

*In the opinion of Squire Patton Boggs (US) LLP and D. Seaton and Associates, P.A., Bond Counsel, under existing law (i) assuming continuing compliance with certain covenants and the accuracy of certain representations, interest on the Series 2019 Bonds is excluded from gross income for federal income tax purposes, and is not an item of tax preference for purposes of the federal alternative minimum tax, and (ii) the Series 2019 Bonds and the income thereon are exempt from taxation under the laws of the State of Florida, except estate taxes imposed by Chapter 198, Florida Statutes, as amended, and net income and franchise taxes imposed by Chapter 220, Florida Statutes, as amended. Interest on the Series 2019 Bonds may be subject to certain federal taxes imposed only on certain corporations. For a more complete discussion of the tax aspects, see "TAX MATTERS" herein.*

**\$233,305,000**

**MIAMI-DADE COUNTY, FLORIDA**  
**Water and Sewer System Revenue Bonds,**  
**Series 2019**

**Dated: Date of Delivery**

**Due: October 1,**  
**as shown on the inside front cover**

Miami-Dade County, Florida (the "County") is issuing its Water and Sewer System Revenue Bonds, Series 2019 (the "Series 2019 Bonds") as fully-registered bonds in the name of Cede & Co., as registered owner and nominee of The Depository Trust Company, New York, New York ("DTC"), which will act as securities depository for the Series 2019 Bonds. Since purchases of beneficial interests in the Series 2019 Bonds will be made in book-entry only form in denominations of \$5,000 or any integral multiple of \$5,000, beneficial owners will not receive physical delivery of bond certificates. Interest on the Series 2019 Bonds will be payable semi-annually on April 1 and October 1 of each year, commencing April 1, 2019. Principal of the Series 2019 Bonds will be payable at the designated office of U.S. Bank National Association, as Paying Agent and Registrar for the Series 2019 Bonds. As long as DTC or its nominee is the registered owner of the Series 2019 Bonds, payments of the principal of and interest on the Series 2019 Bonds will be made directly to DTC or its nominee. See "APPENDIX I – BOOK-ENTRY ONLY SYSTEM".

Payment of the principal of and interest on the Series 2019 Bonds is secured, on a parity basis with certain other outstanding Bonds as described herein, by a pledge of and a lien on the Pledged Revenues, which consist of the Net Operating Revenues (as such terms are defined in this Official Statement) of the County's water and sewer utility system (the "Utility").

The Series 2019 Bonds are subject to optional redemption and mandatory sinking fund redemption prior to maturity under the terms and conditions as more fully described in this Official Statement.

The proceeds of the Series 2019 Bonds, together with any other available funds of the Miami-Dade Water and Sewer Department (the "Department"), will be used to: (i) refund all of the outstanding Miami-Dade County, Florida Water and Sewer System Commercial Paper Notes, Series A-1 (Tax-Exempt) and all of the outstanding Miami-Dade County, Florida Water and Sewer System Commercial Paper Notes, Series B-1 (Tax-Exempt); (ii) make a deposit to the Reserve Account; and (iii) pay the costs of issuance of the Series 2019 Bonds.

THE SERIES 2019 BONDS ARE SPECIAL, LIMITED OBLIGATIONS OF THE COUNTY PAYABLE SOLELY FROM AND SECURED SOLELY BY PLEDGED REVENUES. THE SERIES 2019 BONDS DO NOT CONSTITUTE AN INDEBTEDNESS, LIABILITY, GENERAL OR MORAL OBLIGATION, OR A PLEDGE OF THE FAITH, CREDIT OR POWER OF THE COUNTY, THE STATE OF FLORIDA OR ANY POLITICAL SUBDIVISION OF THE STATE OF FLORIDA, WITHIN THE MEANING OF ANY CONSTITUTIONAL, STATUTORY OR CHARTER PROVISION. NEITHER THE STATE OF FLORIDA NOR ANY POLITICAL SUBDIVISION OF THE STATE OF FLORIDA NOR THE COUNTY SHALL BE DIRECTLY OR INDIRECTLY OR CONTINGENTLY OBLIGATED TO LEVY ANY AD VALOREM TAXES ON ANY PROPERTY TO PAY PRINCIPAL OF, OR THE INTEREST ON, THE SERIES 2019 BONDS OR OTHER RELATED COSTS, OR TO PAY THE SAME FROM ANY OTHER FUNDS OF THE COUNTY EXCEPT FROM THE PLEDGED REVENUES. THE ACCEPTANCE OF THE SERIES 2019 BONDS BY THE REGISTERED OWNERS FROM TIME TO TIME OF THE SERIES 2019 BONDS SHALL BE DEEMED AN AGREEMENT BETWEEN THE COUNTY AND SUCH REGISTERED OWNERS THAT THE SERIES 2019 BONDS AND THE INDEBTEDNESS EVIDENCED BY THE SERIES 2019 BONDS SHALL NOT CONSTITUTE A LIEN UPON THE UTILITY, ANY PART OF THE UTILITY, OR ANY OTHER PROPERTY OF THE COUNTY, BUT SHALL CONSTITUTE A LIEN ONLY ON THE PLEDGED REVENUES.

See the inside cover page for maturities, principal amounts, interest rates, prices, yields and initial CUSIP numbers.

This cover page contains information for quick reference only. It is *not* a complete summary of the information in this Official Statement. Investors must read this entire Official Statement, including the Appendices, to obtain information essential in making an informed investment decision with respect to the purchase of the Series 2019 Bonds.

The Series 2019 Bonds are offered when, as and if issued by the County and accepted by the Underwriters, subject to the opinions on certain legal matters relating to their issuance of Squire Patton Boggs (US) LLP, Miami, Florida, and D. Seaton and Associates, P.A., Miami, Florida, Bond Counsel for the County. Certain legal matters will be passed upon for the County by the Office of the Miami-Dade County Attorney. Certain legal matters relating to disclosure will be passed upon for the County by Hunton Andrews Kurth LLP, Miami, Florida, and DiFalco & Fernandez LLLP, Miami, Florida, Disclosure Counsel. Certain legal matters will be passed upon for the Underwriters by their counsel, Liebler, Gonzalez & Portuondo, Miami, Florida. Public Resources Advisory Group, St. Petersburg, Florida, has served as Financial Advisor to the County and the Department in connection with the issuance of the Series 2019 Bonds. It is expected that the Series 2019 Bonds will be available for delivery through DTC in New York, New York, on or about January 31, 2019.

**MORGAN STANLEY**

**Cabrera Capital Markets, LLC**

**Rice Financial Products Company**

**Barclays**

**Estrada Hinojosa & Company, Inc.**

**Blaylock Van, LLC**

**Jefferies**

**Siebert Cisneros Shank & Co., L.L.C.**

**Raymond James**

**Samuel A. Ramirez & Co., Inc.**

**Drexel Hamilton**

**RBC Capital Markets**

**MATURITY SCHEDULE, PRINCIPAL AMOUNTS, INTEREST RATES,  
PRICES, YIELDS AND INITIAL CUSIP NUMBERS<sup>(1)</sup>**

**\$233,305,000  
MIAMI-DADE COUNTY, FLORIDA  
Water and Sewer System Revenue Bonds,  
Series 2019**

<b>Maturity Date (October 1)</b>	<b>Principal Amount</b>	<b>Interest Rate</b>	<b>Price</b>	<b>Yield</b>	<b>Initial CUSIP No.<sup>(1)</sup></b>
2030	\$ 7,560,000	5.000%	120.869*	2.550%	59334DKU7
2031	7,950,000	5.000	119.921*	2.650	59334DKV5
2032	8,360,000	5.000	118.981*	2.750	59334DKW3
2033	8,785,000	5.000	118.608*	2.790	59334DKX1
2034	9,235,000	5.000	117.958*	2.860	59334DKY9
2035	9,710,000	5.000	116.945*	2.970	59334DKZ6
2036	10,210,000	5.000	116.397*	3.030	59334DLA0
2037	10,730,000	5.000	115.851*	3.090	59334DLB8
2038	11,280,000	5.000	115.309*	3.150	59334DLC6
2039	4,780,000	5.000	114.860*	3.200	59334DLD4

\$60,925,000 5.000% Series 2019 Term Bonds due October 1, 2043, Price 113.613\*; Yield 3.340%,  
Initial CUSIP No. 59334DLE2<sup>(1)</sup>

\$39,640,000 5.000% Series 2019 Term Bonds due October 1, 2046, Price 113.348\*; Yield 3.370%,  
Initial CUSIP No. 59334DLF9<sup>(1)</sup>

\$44,140,000 4.000% Series 2019 Term Bonds due October 1, 2048, Price 101.682\*; Yield 3.790%,  
Initial CUSIP No. 59334DLG7<sup>(1)</sup>

\* Priced to first call date of October 1, 2028.

<sup>(1)</sup> CUSIP numbers have been assigned by an organization not affiliated with the County and are included solely for the convenience of the Bondholders only at the time of issuance of the Series 2019 Bonds and neither the County nor the Underwriters make any representation with respect to such CUSIP numbers, nor undertake any responsibility for their accuracy now or at any time in the future. The CUSIP numbers are subject to being changed after the issuance of the Series 2019 Bonds as a result of various subsequent actions, including, but not limited to, a refunding in part of the Series 2019 Bonds.

**MIAMI-DADE COUNTY, FLORIDA**

Carlos A. Gimenez, Mayor

**MEMBERS OF THE BOARD OF COUNTY COMMISSIONERS**

Audrey M. Edmonson, Chairwoman

Rebeca Sosa, Vice-Chairwoman

Barbara J. Jordan	District 1	Daniella Levine Cava	District 8
Jean Monestime	District 2	Dennis C. Moss	District 9
Audrey M. Edmonson	District 3	Senator Javier D. Souto	District 10
Sally A. Heyman	District 4	Joe A. Martinez	District 11
Eileen Higgins	District 5	José “Pepe” Diaz	District 12
Rebeca Sosa	District 6	Esteban L. Bovo, Jr.	District 13
Xavier L. Suarez	District 7		

**COUNTY CLERK**

Harvey Ruvin

**COUNTY ATTORNEY**

Abigail Price-Williams, Esq.

**DEPUTY MAYOR/FINANCE DIRECTOR**

Edward Marquez

**WATER AND SEWER DEPARTMENT**

Kevin T. Lynskey, Director

Hardeep Anand, P.E., Deputy Director – Capital Improvement Program

Antonio Cotarelo, P.E., Deputy Director – Operations

Lynette M. Ramirez, P.E., Senior Advisor – Capital Projects and Compliance

L. Douglas Yoder, DPA, Senior Advisor

Frances G. Morris, Chief Financial Officer

**BOND COUNSEL**

Squire Patton Boggs (US) LLP  
Miami, Florida

D. Seaton and Associates, P.A.  
Miami, Florida

**DISCLOSURE COUNSEL**

Hunton Andrews Kurth LLP  
Miami, Florida

DiFalco & Fernandez LLLP  
Miami, Florida

**FINANCIAL ADVISOR**

Public Resources Advisory Group  
St. Petersburg, Florida

**CONSULTING ENGINEER**

Arcadis U.S., Inc.  
Miami, Florida

Planning and Economics Group, Inc.  
Miami, Florida

**INDEPENDENT PUBLIC ACCOUNTANTS**

Marcum, LLP  
Miami, Florida

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NO DEALER, BROKER, SALESMAN OR OTHER PERSON HAS BEEN AUTHORIZED BY THE COUNTY, THE DEPARTMENT OR THE UNDERWRITERS TO GIVE ANY INFORMATION OR TO MAKE ANY REPRESENTATIONS, OTHER THAN THOSE CONTAINED IN THIS OFFICIAL STATEMENT, AND IF GIVEN OR MADE, SUCH OTHER INFORMATION OR REPRESENTATIONS MUST NOT BE RELIED UPON AS HAVING BEEN AUTHORIZED BY THE COUNTY, THE DEPARTMENT OR THE UNDERWRITERS. THIS OFFICIAL STATEMENT DOES NOT CONSTITUTE AN OFFER TO SELL OR THE SOLICITATION OF AN OFFER TO BUY NOR SHALL THERE BE ANY SALE OF THE SERIES 2019 BONDS BY ANY PERSON IN ANY JURISDICTION IN WHICH IT IS UNLAWFUL FOR SUCH PERSON TO MAKE SUCH OFFER, SOLICITATION OR SALE.

THE ORDER AND PLACEMENT OF MATERIALS IN THIS OFFICIAL STATEMENT, INCLUDING THE APPENDICES, ARE NOT TO BE DEEMED A DETERMINATION OF RELEVANCE, MATERIALITY OR IMPORTANCE, AND THIS OFFICIAL STATEMENT, INCLUDING THE APPENDICES, MUST BE CONSIDERED IN ITS ENTIRETY. THE CAPTIONS AND HEADINGS IN THIS OFFICIAL STATEMENT ARE FOR CONVENIENCE ONLY AND IN NO WAY DEFINE, LIMIT OR DESCRIBE THE SCOPE OR INTENT, OR AFFECT THE MEANING OR CONSTRUCTION, OF ANY PROVISIONS OR SECTIONS IN THIS OFFICIAL STATEMENT. THE OFFERING OF THE SERIES 2019 BONDS IS MADE ONLY BY MEANS OF THIS ENTIRE OFFICIAL STATEMENT.

THIS OFFICIAL STATEMENT CONTAINS STATEMENTS, WHICH TO THE EXTENT THEY ARE NOT RECITATIONS OF HISTORICAL FACT, CONSTITUTE "FORWARD-LOOKING STATEMENTS." IN THIS RESPECT, THE WORDS "ESTIMATE," "PROJECT," "ANTICIPATE," "EXPECT," "INTEND," "BELIEF," AND SIMILAR EXPRESSIONS ARE INTENDED TO IDENTIFY FORWARD LOOKING STATEMENTS. SUCH STATEMENTS MAY BE SUBJECT TO RISKS AND UNCERTAINTIES THAT COULD CAUSE ACTUAL RESULTS TO DIFFER MATERIALLY FROM THOSE CONTEMPLATED IN SUCH FORWARD LOOKING STATEMENTS.

THIS OFFICIAL STATEMENT IS BEING PROVIDED TO PROSPECTIVE PURCHASERS EITHER IN BOUND PRINTED FORM ("ORIGINAL BOUND FORMAT") OR IN ELECTRONIC FORMAT ON THE FOLLOWING WEBSITES: [WWW.MUNIOS.COM](http://WWW.MUNIOS.COM) AND [WWW.EMMA.MSRB.ORG](http://WWW.EMMA.MSRB.ORG). THIS OFFICIAL STATEMENT MAY BE RELIED UPON ONLY IF IT IS IN ITS ORIGINAL BOUND FORMAT OR IF IT IS PRINTED IN FULL DIRECTLY FROM SUCH WEBSITES.

THE UNDERWRITERS HAVE PROVIDED THE FOLLOWING SENTENCE FOR INCLUSION IN THIS OFFICIAL STATEMENT. *THE UNDERWRITERS HAVE REVIEWED THE INFORMATION IN THIS OFFICIAL STATEMENT IN ACCORDANCE WITH, AND AS PART OF, THEIR RESPECTIVE RESPONSIBILITIES TO INVESTORS UNDER THE FEDERAL SECURITIES LAWS AS APPLIED TO THE FACTS AND CIRCUMSTANCES OF THIS TRANSACTION, BUT THE UNDERWRITERS DO NOT GUARANTEE THE ACCURACY OR COMPLETENESS OF SUCH INFORMATION.*

IN CONNECTION WITH THIS OFFERING, THE UNDERWRITERS MAY OVERALLOT OR EFFECT TRANSACTIONS WHICH STABILIZE OR MAINTAIN THE MARKET PRICE OF THE SERIES 2019 BONDS AT A LEVEL ABOVE THAT WHICH MIGHT OTHERWISE PREVAIL IN THE OPEN MARKET. SUCH STABILIZING, IF COMMENCED, MAY BE DISCONTINUED AT ANY TIME. THE UNDERWRITERS MAY OFFER AND SELL THE SERIES 2019 BONDS TO CERTAIN DEALERS AND OTHERS AT YIELDS HIGHER THAN THE YIELDS STATED ON THE INSIDE COVER PAGE OF THIS OFFICIAL STATEMENT, AND SUCH PUBLIC OFFERING YIELDS MAY BE CHANGED FROM TIME TO TIME, AFTER THE INITIAL OFFERING TO THE PUBLIC, BY THE UNDERWRITERS.

THE SERIES 2019 BONDS HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED, OR ANY STATE SECURITIES LAW, NOR HAS THE BOND ORDINANCE BEEN QUALIFIED UNDER THE TRUST INDENTURE ACT OF 1939, AS AMENDED, IN RELIANCE UPON EXEMPTIONS CONTAINED IN SUCH ACTS. IN MAKING AN INVESTMENT DECISION, INVESTORS MUST RELY ON THEIR OWN EXAMINATION OF THE PLEDGED REVENUES AND THE TERMS OF THIS OFFERING, INCLUDING THE MERITS AND INVESTMENT RISKS INVOLVED. NEITHER THE SECURITIES AND EXCHANGE COMMISSION NOR ANY OTHER FEDERAL, STATE OR GOVERNMENTAL ENTITY OR AGENCY WILL HAVE PASSED UPON THE ACCURACY OR ADEQUACY

OF THIS OFFICIAL STATEMENT OR APPROVED OR RECOMMENDED THE SERIES 2019 BONDS FOR SALE. ANY REPRESENTATION TO THE CONTRARY MAY BE A CRIMINAL OFFENSE.

REFERENCES TO WEBSITE ADDRESSES PRESENTED HEREIN ARE FOR INFORMATIONAL PURPOSES ONLY AND MAY BE IN THE FORM OF A HYPERLINK SOLELY FOR THE READER'S CONVENIENCE. UNLESS SPECIFIED OTHERWISE, SUCH WEBSITES AND THE INFORMATION OR LINKS CONTAINED THEREIN ARE NOT INCORPORATED INTO, AND ARE NOT PART OF, THIS OFFICIAL STATEMENT FOR PURPOSES OF RULE 15c2-12 OF THE UNITED STATES SECURITIES AND EXCHANGE COMMISSION, AS AMENDED, AND IN EFFECT ON THE DATE HEREOF.

THIS OFFICIAL STATEMENT IS IN A FORM DEEMED FINAL BY THE COUNTY FOR PURPOSES OF RULE 15c2-12 PROMULGATED UNDER THE SECURITIES EXCHANGE ACT OF 1934, AS AMENDED.

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## **OFFICIAL STATEMENT**

**relating to**

### **\$233,305,000 MIAMI-DADE COUNTY, FLORIDA Water and Sewer System Revenue Bonds, Series 2019**

## **INTRODUCTION**

The purpose of this Official Statement of Miami-Dade County, Florida (the “County”), which includes the inside cover page and Appendices, is to furnish certain information in connection with the issuance and sale by the County of \$233,305,000 aggregate principal amount of Miami-Dade County, Florida Water and Sewer System Revenue Bonds, Series 2019 (the “Series 2019 Bonds”). The Series 2019 Bonds are being issued pursuant to the authority of, and in compliance with, the Constitution and Laws of the State of Florida (the “State”), including without limitation, (i) Chapter 125 and Chapter 166, Florida Statutes, each as amended; (ii) the Home Rule Amendment and Charter of the County, as amended; (iii) the Code of the County, as amended; and (iv) Ordinance No. 93-134 enacted by the Board of County Commissioners of the County (the “Board”) on November 16, 1993 (the “Original Ordinance”), as amended by Ordinance No. 13-47 enacted by the Board on June 4, 2013 (the “2013 Ordinance,” the Original Ordinance as amended by the 2013 Ordinance, the “Master Ordinance”), the 2013 Ordinance, and Resolution No. R-1227-18 adopted by the Board on December 4, 2018 (the “Series 2019 Resolution” and, together with the Master Ordinance and the 2013 Ordinance, the “Bond Ordinance”). The full text of the Bond Ordinance is appended to this Official Statement as “APPENDIX D – BOND ORDINANCE.”

The Series 2019 Bonds are being issued for the purposes described under the heading “PLAN OF FINANCE.”

Payment of principal of and interest on the Series 2019 Bonds is secured, on a parity basis as described below, by a pledge of and lien on the Pledged Revenues, which consist of the Net Operating Revenues (as such terms are defined herein) of the County’s water and wastewater utility system (the “Utility”). See “SECURITY AND SOURCES OF PAYMENT FOR THE SERIES 2019 BONDS.”

The Series 2019 Bonds are being issued on a parity as to the source and security for payment with

(i) the \$68,300,000 original aggregate principal amount of Miami-Dade County, Florida Water and Sewer System Revenue Bonds, Series 2008A, currently outstanding in the principal amount of \$25,475,000 (the “Series 2008A Bonds”);

(ii) the \$374,555,000 original aggregate principal amount of Miami-Dade County, Florida Water and Sewer System Revenue Refunding Bonds, Series 2008B, currently outstanding in the principal amount of \$185,870,000 (the “Series 2008B Bonds”);

(iii) the \$594,330,000 original aggregate principal amount of Miami-Dade County, Florida Water and Sewer System Revenue Bonds, Series 2010, currently outstanding in the principal amount of \$6,585,000 (the “Series 2010 Bonds”);

(iv) the \$340,265,000 original aggregate principal amount of Miami-Dade County, Florida Water and Sewer System Revenue Bonds, Series 2013A, all of which are currently outstanding (the “Series 2013A Bonds”);

(v) the \$152,400,000 original aggregate principal amount of Miami-Dade County, Florida Water and Sewer System Revenue Refunding Bonds, Series 2013B, all of which are currently outstanding (the “Series 2013B Bonds”);

(vi) the \$481,175,000 original aggregate principal amount of Miami-Dade County, Florida Water and Sewer System Revenue Refunding Bonds, Series 2015, currently outstanding in the principal amount of \$467,670,000 (the “Series 2015 Bonds”);

(vii) the \$381,355,000 original aggregate principal amount of Miami-Dade County, Florida Water and Sewer System Revenue Bonds, Series 2017A, all of which are currently outstanding (the “Series 2017A Bonds”); and

(viii) \$548,025,000 aggregate principal amount of Miami-Dade County, Florida Water and Sewer System Revenue Refunding Bonds, Series 2017B, all of which are currently outstanding (the “Series 2017B Bonds” and, collectively with the Series 2008A Bonds, the Series 2008B Bonds, the Series 2010 Bonds, the Series 2013A Bonds, the Series 2013B Bonds, the Series 2015 Bonds and the Series 2017A Bonds, the “Outstanding Bonds”), and with certain Hedge Obligations as described in this Official Statement and any future Additional Bonds, Completion Bonds and Refunding Bonds. See “SECURITY AND SOURCES OF PAYMENT FOR THE SERIES 2019 BONDS – Flow of Funds,” “– Additional Bonds,” “– Refunding Bonds,” and “– Completion Bonds.” Any bonds issued under the provisions of the Master Ordinance shall be referred to as the “Bonds.”

This Official Statement contains descriptions of, among other things, the Series 2019 Bonds, the Bond Ordinance, the Miami-Dade Water and Sewer Department (the “Department”) and the County. Such descriptions and information do not purport to be comprehensive or definitive. Certain information in this Official Statement has been provided by The Depository Trust Company, New York, New York (“DTC”). The County and the Department have not provided information in this Official Statement with respect to DTC and do not certify as to the accuracy or sufficiency of the disclosure policies of or content provided by DTC and are not responsible for the information provided by DTC. All references in this Official Statement to the Bond Ordinance and related documents are qualified by reference to such documents, and references to the Series 2019 Bonds are qualified in their entirety by reference to the form of such bonds included in the Bond Ordinance. *All capitalized terms in this Official Statement shall have the meanings assigned to such terms in the Bond Ordinance unless another meaning is ascribed to any of such terms in this Official Statement.*

## **PLAN OF FINANCE**

The Series 2019 Bonds are being issued, together with any other available funds of the Department, to: (i) refund all of the outstanding Miami-Dade County, Florida Water and Sewer System Commercial Paper Notes, Series A-1 (Tax-Exempt) and all of the outstanding Miami-Dade County, Florida Water and Sewer System Commercial Paper Notes, Series B-1 (Tax-Exempt) (collectively, the “Tax-Exempt CP Notes”); (ii) make a deposit to the Reserve Account; and (iii) pay the costs of issuance of the Series 2019 Bonds. The outstanding Tax-Exempt CP Notes were issued for the purpose of providing temporary funding for a portion of the costs of the Department’s Multi-Year Capital Plan (the “MYCIP”) and the Series 2019 Bonds are being issued to provide long-term financing for such expenditures.

The Series 2019 Bonds are part of a series of Water and Sewer Revenue Bond new money issues previously issued and expected to be issued in the future by the County to fund a portion of the costs of the MYCIP. The Department has a long-term capital plan of approximately \$11.4 billion, of which approximately \$1.4 billion has been funded. The Department establishes its MYCIP over a six year planning period consisting of the current fiscal year and the next five fiscal years. The Department has identified approximately \$3.2 billion in capital needs to be funded over the term of the current MYCIP, which runs from fiscal year 2019 through 2024. An additional \$8.6 billion in capital needs is expected to be funded after 2024. See “FINANCIAL OPERATIONS - Multi-Year Capital Plan” for a description of such capital needs and projected costs. See also “SERIES 2019 BONDS ESTIMATED SOURCES AND USES OF FUNDS.”

## DESCRIPTION OF THE SERIES 2019 BONDS

### General

The Series 2019 Bonds shall bear interest at such rates and will mature on the dates and in the principal amounts set forth on the inside cover page of this Official Statement. U.S. Bank National Association will act as Registrar and Paying Agent for the Series 2019 Bonds (the “Paying Agent” or “Registrar”).

The Series 2019 Bonds will be issued initially as fully registered bonds in the name of Cede & Co., as nominee of DTC, which will act as initial securities depository for the Series 2019 Bonds. Purchases of the Series 2019 Bonds will be made through a book-entry only system maintained by DTC, in denominations of \$5,000 or any integral multiple of \$5,000, and purchasers of the Series 2019 Bonds (the “Beneficial Owners”) will not receive physical delivery of bond certificates. As long as DTC or its nominee is the registered owner of the Series 2019 Bonds, the principal and interest payments will be made to DTC or its nominee, which will in turn remit such principal and interest payments to DTC’s Participants (as defined in APPENDIX I) for subsequent disbursement to the Beneficial Owners. See “APPENDIX I – BOOK-ENTRY ONLY SYSTEM.”

### Redemption of Series 2019 Bonds

Optional Redemption of Series 2019 Bonds. The Series 2019 Bonds shall be subject to optional redemption prior to maturity, at the option of the County, in whole or in part at any time, on or after October 1, 2028, and if in part, in maturities determined by the County and by lot within a maturity, at a redemption price equal to 100% of the principal amount of the Series 2019 Bonds to be redeemed, plus accrued interest to the date of redemption and without premium.

Mandatory Redemption of Series 2019 Bonds. The Series 2019 Bonds maturing on October 1, 2043, are subject to mandatory sinking fund redemption in part, prior to maturity, by lot, at a redemption price equal to the principal amount of the Series 2019 Bonds to be redeemed, commencing on October 1, 2039, and on each October 1 thereafter, in the years and principal amounts set forth below:

<b>Year (October 1)</b>	<b>Amount</b>
2039	\$7,080,000
2040	12,470,000
2041	13,110,000
2042	13,780,000
2043	14,485,000*

\*Payment at maturity

The Series 2019 Bonds maturing on October 1, 2046, are subject to mandatory sinking fund redemption in part, prior to maturity, by lot, at a redemption price equal to the principal amount of the Series 2019 Bonds to be redeemed, commencing on October 1, 2044, and on each October 1 thereafter, in the years and principal amounts set forth below:

<b>Year (October 1)</b>	<b>Amount</b>
2044	\$15,230,000
2045	16,010,000
2046	8,400,000*

\*Payment at maturity

The Series 2019 Bonds maturing on October 1, 2048, are subject to mandatory sinking fund redemption in part, prior to maturity, by lot, at a redemption price equal to the principal amount of the Series 2019 Bonds to be redeemed, commencing on October 1, 2046, and on each October 1 thereafter, in the years and principal amounts set forth below:

<b>Year (October 1)</b>	<b>Amount</b>
2046	\$8,390,000
2047	17,520,000
2048	18,230,000*

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\*Payment at maturity

**Notice of Redemption.** In the event any Series 2019 Bonds are called for redemption, the Paying Agent shall give notice in the name of the County, of the redemption of such Series 2019 Bonds, which notice shall (i) specify the Series 2019 Bonds to be redeemed, the CUSIP numbers, certificate numbers, the date of issue, interest rate, maturity date of the Series 2019 Bonds to be redeemed, the redemption date, the date of notice, the redemption price and the place or places where amounts due upon such redemption will be payable (which shall be the designated principal corporate trust office of the Paying Agent or of its agent) and, if less than all of the Series 2019 Bonds are to be redeemed, the numbers of the Series 2019 Bonds and the portion of Series 2019 Bonds so to be redeemed and (ii) state that on the redemption date, the Series 2019 Bonds to be redeemed shall cease to bear interest.

Notice of redemption shall be given by the Paying Agent in the name of the County by mailing a copy of the redemption notice to Cede & Co., as nominee of DTC, as registered owner of the Series 2019 Bonds, or, if DTC is no longer the registered owner of the Series 2019 Bonds, then to the then registered owners of the Series 2019 Bonds at least thirty (30) days prior to the date fixed for redemption, by first class mail and postage prepaid at their addresses appearing on the bond registration books of the County maintained by the Registrar, and if applicable, to the securities depository.

A second notice of redemption shall be given (within 60 days after the redemption date) in the manner required above, to the registered Holders of redeemed Series 2019 Bonds which have not been presented for payment within 30 days after the redemption date. However, failure to give such notice shall not affect the validity of the redemption of the Series 2019 Bonds.

**Effect of Calling for Redemption.** On the date so designated for redemption, notice having been mailed as provided in the Master Ordinance, the Series 2019 Bonds so called for redemption shall become and be due and payable at the redemption price provided for redemption of such Series 2019 Bonds on such date, and moneys for payment of the redemption price, together with accrued interest, if any, to such date, being held in separate accounts by the Paying Agent in trust for the registered owners of the Series 2019 Bonds to be redeemed, interest on the Series 2019 Bonds so called for redemption shall cease to accrue, such Series 2019 Bonds shall not be deemed to be Outstanding for purposes of the Bond Ordinance, and shall cease to be entitled to any lien, benefit or security under the Bond Ordinance, and the registered owners of such Series 2019 Bonds shall have no rights in respect of the Series 2019 Bonds except to receive payment of the redemption price of the Series 2019 Bonds, together with accrued interest, if any, to such date.

Whenever any Series 2019 Bonds shall be delivered to the Paying Agent for cancellation, upon payment of the principal amount of the Series 2019 Bonds, or for replacement, transfer or exchange, such Series 2019 Bonds shall be canceled and destroyed by the Paying Agent, and counterparts of the certificate of destruction evidencing any such destruction shall be furnished to the County.

**Conditional Notice of Redemption.** In the case of an optional redemption of any Series 2019 Bonds, the notice of redemption may state that (1) it is conditioned upon the deposit of moneys with the Paying Agent or with an escrow agent under an escrow deposit agreement, in amounts necessary to effect the redemption, no later than the redemption date or (2) the County retains the right to rescind such notice on or prior to the scheduled redemption date (in either case, a "Conditional Redemption"), and such notice and optional redemption shall be of no effect if such moneys are not so deposited or if the notice is rescinded. Any such notice of Conditional Redemption shall be

captioned “Conditional Notice of Redemption.” Any Conditional Redemption may be rescinded at any time prior to the redemption date if the County delivers a written direction to the Paying Agent directing the Paying Agent to rescind the redemption notice. The Paying Agent shall give prompt notice of such rescission to the affected Bondholders. Any Series 2019 Bonds subject to Conditional Redemption where redemption has been rescinded shall remain Outstanding, and neither the rescission nor the failure by the County to make such funds available shall constitute an Event of Default under the Bond Ordinance. The County shall give immediate notice to each MSIR (as hereinafter defined) and the affected Bondholders that the redemption did not occur and that the Series 2019 Bonds called for redemption and not so paid remain Outstanding under the Bond Ordinance.

## **SECURITY AND SOURCES OF PAYMENT FOR THE SERIES 2019 BONDS**

### **Pledged Revenues**

The payment of principal of and interest on the Series 2019 Bonds is secured by a pledge of and lien on the Net Operating Revenues of the Utility (the “Pledged Revenues”). For a description of the application and use of the Pledged Revenues, see “Flow of Funds” below. The Series 2019 Bonds are on parity as to source and security for payment with the Outstanding Bonds, any future Bonds and with certain Hedge Obligations as hereinafter described in this Official Statement. See “INTEREST RATE SWAP AGREEMENTS.”

The term “Net Operating Revenues” is defined in the Master Ordinance as Operating Revenues reduced by Operating Expenses. The term “Operating Revenues” is defined in the Master Ordinance as all operating income or earnings received or accrued by the County from the ownership, operation or use of the Utility, or any part of the Utility, including, but not limited to, user charges for the provision of water service and sewer service, meter installation fees, and the like, delinquent charges and investment earnings, but shall exclude any income from the investment of the Construction Fund, proceeds from insurance (except business interruption insurance), condemnation or the disposition of property not in the ordinary course of business, Capital Facilities Charges, grants and proceeds from the sale of any obligations of the County (exclusive of short-term obligations for Utility working capital) and payments on special assessments for water and sewer improvements.

The term “Capital Facilities Charges” is defined in the Master Ordinance as all payments received by the County or the Department which are related to acquiring, constructing, expanding or equipping capacity and facilities of the Utility, for the purpose of reserving capacity in either the Water System or the Sewer System, connecting to either System, or paying or reimbursing any capital cost relating to such acquisition, construction, expansion or equipping of excess and unused capacity of either System or any expansion thereof, including connection charges and impact fees relative to the Utility, but shall not include (i) amounts received for the acceptance, treatment or disposal of sewage, (ii) amounts received from the sale of water, (iii) meter installation fees and (iv) other revenues constituting Operating Revenues.

The term “Operating Expenses” is defined in the Master Ordinance as all current expenses, paid or accrued, and any Operating Expense reserve described in Section 503 of the Master Ordinance, for the operation, maintenance and ordinary current repairs of the Utility and its components, as calculated in accordance with generally accepted accounting principles for municipal utilities (“GAAP”), including, without limitation, insurance premiums (or comparable payments under a self-insurance or risk management program), labor, cost of materials and supplies used for current operation, charges for the accumulation of appropriate reserves for current expenses not annually recurrent but which are such as may reasonably be expected to be incurred in accordance with GAAP and Credit Facility Charges, administrative expenses and professional fees and expenses, before depreciation, amortization and interest expense determined in accordance with GAAP, provided, however, there will not be taken into account:

- (a) any gain or loss resulting from either the extinguishment or refinancing of indebtedness;
- (b) loss from the sale, exchange or other disposition of capital assets not made in the ordinary course of business; and
- (c) any capital expenditures for renewal, replacement, expansion or acquisition of capital assets of the Utility (including any deposit to reserves therefor).

The Master Ordinance would permit the County to acquire a water and/or sewer system and specifically designate such system to be a “Separate System” for purposes of the Master Ordinance. Any Separate System so designated would not constitute a part of the Utility, and revenues generated by such Separate System would not constitute Operating Revenues subject to the lien of the Master Ordinance and costs allocable thereto would not be taken into account for purposes of determining Operating Expenses and Net Operating Revenues. There are currently no Separate Systems.

#### **Flow of Funds**

Section 502 of the Master Ordinance creates the following funds and accounts (all of which are to be held by the County) for the security of the Outstanding Bonds, the Series 2019 Bonds, and any future Bonds:

- (a) the Revenue Fund;
- (b) the Debt Service Fund, and therein a Bond Service Account, a Redemption Account and a Reserve Account;
- (c) the Renewal and Replacement Fund;
- (d) the Plant Expansion Fund;
- (e) the Rate Stabilization Fund; and
- (f) the General Reserve Fund.

In addition, the Series 2019 Resolution creates the “Series 2019 Bond Service Subaccount” and the “Series 2019 Redemption Subaccount” in the Debt Service Fund.

Section 503 of the Master Ordinance requires that the County deposit all Operating Revenues of the Utility in the Revenue Fund as received, and that all moneys in the Revenue Fund be applied in the order of priority described below:

- (1) The County must make withdrawals from the Revenue Fund in amounts necessary to pay Operating Expenses and to establish an Operating Expense reserve in an amount determined by the County (which may not exceed 1/6<sup>th</sup> of the budgeted Operating Expenses for the then-current Fiscal Year).
- (2) Subject only to the payments and set asides described in (1) above, the remaining moneys in the Revenue Fund are required to be applied on or before the 20<sup>th</sup> day of each month in the following order:
  - (i) to the credit of the Bond Service Account, an amount equal to one-sixth (1/6<sup>th</sup>) of the amount of the interest payable on the Bonds of each Series on the interest payment date next succeeding (less any amount received as capitalized or accrued interest from the proceeds of any Bonds which is available for such interest payment) and an amount equal to one-twelfth (1/12<sup>th</sup>) of the next maturing installment of principal (or Accreted Value, as applicable) on all Serial Bonds then outstanding; provided, however, that:
    - (A) in each month intervening between the date of delivery of a Series of Bonds, and the next succeeding interest payment date and the next succeeding principal payment date, respectively, the amount specified in this subparagraph (i) shall be that amount which when multiplied by the number of deposits to the credit of the Bond Service Account required to be made during such respective periods will equal the amounts required (in addition to any amounts received as accrued interest or capitalized interest from the proceeds of such Bonds) for such next succeeding interest payment and next maturing installment of principal, respectively;

(B) the amount specified in this subparagraph (i) shall be reduced to take into account Hedge Receipts to be received on or before the succeeding interest payment date and shall be increased to provide for the payment of any Hedge Obligations to be paid on or before the succeeding interest payment date; and

(C) with respect to any Bonds (or any Hedge Agreement) bearing interest at a Variable Rate and/or payable other than semiannually, the amount specified in this subparagraph (i) for the payment of interest (or Hedge Obligation) shall be that amount necessary to provide substantially equal monthly payments for the payment of such interest (or Hedge Obligation) on the payment dates therefor;

(ii) to the credit of the Redemption Account, an amount equal to one-twelfth (1/12<sup>th</sup>) of the principal amount (or Accreted Value, as applicable) of Term Bonds of each Series then Outstanding required to be retired in satisfaction of the Amortization Requirements for such Bond Year, plus the redemption premiums, if any, which would be payable in such Bond Year if such Term Bonds were to be redeemed prior to their respective maturities from moneys held for the credit for the Debt Service Fund;

(iii) to the credit of the Reserve Account, the Reserve Account deposit requirement established by the Master Ordinance for such month; provided, however, no deposit shall be required in any month in which the amount on deposit in the Reserve Account is at least equal to the Reserve Account Requirement. If a Reserve Account Credit Facility is utilized and the Provider of the Reserve Account Credit Facility is required to advance any sums to meet Principal and Interest Requirements or other sums required to be funded from the Reserve Account, the County shall reimburse the Provider within 12 months from the date the County receives written notice of such advance by the Provider;

(iv) to the payment of principal (including amortization installment, if any) of, and premiums and interest on, and other required payments with respect to Subordinate Obligations;

(v) to the credit of the Renewal and Replacement Fund, an amount equal to one-twelfth (1/12<sup>th</sup>) of the amount to be deposited from Revenues, if any, recommended by the Consultant pursuant to the provisions of Section 607 of the Master Ordinance, to be deposited to the credit of said fund during such Fiscal Year;

(vi) in the discretion of the County, to the credit of the Rate Stabilization Fund in such sums as are determined by the County; and

(vii) to the credit of the General Reserve Fund, the balance, if any, remaining thereafter. At the election of the County, amounts credited to the General Reserve Fund may be applied to any other lawful purpose of the Utility and, to the extent legally permitted, to make contributions to other funds of the County in the amounts determined by the Board; provided, however that in the event of any deficiencies in any Accounts or Funds created by the Master Ordinance, the moneys in the General Reserve Fund will be applied to make up all such deficiencies prior to applying any moneys in the Reserve Account or the Renewal and Replacement Fund for such purpose.

If an amount deposited in any month to the credit of any of the Accounts or Funds shall be less than the amount required to be deposited under the provisions of the Master Ordinance, the requirement therefor shall nevertheless be cumulative and the amount of any deficiency in any month shall be added to the amount otherwise required to be deposited in each month thereafter until such time as all deficiencies have been made up.

Pursuant to subparagraph (i) above, Hedge Obligations are payable on parity as to source and security with Bonds issued and Outstanding under the Bond Ordinance. The term "Hedge Obligations" is defined in the Master Ordinance as net payments required to be made by the County under a Hedge Agreement from time to time as a result of fluctuation in hedged interest rates or in the value of any index of payment and, under certain conditions set forth in the Master Ordinance, termination charges with respect to a Hedge Agreement. A "Hedge Agreement"

includes, but is not limited to, an interest rate swap agreement meeting the criteria set forth in the Master Ordinance and entered into by the County as a hedging device with respect to its obligation to pay debt service on the Bonds. See "INTEREST RATE SWAP AGREEMENTS" for a description of Hedge Agreements currently in effect that have been entered into by the County.

### **Limited Obligations**

THE SERIES 2019 BONDS ARE SPECIAL, LIMITED OBLIGATIONS OF THE COUNTY PAYABLE SOLELY FROM AND SECURED SOLELY BY PLEDGED REVENUES. THE SERIES 2019 BONDS DO NOT CONSTITUTE AN INDEBTEDNESS, LIABILITY, GENERAL OR MORAL OBLIGATION, OR A PLEDGE OF THE FAITH, CREDIT OR POWER OF THE COUNTY, THE STATE OF FLORIDA OR ANY POLITICAL SUBDIVISION OF THE STATE OF FLORIDA, WITHIN THE MEANING OF ANY CONSTITUTIONAL, STATUTORY OR CHARTER PROVISION. NEITHER THE STATE OF FLORIDA NOR ANY POLITICAL SUBDIVISION OF THE STATE OF FLORIDA NOR THE COUNTY SHALL BE DIRECTLY OR INDIRECTLY OR CONTINGENTLY OBLIGATED TO LEVY ANY AD VALOREM TAXES ON ANY PROPERTY TO PAY PRINCIPAL OF, OR THE INTEREST ON, THE SERIES 2019 BONDS OR OTHER RELATED COSTS, OR TO PAY THE SAME FROM ANY OTHER FUNDS OF THE COUNTY EXCEPT FROM THE PLEDGED REVENUES. THE ACCEPTANCE OF THE SERIES 2019 BONDS BY THE REGISTERED OWNERS FROM TIME TO TIME OF THE SERIES 2019 BONDS SHALL BE DEEMED AN AGREEMENT BETWEEN THE COUNTY AND SUCH REGISTERED OWNERS THAT THE SERIES 2019 BONDS AND THE INDEBTEDNESS EVIDENCED BY THE SERIES 2019 BONDS SHALL NOT CONSTITUTE A LIEN UPON THE UTILITY, ANY PART OF THE UTILITY, OR ANY OTHER PROPERTY OF THE COUNTY, BUT SHALL CONSTITUTE A LIEN ONLY ON THE PLEDGED REVENUES.

### **Rate Covenant**

The County has covenanted in Section 602 of the Master Ordinance to fix, charge and collect rates and charges for the use of the services and facilities furnished by the Utility and, from time to time and as often as it shall be necessary, to adjust such rates and charges by increasing or decreasing the same or any selected categories of such rates and charges so as to provide Net Operating Revenues in each Fiscal Year equal to (a) (i) commencing with the Fiscal Year beginning October 1, 1993, equal to one hundred ten percent (110%) of the Principal and Interest Requirements on the Bonds for such Fiscal Year, and (ii) commencing with the Fiscal Year beginning October 1, 2012, equal to one hundred twenty five percent (125%) of the Principal and Interest Requirements on the Bonds for such Fiscal Year, plus (b) in each case, one hundred percent (100%) of the required deposits into the Reserve Account (less any portion of such deposits to be deposited from proceeds of Bonds) together with any Reserve Account Credit Facility costs payable in such Fiscal Year. In addition to satisfying the debt service coverage requirements set forth above, the adjusted Net Operating Revenues remaining after deduction of the Maximum Principal and Interest Requirements on all Bonds shall be at least equal to one hundred percent (100%) of all debt service and reserve requirements on Subordinate Obligations.

The term "Principal and Interest Requirements" is defined in the Master Ordinance as the respective amounts which are required in each Fiscal Year to pay (a) principal and interest on all Bonds then Outstanding and (b) the Amortization Requirements, if any, for all Term Bonds then Outstanding for such Fiscal Year; provided, however, that: (i) the amount of such Principal and Interest Requirements for any Fiscal Year may be reduced by the amount of any capitalized interest to be used to pay interest in such Fiscal Year and by the anticipated earnings on money in the applicable Bond Service Account, and such earnings will be deposited to the credit of the applicable Bond Service Account; and (ii) the Principal and Interest Requirements for any Bonds bearing interest at a Variable Rate shall be determined as provided in the Definition of "Variable Rate" in the Master Ordinance (*see* APPENDIX D for this definition). "Maximum Principal Interest Requirements" is defined in the Master Ordinance, as of any particular date of calculation, as the greatest amount of Principal and Interest Requirements for the then current or any future Fiscal Year.

The Master Ordinance defines "Reserve Account Credit Facility" as a surety bond, a policy of insurance, a letter of credit or other financial product obtained by the County with respect to any Bonds, from an entity meeting the criteria set forth in the Master Ordinance, which provides for payment of Principal and Interest on such Bonds in amounts not greater than the Reserve Account Requirement for such Bonds in the event of an insufficiency of available moneys to pay when due principal of, premium, if any, and interest on such Bonds.



In case the County has made deposits of Net Operating Revenues to or withdrawals from the Rate Stabilization Fund during such Fiscal Year, Net Operating Revenues shall be adjusted by subtracting the amount of any such deposits and by adding the amount of any such withdrawal.

### **Reserve Account**

The Master Ordinance provides for the creation of a Reserve Account and provides, except as described below, upon the issuance of each Series of Bonds, the County shall deposit or provide for the deposit to the Reserve Account, an amount, which together with amounts on deposit therein, shall equal the Reserve Account Requirement; provided, however, the County may fund up to fifty percent (50%) of the Reserve Account Requirement applicable to a Series of Bonds over 36 months if it will not cause any rating then assigned the Outstanding Bonds to be withdrawn or reduced. The “Reserve Account Requirement” is defined in the Master Ordinance as the Maximum Principal and Interest Requirements in the then current or any subsequent Fiscal Year on all Outstanding Bonds or such lesser amount which is the greatest allowable under the Internal Revenue Code of 1986, as amended (the “Code”).

In lieu of depositing cash to the Reserve Account in an amount equal to the Reserve Account Requirement, the County may elect to provide a Reserve Account Credit Facility. A “Reserve Account Credit Facility” is defined in the Master Ordinance as a surety bond, a policy of insurance, a letter of credit or other financial product obtained by the County with respect to any Bonds, from an entity that is rated in one of the two highest ratings categories by Moody’s and S&P (each as defined under the caption “RATINGS” below) and which financial product provides for payment of Principal and Interest on such Bonds in amounts not greater than the Reserve Account Requirement for such Bonds in the event of an insufficiency of available moneys to pay when due principal of, premium, if any, and interest on, such Bonds.

Upon the issuance of the Series 2019 Bonds, there shall be on deposit in the Reserve Account an amount at least equal to the Reserve Account Requirement for all Bonds Outstanding, including the Series 2019 Bonds, consisting of \$78,893,824.48 in cash and \$110,837,650.00 in reserve insurance policies constituting Reserve Account Credit Facilities for a total of \$189,731,474.48, which amount is \$7,162,361.95 over the Reserve Account Requirement. The Reserve Account Credit Facilities are provided by Assured Guaranty as successor to Financial Security Assurance Inc. (“Assured”) (\$43,823,316 in the aggregate), National Public Finance Guarantee Corporation as successor to Financial Guaranty Insurance Company (“NPFGE”) (\$36,514,334 in the aggregate) and Berkshire Hathaway Assurance Corporation (“Berkshire”) (\$30,500,000 in the aggregate). Approximately \$49.6 million and \$53.1 million of the Reserve Account Credit Facilities will terminate October 1, 2025 and October 1, 2026, respectively. In order to ensure that the Reserve Account is adequately funded following the termination of such Reserve Account Credit Facilities, the Department intends to take the appropriate actions authorized under the Bond Ordinance to satisfy the Reserve Account Requirement.

The following table lists the Reserve Account Credit Facilities held in the Reserve Account as security for the Outstanding Bonds and the Series 2019 Bonds:

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
RESERVE ACCOUNT CREDIT FACILITIES  
(ROUNDED, IN \$MILLIONS)**

<b>Surety Policies</b>	<b>Amount</b>	<b>Matures</b>
Assured	\$19.07	10/1/2025
NPFGE	8.21	10/1/2029
NPFGE	28.31	10/1/2026
Assured	24.75	10/1/2026
Berkshire	30.50	10/1/2025
	<b><u>\$110.84</u></b>	

Moneys held for the credit of the Reserve Account shall first be used for the purpose of paying the interest on and the principal of the Bonds whenever and to the extent that the available moneys held for such purpose for the credit of the Bond Service Account and the General Reserve Fund shall be insufficient for such purpose, and thereafter for the purpose of making deposits to the credit of the Redemption Account of the Debt Service Fund

pursuant to the requirements of the Master Ordinance whenever and to the extent that withdrawals from the Revenue Fund and the amount on deposit in the General Reserve Fund are insufficient for such purposes, and shall next be used to pay Payment Obligations with respect to the applicable Reserve Account Credit Facility, if any. Amounts withdrawn from the Reserve Account for the purpose of payment of debt service on any Bonds shall be replenished by substantially equal monthly deposits into the Reserve Account over a period not to exceed 60 months. If at any time the moneys held for the credit of any subaccount in the Reserve Account shall exceed the Reserve Account Requirement for those Bonds that are secured by such subaccounts, such excess shall be withdrawn by the Finance Director and deposited to the credit of the Revenue Fund.

The County may create subaccounts in the Reserve Account for any Series of Bonds. In such event, moneys in such subaccount shall be held specifically for the benefit of the respective Series of Bonds for which such subaccounts were created. In this regard, the remaining amounts on deposit would be available for payment of debt service of all Bonds, including such Series of Bonds for which a separate subaccount has been created. No such separate subaccount is currently in existence and the County is not creating a separate subaccount for the benefit of the Series 2019 Bonds.

### **Additional Bonds**

Upon satisfying certain conditions contained in Section 208 of the Master Ordinance, the County may issue additional bonds (the “Additional Bonds”) and other obligations that are payable on a parity with the Series 2019 Bonds and the Outstanding Bonds. Additional Bonds may be issued (a) for the purpose of paying all or any part of the cost of constructing or acquiring any Improvements, (b) to refund any obligations of the County which financed or refinanced any Improvements, or (c) to finance termination payments relating to Hedge Agreements.

Except in the case of Refunding Bonds and Completion Bonds as described in “Refunding Bonds” and “Completion Bonds” below, the County, after satisfaction of all other conditions in the Master Ordinance, may issue Additional Bonds and any other obligations that are First Lien Obligations (which, for purposes of meeting these conditions, are deemed to be Additional Bonds) if there has been filed a certificate of the Finance Director (i) setting forth the amount of the Net Operating Revenues for any four consecutive quarters (the “Computation Period”) in the six preceding quarters, subject to certain adjustments permitted under the Master Ordinance, (ii) setting forth the respective amounts of the Principal and Interest Requirements for each Fiscal Year thereafter including the Additional Bonds to be issued, (iii) certifying that the Net Operating Revenues, as adjusted in accordance with Section 208(c) of the Master Ordinance, for the Computation Period shall have equaled at least the sum of one hundred ten percent (110%) of the Maximum Principal and Interest Requirements on all Bonds to be Outstanding as of the date of such issuance, plus one hundred percent (100%) of all required deposits to the Reserve Account during the Computation Period and (iv) certifying that the Net Operating Revenues (as adjusted in accordance with Section 208(c) of the Master Ordinance) remaining after deduction of Maximum Principal and Interest Requirements on all Bonds shall be at least equal to one hundred percent (100%) of all debt service and reserve requirements on all Subordinate Obligations.

In addition to the certificate of the Finance Director described above, there shall be filed with the Finance Director a certificate signed by a Consultant meeting the criteria set forth in the Master Ordinance setting forth (x) the estimated date on which the Improvements being financed or refinanced with the Additional Bonds will be placed in operation, (y) the Consultant’s estimate of the Net Operating Revenues for each of the three Fiscal Years following the Fiscal Year in which the Improvements will be placed in operation as estimated in item (x) of said certificate, taking into account the rates and charges in effect on the date of delivery of such Additional Bonds and any revised rates and charges that shall become effective prior to or during such Fiscal Year, and (z) that after taking into account (x) and (y) above, the Net Operating Revenues (as adjusted in accordance with Section 208(c) of the Master Ordinance) will satisfy the ratio set forth in (iii) of the preceding paragraph, and that the adjusted Net Operating Revenues remaining after deduction of the Maximum Principal and Interest Requirements on all Bonds shall be at least equal to one hundred percent (100%) of all debt service and reserve requirements on Subordinate Obligations.

The Series 2019 Bonds are being issued as Additional Bonds.

## **Refunding Bonds**

The Master Ordinance provides for the issuance of “Refunding Bonds” for the purpose of providing funds for paying principal of, redemption premium and interest on all or any part of the outstanding Bonds at maturity or prior redemption date. Refunding Bonds so issued will be secured and payable from Pledged Revenues on a parity with all Bonds issued and Outstanding under the Master Ordinance. The coverage tests applicable to Additional Bonds (*see* “Additional Bonds” above) do not apply to Refunding Bonds provided that the Finance Director certifies that the Principal and Interest Requirements for each Fiscal Year thereafter (except for years subsequent to the final maturity of all the Outstanding Bonds) on account of all Bonds to be Outstanding after issuance of such Refunding Bonds and the payment and redemption of the Bonds to be paid and redeemed shall not exceed the Principal and Interest Requirements for each such Fiscal Year on account of all Bonds Outstanding immediately prior to the issuance of such Refunding Bonds. However, Refunding Bonds may also be issued by meeting the historical coverage test for Additional Bonds – *see* “Additional Bonds.”

## **Completion Bonds**

The Master Ordinance provides for the issuance of “Completion Bonds” for the purpose of providing funds for paying the cost of completion of any Project for which one or more Series of Bonds have theretofore been issued, in a principal amount not greater than ten percent (10%) of the estimated cost of such Project. Completion Bonds so issued will be secured and payable from Pledged Revenues on parity with all Bonds issued under the Master Ordinance. The coverage tests applicable to Additional Bonds (and described above) are not applicable to Completion Bonds.

*See* APPENDIX D – “THE BOND ORDINANCE” for a more complete discussion on the issuance of Additional Bonds, Refunding Bonds and Completion Bonds.

## **Defeasance**

The Master Ordinance provides that in the event Bonds are defeased in the manner described in the Master Ordinance, the right, title and interest of the Holders of such Bonds in the Bond Ordinance will cease, determine and become void. *See* APPENDIX D – “THE BOND ORDINANCE.”

## **Additional Covenants of the County**

The County has covenanted in the Master Ordinance that it will neither furnish free service nor provide service otherwise than in accordance with the established rate schedule for the Utility. The County has also agreed to certain restrictions on the sale or disposal of assets comprising the Utility. The County has covenanted to cause the Department to adopt an annual operating budget which may be amended from time to time, to operate the Utility in an efficient and economic manner, to maintain the Utility in good repair, and to timely pay all principal and interest payments, when due, on the Bonds, and that it will diligently enforce and collect payment of all fees and charges for the use of the Utility.

The County has further covenanted to maintain a practical insurance program for the Utility, to maintain separate records and accounts for the Utility, to keep accurate accounts of revenues, costs and expenditures, to issue annual audited financial reports of the Utility, to require, to the extent permitted by law, all lands, buildings and structures within the service area of the Utility fronting or abutting on the distribution lines to connect with and/or use the Utility, and to retain qualified Consultants and Accountants as required by the Master Ordinance. *See* APPENDIX D – “THE BOND ORDINANCE.”

## **Other Obligations**

The County has incurred certain obligations, which are secured by a subordinate pledge of and lien on the Pledged Revenues. *See* “SUBORDINATE OBLIGATIONS.” In addition, the County’s obligation to pay a termination payment, if any, upon the termination of the swaps described in “INTEREST RATE SWAP AGREEMENTS,” is subordinate to the pledge and lien on the Pledged Revenues which secures the Outstanding Bonds. The County may also issue additional Subordinate Obligations payable on a subordinate basis to the Outstanding Bonds pursuant to the Master Ordinance.

## **Remedies**

Upon an Event of Default as described in Section 701 of the Master Ordinance, the Series 2019 Bonds will not be subject to acceleration. Rather, a trustee or Bondholder acting for the Holders of all Bonds may by suit, action, mandamus or other judicial proceedings, protect and enforce any and all rights, including the right to the appointment of a receiver, existing under and to the extent permitted by the laws of the State of Florida, or granted and contained in the Master Ordinance, and may enforce and compel the performance of all duties required in the Master Ordinance or by any applicable statutes to be performed by the County or by any officer thereof. However, nothing in the Master Ordinance shall be construed to grant to any Bondholder any lien on any property of or within the corporate boundaries of the County, and no Bondholder shall have any right to affect, disturb or prejudice the security of the Master Ordinance. *See* “ENFORCEABILITY OF REMEDIES.”

## **Modifications or Supplements to Master Ordinance**

The Master Ordinance can be supplemented as set forth in Section 801 of the Master Ordinance, which relates to supplemental ordinances without consent of the Holders, and Section 802 of the Master Ordinance, which relates to supplemental ordinances with consent of the Holders. *See* APPENDIX D – “THE BOND ORDINANCE.”

## **SUBORDINATE OBLIGATIONS**

The County has incurred the obligations described below which are secured by a subordinate pledge of and lien on Pledged Revenues (“Subordinate Obligations”).

### **State Revolving Fund Loan Program**

Under the State Revolving Fund Loan Program, the Department has received various loan commitments in the aggregate amount of \$321,388,325 for the construction of wastewater treatment facilities. Draws against wastewater treatment loan commitments totaled \$317,817,924 as of September 30, 2018. The Department has also received loan commitments in the aggregate amount of \$91,934,233 for drinking water construction projects. Draws against drinking water loan commitments totaled \$59,720,397 as of September 30, 2018. Default in payment of principal and interest on any of the loans described above or any future loans could cause an acceleration of the entire amount of such loans.

### **WIFIA Loan Program**

In 2017, the United States Environmental Protection Agency (“EPA”) selected the Department to be one of 12 entities invited to apply for funding through the inaugural Water Infrastructure Finance and Innovation Act (“WIFIA”) loan program. The Department applied for approximately \$79 million in WIFIA funding for its Ocean Outfall Reduction and Resiliency Enhancement Project. WIFIA will fund up to 49%, or \$79 million of this project’s costs. The Department is currently negotiating the Terms of the WIFIA Agreement with the EPA. Final funding is dependent upon approval by the EPA and the Board.

The Department has also been invited to apply for approximately \$343 million in funding as part of the second round of the WIFIA loan program. The funding will provide up to 49% or \$343 million for the design and construction of five new electrical distribution buildings at three wastewater treatment plants. The Department is currently completing its application. Final funding is dependent upon approval by the EPA and the Board.

### **Commercial Paper Notes**

On May 26, 2016, the County issued its Water and Sewer System Commercial Paper Notes, Series A-1 (Tax-Exempt) (the “Series A-1 CP Notes”) and its Water and Sewer System Commercial Paper Notes, Series B-1 (Tax-Exempt) (the “Series B-1 CP Notes”). As discussed under Plan of Finance, all of the Tax-Exempt CP Notes will be refunded with a portion of the proceeds of the Series 2019 Bonds, together with other available funds. The commercial paper program also allows for the issuance of Water and Sewer System Commercial Paper Notes, Series A-2 (Taxable) (together with the Series A-1 CP Notes, the “Series A CP Notes”) and Water and Sewer System Commercial Paper Notes, Series B-2 (Taxable) (together with the Series B-1 CP Notes, the “Series B CP Notes”) but to date, none have been issued. No more than \$400,000,000 in Series A CP Notes and Series B CP Notes

(collectively, the “CP Notes”) may be outstanding at any one time. Payment of all outstanding Series A CP Notes is secured by and payable under an irrevocable transferrable direct-pay Letter of Credit issued by Barclays Bank PLC, which expires on May 24, 2019. Payment of all outstanding Series B CP Notes is secured by and payable under an irrevocable transferrable direct-pay Letter of Credit issued by Sumitomo Mitsui Banking Corporation, acting through its New York Branch, which expires on May 24, 2019.

Payment of interest on the CP Notes may be made from Pledged Revenues. However, such application of Pledged Revenues is subordinate to the pledge of Pledged Revenues to the payment of principal and interest on the Bonds.

## **INTEREST RATE SWAP AGREEMENTS**

### **General**

The County has entered into interest rate swaps with respect to the Series 2013B Bonds and the Series 2015 Bonds and may enter into additional interest rate swaps or other synthetic financial instruments in the future for the purpose of hedging risk or otherwise managing the interest cost of its Utility debt. Such interest rate swaps and other synthetic financial instruments involve risks that could result in an economic loss to the County. The County’s obligations to make periodic net payments as a result of a fluctuation in hedged interest rates or a fluctuation in the value of any interest rate index (i.e., Hedge Obligations) are payable from Pledged Revenues on a parity with the Bonds. Any termination payments or Hedge Charges that may be due from the County are payable from Pledged Revenues on a subordinate basis to the Bonds pursuant to the Master Agreement (defined below) relating to the outstanding interest rate swaps. In any future interest rate swap agreement that the County may enter into, the termination payments may be considered as Hedge Obligations and, therefore, be payable from Pledged Revenues on a parity with the Bonds if on or before the date of entering into the related agreement, the County has obtained written evidence from each Rating Agency that such agreement will not, in and of itself, result in the withdrawal or reduction of the ratings then applicable to the Bonds. The County may elect to finance such termination payments or Hedge Charges through the issuance of Additional Bonds under Section 208 of the Master Ordinance. As of September 30, 2018, the termination value of both swaps are in favor of the County with an aggregate termination value of \$22,584,697. See “SECURITY AND SOURCES OF PAYMENT FOR THE SERIES 2019 BONDS – Flow of Funds” and “– Additional Bonds.”

The County includes in its annual budget for the Department the Hedge Receipts received from the swap counterparty for the outstanding interest rate swaps described below.

### **Outstanding Swaps**

The following table describes the interest rate swaps related to the Series 2013B Bonds and the Series 2015 Bonds. The interest rate swaps were entered into pursuant to an ISDA Master Agreement, dated October 2, 2009, as amended and supplemented (the “Master Agreement”), between the County and The Bank of New York Mellon, as counterparty (“BNY Mellon”).

**WATER AND SEWER DEPARTMENT  
SWAP PORTFOLIO**

Associated Series of Bonds	Notional Amount as of 09/30/17	Counterparty	Counterparty Current Ratings (Moody's, S&P, Fitch)	Start Date	Termination Date	Counterparty Payment	County Payment
Series 2013B	\$205,070,000	BNY Mellon	Aa1, AA-, AA-	03/06/2006 (assigned October 2, 2009)	10/01/2029	Variable – USD-ISDA-Swap Rate multiplied by 90.15%, plus 1.580%	Variable – USD-SIFMA Municipal Swap Index divided by 0.604
Series 2015	200,000,000	BNY Mellon	Aa1, AA-, AA-	07/18/2002 (novated and assigned October 2, 2009)	10/01/2026	Variable – USD-LIBOR-BBA, plus 1.465%	Variable – USD-SIFMA Municipal Swap Index divided by 0.604

**SERIES 2019 BONDS ESTIMATED SOURCES AND USES OF FUNDS**

The following table sets forth the estimated sources and uses of the proceeds of the Series 2019 Bonds and other available moneys of the Department:

Sources of Funds	Series 2019 Bonds
Par Amount	\$233,305,000.00
Plus: Original Issue Premium	29,826,132.55
Other Funds of the Department	421,606.57
Total Sources	<u>\$263,552,739.12</u>
Uses of Funds	
Refund Tax-Exempt CP Notes	\$250,000,000.00
Deposit to Reserve Account	11,223,850.00
Underwriters' Discount	1,031,485.65
Costs of Issuance <sup>(1)</sup>	1,297,403.47
Total Uses	<u>\$263,552,739.12</u>

<sup>(1)</sup> Includes legal fees, financial advisory fees, printing costs and other costs associated with the Series 2019 Bonds.

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# DEBT SERVICE REQUIREMENTS ON THE OUTSTANDING BONDS, SERIES 2019 BONDS AND SUBORDINATE OBLIGATIONS

The following table sets forth the debt service requirements, *on a cash basis*, on all Outstanding Bonds, the Series 2019 Bonds and all Subordinate Obligations.

Fiscal Year Ending Sept. 30	Debt Service on Outstanding Bonds <sup>(1)</sup>	Series 2019 Bonds			Total Bonds Debt Service	Debt Service on Subordinate Obligations <sup>(2)(3)</sup>	Total Debt Service <sup>(3)</sup>
		Principal	Interest	Total <sup>(3)</sup>			
2019	\$ 49,231,541		\$ 1,901,819	\$ 1,901,819	\$ 51,133,360	\$ 15,695,225	\$ 66,828,585
2020	171,314,869		11,223,850	11,223,850	182,538,719	17,040,180	199,578,899
2021	171,345,263		11,223,850	11,223,850	182,569,113	17,015,848	199,584,961
2022	170,960,631		11,223,850	11,223,850	182,184,481	16,472,790	198,657,271
2023	170,933,706		11,223,850	11,223,850	182,157,556	13,367,443	195,524,999
2024	169,326,519		11,223,850	11,223,850	180,550,369	13,083,955	193,634,324
2025	169,144,644		11,223,850	11,223,850	180,368,494	12,677,809	193,046,303
2026	169,215,894		11,223,850	11,223,850	180,439,744	12,677,809	193,117,553
2027	168,116,894		11,223,850	11,223,850	179,340,744	12,677,809	192,018,553
2028	139,823,644		11,223,850	11,223,850	151,047,494	12,677,809	163,725,303
2029	139,839,359		11,223,850	11,223,850	151,063,209	12,677,809	163,741,018
2030	139,626,481		11,223,850	11,223,850	150,850,331	12,677,809	163,528,140
2031	107,699,888	\$ 7,560,000	11,034,850	18,594,850	126,294,738	12,661,541	138,956,279
2032	107,581,388	7,950,000	10,647,100	18,597,100	126,178,488	12,658,263	138,836,751
2033	107,524,138	8,360,000	10,239,350	18,599,350	126,123,488	12,658,257	138,781,745
2034	107,459,138	8,785,000	9,810,725	18,595,725	126,054,863	8,680,251	134,735,114
2035	107,396,488	9,235,000	9,360,225	18,595,225	125,991,713	4,702,238	130,693,951
2036	107,325,763	9,710,000	8,886,600	18,596,600	125,922,363	4,702,238	130,624,601
2037	107,260,038	10,210,000	8,388,600	18,598,600	125,858,638	4,114,879	129,973,517
2038	107,184,088	10,730,000	7,865,100	18,595,100	125,779,188	2,848,156	128,627,344
2039	107,102,613	11,280,000	7,314,850	18,594,850	125,697,463	2,156,803	127,854,266
2040	107,024,091	11,860,000	6,736,350	18,596,350	125,620,441	-	125,620,441
2041	111,542,919	12,470,000	6,128,100	18,598,100	130,141,019	-	130,141,019
2042	111,453,419	13,110,000	5,488,600	18,598,600	130,052,019	-	130,052,019
2043	111,356,519	13,780,000	4,816,350	18,596,350	129,952,869	-	129,952,869
2044	29,551,469	14,485,000	4,109,725	18,594,725	48,146,194	-	48,146,194
2045	29,551,669	15,230,000	3,366,850	18,596,850	48,148,519	-	48,148,519
2046	29,550,338	16,010,000	2,585,850	18,595,850	48,146,188	-	48,146,188
2047	29,549,919	16,790,000	1,807,800	18,597,800	48,147,719	-	48,147,719
2048	29,552,866	17,520,000	1,079,600	18,599,600	48,152,466	-	48,152,466
2049	-	18,230,000	364,600	18,594,600	18,594,600	-	18,594,600
Total <sup>(3)</sup>	\$3,384,546,188	\$233,305,000	\$245,395,394	\$478,700,394	\$3,863,246,582	\$233,924,921	\$4,097,171,503

<sup>(1)</sup> Inclusive of all Outstanding Bonds. The interest on the Outstanding Bonds has been calculated at their respective fixed rate of interest, and the effect of the swap agreements on the Series 2013B Bonds and the Series 2015 Bonds has not been taken into account. See "INTEREST RATE SWAP AGREEMENTS."

<sup>(2)</sup> For a more complete description of such Subordinate Obligations, see "SUBORDINATE OBLIGATIONS" and APPENDIX C – "AUDITED FINANCIAL REPORT OF THE MIAMI-DADE WATER AND SEWER DEPARTMENT FOR FISCAL YEAR ENDED SEPTEMBER 30, 2017."

<sup>(3)</sup> Totals may not add up due to rounding.

## THE DEPARTMENT

### History

On October 3, 1972, the electorate of the County approved the formation of a new County-wide water and sewer agency by expanding the then-existing Department of Water and Sewer of the City of Miami (the “City”). Subsequently, the Board established the Miami-Dade Water and Sewer Authority (the “Authority”) which began operating on April 1, 1973. On March 13, 1975, the City, the County and the Authority agreed to the transfer of all water and sewer properties, facilities and funds of the Department of Water and Sewer of the City to the Authority with the condition that certain property donated by the City would be returned to the City in the future if such property was not needed for water or sewer utility purposes.

On October 4, 1983, the Board enacted Ordinance No. 83-92, which abolished the Authority effective November 1, 1983 and established the Miami-Dade Water and Sewer Authority Department as a department within the Miami-Dade County government. On October 19, 1993, the Department changed its name to the Miami-Dade Water and Sewer Department.

### Organization and Administration

The Department is responsible for the everyday operation and maintenance of the Utility. The Utility is administered by the Board under the supervision of the County Mayor. Kevin T. Lynskey has been the Director of the Department (the “Director”) since February 2018.

The Department is divided into two major groups, each under the supervision of a Deputy Director, with eight Assistant Directors, each responsible for a number of specific divisions.

### Management

The following are brief resumes of the Director, the two Deputy Directors, two Senior Advisors and the Chief Financial Officer:

*Kevin T. Lynskey, Director*, was appointed Director of the Department in February 2018. He has responsibility for the overall direction and management of the Department.

Mr. Lynskey has more than 24 years of experience with Miami-Dade County government. Prior to his appointment as Director of the Department, Mr. Lynskey served as Deputy Director of PortMiami. During his ten-year tenure at PortMiami, he was responsible for finance, administration, planning, architecture and engineering, as well as cargo and cruise contract development. Among his accomplishments, Mr. Lynskey negotiated the first-ever PortMiami P3 cruise terminal facility for Royal Caribbean Cruises LTD, and multiple cruise passenger and cargo line guarantees. Mr. Lynskey was responsible for PortMiami’s business development program, which increased PortMiami’s financial reserves by 1000% while establishing contractual guarantees amounting to 70% of annual revenues. Mr. Lynskey also served as the County’s point person for the PortMiami Tunnel project and an intermodal rail program.

Prior to his employment at PortMiami, Mr. Lynskey supervised an internal consultancy for the County for nearly a decade. He has also worked at the U.S. Department of State in the Presidential Management Program. Mr. Lynskey holds a bachelor’s degree from Georgetown University in Foreign Service and a master’s degree from Columbia University in International Affairs.

*Hardeep Anand, P.E., Deputy Director – Capital Improvement Program*, oversees the implementation of the Capital Improvement Program for the Department. He has previously served as a division director at the Miami-Dade County Department of Environmental Resources Management, as Public Works Director with the City of Fort Lauderdale, and as an engineering consultant over a variety of utility, stormwater, environmental, solid waste and information technology projects.



Mr. Anand is a registered professional engineer in the State of Florida and holds a Bachelor's Degree in Civil Engineering as well as a Master's Degree in Civil Engineering and Management of Information Systems. He has over 25 years of professional engineering experience along with a combination of program management and leadership experience in the public and private sectors.

*Antonio Cotarelo, P.E., Deputy Director – Operations*, oversees all operations and maintenance of water and wastewater systems of the Utility. He previously served as Water Management division director at the Department of Environmental Resources Management, as Deputy Director of Engineering Services for Public Works and Waste Management Department and as the County Engineer administering projects of major importance encompassing engineering, bridge capital improvement and infrastructure maintenance, roadway project capacity improvements, resurfacing and striping, water management and drainage retrofit projects, street lighting, intersection improvements, sidewalks and pedestrian ramps.

Mr. Cotarelo is a registered professional civil engineer in the State of Florida and holds a Bachelor's Degree in Civil Engineering from the University of South Florida. He has over 31 years of professional civil engineering and management experience within the County.

*Lynnette M. Ramirez, P.E., Senior Advisor - Capital Projects and Compliance*, provides guidance over the Capital Improvement Program and Regulatory Compliance of the Utility.

Ms. Ramirez holds a Bachelor's Degree in Chemical Engineering from the University of Puerto Rico-Mayaguez and a Master's Degree in Environmental Engineering from the University of Illinois at Urbana-Champaign. She is a registered engineer in the State of Florida and in Puerto Rico, and has over 15 years of engineering work experience in program management, project development and environmental compliance. She was formerly the Executive Infrastructure Director for the Puerto Rico Aqueduct and Sewer Authority overseeing the public corporation's \$8 billion Capital Improvement Program, after having served as Deputy Infrastructure Director and Engineering Director. Prior to that, she served as project engineer and environmental engineering consultant for the private sector involved with planning, permitting, design, procurement and process optimization.

*L. Douglas Yoder, DPA, Senior Advisor*, was formerly the Deputy Director of Regulatory Compliance and Capital Improvements and Deputy Director of Operations.

Dr. Yoder graduated from Cornell University in 1969 with an undergraduate degree in government. He began his public service career with the County in 1971 working in the County Manager's Office. He earned masters and doctoral degrees in public administration from Nova Southeastern University, returning to full time employment with the County as a program manager with the Department of Environmental Resources Management in 1977. He was promoted to Assistant Director in 1981 and held that position until his transfer to the Department in January 2006.

*Frances G. Morris, Chief Financial Officer*, directs all financial strategies of the Department including internal and external financial reporting, coordination of implementation of water and sewer rates, debt financing and administration, cash flow management, investments, and budget strategies. As the financial steward of the Department, Ms. Morris also contributes to the development and implementation of the Utility's alignment with the County's Strategic Plan.

Ms. Morris received her Bachelor's degree in Business Administration with an emphasis in Accounting from Barry University in 1992. She was hired by the County in 1994 and spent four years at the County's Department of Solid Waste Management and eight years at the County's Seaport Department. She was hired as the Department's Assistant Controller in 2006, became the Assistant Director of Finance in 2010 and the CFO in 2015.

## **WATER AND SEWER SYSTEM**

### **General**

The Utility is divided into the Water System and the Sewer System. The Sewer System is also referred to as the “Wastewater System.” The Department administers each system on a unified basis for purposes of billing but separates the two for rates, capital improvements and accounting. However, the Utility is combined for financial statement purposes. See “Note 1 – Summary of Significant Accounting Policies” in “APPENDIX C – AUDITED FINANCIAL REPORT OF THE MIAMI-DADE WATER AND SEWER DEPARTMENT FOR FISCAL YEAR ENDED SEPTEMBER 30, 2017.” Water System and Sewer System funds can be used interchangeably when there is a shortfall or surplus in either system.

### **Service Area**

The Utility currently provides water and wastewater treatment to substantially all of the County either directly to retail customers or indirectly through wholesale contracts between the Department and various municipalities. The County is the largest county in the southeastern United States in terms of population. In 2017, the population of the County was estimated at approximately 2,743,095. See “APPENDIX B – GENERAL INFORMATION RELATIVE TO MIAMI-DADE COUNTY, FLORIDA.”

The Department’s long-term objective of expansion to Countywide operation has been achieved by the acquisition of all privately-owned utilities in the County. Since 1973, the Department has acquired twenty-six (26) independent systems.

The Department supplies treated water on a wholesale basis to 15 municipally-owned water utilities in the County and to approximately 447,209 retail water customers. The only municipalities in the County that operate water treatment facilities for customers located primarily within their municipal boundaries are the City of Homestead, Florida City, the City of North Miami Beach and the City of North Miami. In addition, the Department provides wastewater transmission treatment and disposal service on a wholesale basis to 12 municipally owned wastewater utilities, Homestead Air Reserve Base, and approximately 363,444 retail wastewater customers. The City of Homestead is the only municipality in the County that owns and operates its own wastewater treatment plant. See “WATER AND SEWER SYSTEM – Sewer (Wastewater) System” below.

With the exception of four retail customers, the Department’s wholesale customers are also its largest water and wastewater customers by revenues. The four exceptions are the County’s Aviation Department, Florida Power & Light Company, Florida Department of Corrections and Jackson Memorial Hospital. The Aviation Department, which operates Miami International Airport and five general aviation airports, is the Department’s fourth largest water customer and sixth largest wastewater customer. Florida Power & Light Company, which operates a large electric power plant in the County, is the Department’s fifth largest water customer. The Florida Department of Corrections is the Department’s sixth largest water customer and tenth largest wastewater customer, and Jackson Memorial Hospital is the Department’s tenth largest water customer.

The Department has entered into long-term agreements with its wholesale customers. The majority of the wholesale water agreements expire between 2027 and 2031. The Department’s wholesale wastewater agreements have terms expiring between 2029 and 2037, with the exception of the Florida City agreement that expired on November 18, 2016, and the City of West Miami agreement that expired on February 18, 2016. These two expired agreements are currently in negotiation and such wholesale wastewater customers are adhering to the terms of the expired contracts.

### **Water System**

General. The principal components of the Water System include 15 wellfields, with a total of 95 active permitted wells in the Biscayne Aquifer and five installed aquifer storage and recovery wells in the Floridan Aquifer, three major water treatment plants, five smaller water treatment plants, two lime recalcining plants, and an extensive transmission and distribution system composed of storage reservoirs, pump stations and an interconnected network of transmission and distribution mains.

Sources. The Department draws its raw water primarily from the surficial Biscayne Aquifer, a non-artesian (or near surface) aquifer which underlies an area of about 3,200 square miles in Miami-Dade, Broward and Palm Beach counties. The Upper Floridan Aquifer underlies most of the State. In Southeast Florida, it ranges from a subsurface depth of 950 feet to 1,250 feet, and it is an artesian water source. However, because water from the Upper Floridan Aquifer has a higher content of salt, its water is much more expensive to process. Therefore, the Upper Floridan Aquifer is a less desirable water source.

The South Florida Water Management District (the “District”) governs the use of the State’s water resources in Southeast Florida through the water use permitting process. On November 15, 2007, the District issued a consolidated 20-year Water Use Permit (the “Water Use Permit”), which sets limits on the use of the Biscayne Aquifer and Floridan Aquifer. In addition, the permit includes a schedule for the construction of the alternative water supply projects needed to meet demands, which have been incorporated into the Department’s capital plan. The Water Use Permit has been amended three times, in 2010, 2012 and 2015, to reflect declines in consumption resulting from an effective water conservation program, lower than expected population growth, and the economic recession. Alternative water supply projects in the original plan have been delayed or eliminated, thereby reducing capital needs in the near term.

Pumping and Production. The Department pumps its raw water from 15 existing wellfields which use the Biscayne Aquifer as the source water supply. In order to process and prepare raw water for consumption, the Department operates three major water treatment plants, five smaller water treatment plants, two lime recalcining plants and an extensive transmission and distribution system composed of storage reservoirs, pump stations and a network of transmission and distribution water mains. The five smaller treatment plants, which have a combined treatment capacity of 14.2 million gallons per day (“mgd”), serve the extreme southern part of the County.

Water Treatment Plants. The following table reflects the permitted treatment capacities and actual flows for the County’s water treatment plants.<sup>(1)</sup>

Component	Hialeah/Preston	Orr	South Dade Water System <sup>(2)</sup>	Hialeah RO <sup>(3)</sup>
Plant Rated Capacity	225.0 mgd <sup>(4)</sup>	214.7 mgd <sup>(5)</sup>	14.2 mgd <sup>(6)</sup>	7.5 mgd <sup>(7)</sup>
Actual Flows <sup>(8)</sup>				
Average Daily	128.8 mgd	181.1 mgd	7.1 mgd	7.3 mgd
Peak Day	151.0 mgd	212.2 mgd	8.7 mgd	7.9 mgd

<sup>(1)</sup> Water supply allocations are currently granted for source and well fields, and not specifically to plants.

<sup>(2)</sup> Represents five smaller water treatment plants in southern Miami-Dade County.

<sup>(3)</sup> Hialeah Floridan Aquifer Reverse Osmosis (RO) (Joint Participation – Miami-Dade County and City of Hialeah).

<sup>(4)</sup> Hialeah Plant permit capacity is 60 mgd and Preston Plant is 165 mgd for a total of 225 mgd.

<sup>(5)</sup> Orr Plant facility capacity is 248 mgd but permitted capacity is only 214.74 mgd.

<sup>(6)</sup> Sum of Individual Treatment Facilities Permitted Capacity is 14.19 mgd, including the permitted capacity increase to 2.88 mgd for Everglades Labor Camp.

<sup>(7)</sup> Treatment Plant capacity is 10 mgd, but permitted capacity is only 7.5 mgd.

<sup>(8)</sup> For the 12 months ending September 30, 2018; based on reports submitted to the Department of Health.

Source: The Department

The City of Hialeah (“Hialeah”) reverse osmosis water treatment plant (the “Plant”) is jointly owned by Hialeah and the Department, but operated by the contractor which designed and built the Plant. The County and Hialeah share equally in the operations and maintenance costs and benefit equally from the water produced at the Plant. The Plant first opened in 2015 and currently has a treatment capacity of 7.5 mgd, with an additional 2.5 mgd expected to become available at a later date.

The South Miami Heights Water Treatment Plant and Wellfield are required as a function of water supply demands. As water demands within the Department’s service area materialize, additional treatment capacity from an alternative water source (Floridan Aquifer) will be necessary. Currently, the Department has sufficient permit and water treatment plant capacity to meet anticipated demands over the next ten years. The Department continues to monitor water supply needs and will proceed with the South Miami Heights Water Treatment Plant project at the appropriate time.

Transmission. High service pumping facilities located at each of the three major water treatment plants and a low pressure system deliver water directly to the Department's four high service pump stations. From there, the water is distributed through 8,574 miles of water mains, ranging in size from 2 to 72 inches in diameter, to the ultimate users.

Water Conservation. To ensure a sustainable water supply for future use and to ensure the most efficient use of existing water supplies, the Department has implemented a variety of water use efficiency measures. These measures include aggressive public education campaigns, a tiered rate structure, an extensive water loss reduction program, water conservation incentives, legislative requirements for water conservation, system operational measures, and alternative water supplies. The Department's conservation efforts have resulted in the extension of the County's Water Use Permit, cancellation of alternative water supply projects, and deferral of several other expensive infrastructure water supply projects, making conservation the least expensive form of alternative water supply. The Department's water audit from Fiscal Year 2017 indicated that non-account water (water that has been produced and has been used for purposes other than sale to customers, such as flushing and fire hydrants) was approximately 25.58% of total water produced, and unaccounted for water (water that has been produced and "lost", either through leaks, theft or metering inaccuracies) was approximately 6.69% of all water produced. The Department's goal for unaccounted for water is under 10%.

The Department's ongoing water conservation/water use efficiency programs include:

- Water Loss Reduction including leak detection and repair;
- Recycling of water used to backwash filters at treatment plants;
- Use of reclaimed water at the wastewater treatment plants for process water, cleanup and landscape irrigation;
- Ordinances establishing water-efficiency fixtures standards for new construction;
- Ordinance establishing landscape standards;
- Ordinances establishing permanent landscape irrigation restrictions limiting irrigation to two days a week;
- Aquifer storage and recovery;
- Implementation of a tiered water rate structure which includes a surcharge for high water use to encourage water conservation;
- Public information and education efforts, including:
  - o direct customer outreach at events and workshops
  - o advertising via radio, television, print, transit bus benches, internet and movie theatres
  - o educational publications
  - o a Children's Water Conservation Campaign including an annual Every Drop Counts Children's Poster Contest
  - o maintenance of a Water Conservation Webpage
  - o Water, Energy and Learning and Behavior (WE-LAB) Workshops
- Water Conservation Incentives including:
  - o Landscape Irrigation Evaluations and Rebates
  - o Residential High Efficiency Toilet (HET), Showerhead and Faucet Rebates
  - o Audits and Retrofits of County facilities
  - o Senior High Efficiency Toilet Rebate
  - o Showerhead Residential Exchange Project
  - o Multifamily Residential Showerhead and Aerator Retrofit Project
  - o Lodging HET Rebates and Aerator Retrofit Project

Energy Efficiency. The Department has hired an energy manager to develop a comprehensive Energy Efficiency Program. The Energy Efficiency Program will lead and assist Department efforts to consume less energy through increasing efficiencies, switching to alternative and renewable sources, and decreasing overall demand of energy through conservation efforts. The Department's energy segments include wastewater treatment, water production, wastewater pump stations, and buildings which consume approximately 370 million kWh of electricity and 46 million kWh from biogas, natural gas, diesel and propane per year. Combined, this is the amount the energy it takes to power approximately 31,000 homes for one year.

The Department has an opportunity to build upon successful energy initiatives, such as using heat and gases produced from its operations as a source of energy to power its operations. These efforts, in addition to increasing the use of renewable energy sources and cost-effective investments in energy-efficient equipment and innovative technologies, will help the Department meet a variety of goals including realizing cost efficiencies and reducing pollutant and greenhouse gas emissions.

Effective energy management also enhances the department's resilience, through the ability to provide reliable and quality services in the face of shocks such as extreme weather events and longer-term stresses including sea level rise, which could cause interruptions to energy supplies and require energy intensive treatment and operations. Another key focus of the program is to raise awareness and understanding of energy issues and solutions to encourage department-wide energy saving behaviors and foster long-term environmental stewardship through money-saving actions.

Water Quality. The Safe Drinking Water Act (the "Water Act") and the related drinking water standards in the Florida Administrative Code have established quality standards designed to reduce the allowable concentration of a variety of substances. The Water Act also requires local water utilities to issue "consumer confidence reports" describing the source and quality of the water they provide. The Department's "Water Quality Report" provides the required information, verifying the Department's continuing compliance with water quality standards.

The County does not have lead or copper in the distribution system or customer service lines. The County is currently testing lead and copper in the main system on an annual basis. Results are available upon request, or in the County's Consumer Confidence Report, published annually and available on the County's website.

See "REGULATORY MATTERS" for a detailed description of certain regulatory matters with respect to the Water System.

## **Sewer (Wastewater) System**

General. The Department's Sewer (Wastewater) System consists of collection sewers, manholes, lift stations, force mains, interceptors, pump stations and three regional wastewater treatment plants: the North District Wastewater Treatment Plant at Interama (the "North District Plant"), the Central District Wastewater Treatment Plant at Virginia Key (the "Central District Plant") and the South District Wastewater Treatment Plant at Blackpoint (the "South District Plant").

Collection. There has been steady growth in the wastewater service provided by the Department due to an increase in total population in the County, the acquisition of small utilities and the extension of sewers to areas served by septic tank systems. The amount of wastewater treated annually, however, may vary significantly depending upon the amount of annual rainfall.

Wastewater is brought to the Department's treatment facilities through 6,422 miles of local collection facilities which include gravity sewers, manholes, lift stations and force mains. The Department has divided the County into three districts in which wastewater is collected and transmitted to a wastewater treatment plant located in each of the three districts. The districts are interconnected to allow for limited redirection of flows.

The maintenance and improvement of the Utility's 1,049 sewage pump stations owned (1,030) and operated (19) by the Department was one of the requirements of the terms of the Prior Consent Decrees (as defined under "REGULATORY MATTERS"). The Department's program to upgrade its sewage pump stations is continuing. A typical station upgrade includes improvements to the electric service, controls and alarm systems, the replacement of motors, the addition of pumps or a complete replacement pump station.

Groundwater, stormwater or other water not requiring treatment introduced into the Sewer System overloads pump stations and treatment plants. The cost of pumping and providing treatment for this excess water is substantial. Consequently, the Department has established an Infiltration/Inflow Reduction Program to conduct Sewer System Evaluations (SSEs) and to rehabilitate the system by repairing pipes where feasible, replacing pipes damaged beyond repair, installing leakproof manhole covers and repairing manholes. Many of the program activities are continuously funded and required to maintain the Sewer System's integrity and to continually reduce infiltration and inflow amounts. The Department is not responsible for any separate stormwater systems or their associated operating and capital costs.

The Department has an on-going program of inspection and correction to address the corrosive effects of hydrogen sulfide (a by-product of raw sewage) on its concrete force mains. The Department periodically inspects mains and implements corrective action with respect to any affected main.

**Wastewater Treatment Plants.** The Department operates three regional wastewater treatment plants located in various sections of the County as described above. The three plants have a combined treatment capacity of 375.5 mgd. The following table summarizes the treatment permit parameters and the actual flows of each of the County's wastewater treatment plants.

	<b>North District</b>	<b>Central District</b>	<b>South District</b>	<b>Total</b>
<u>Installed Treatment Capacity</u>	120.0	143.0	112.5	375.5
<u>Permit Parameters</u>				
Average Daily Flow, mgd	120.0	143.0	112.5	375.5
Effluent CBOD <sub>5</sub> , mg/L <sup>(1)</sup>	25/20 <sup>(2)</sup>	25	20	-
Effluent Suspended Solids, mg/L	30/20 <sup>(3)</sup>	30	5 <sup>(4)</sup>	-
<u>Actual Flows 12-Month Average for Fiscal Year 2018<sup>(5)</sup></u>				
Average Daily Flow, mgd <sup>(6)</sup>	89.82	105.56	99.77	295.14
Effluent CBOD <sub>5</sub> , mg/L <sup>(6)</sup>	6.59	6.89	2.82	-
Effluent Suspended Solids, mg/L <sup>(6)</sup>	13.67	7.38	3.35	-

<sup>(1)</sup> "CBOD<sub>5</sub>" means Chemical Biological Oxygen Demand; 5 day; "mg/L" means milligrams per liter.

<sup>(2)</sup> 25mg/L in secondary effluent going to the outfall; 20mg/L in effluent going to the wells.

<sup>(3)</sup> 30mg/L in secondary effluent going to the outfall; 20mg/L in effluent going to the wells.

<sup>(4)</sup> 5mg/L for the High Level Disinfection (HLD) secondary effluent going to the wells.

<sup>(5)</sup> For the 12 months ending September 30, 2018.

<sup>(6)</sup> These levels are below those allowed by permit.

Source: The Department

**Disposal of Sludge and Treated Wastewater.** The disposal of the by-products of the treatment process (sludge and effluent or treated wastewater) is an important part of the Department's plans to improve and expand its Sewer System. Steps taken by the Department in accordance with this plan are discussed in the following paragraphs.

Sludge is stabilized in anaerobic digesters at the Central District and South District Plants, with sludge from the North District Plant being transmitted via pipeline to the Central District Plant for treatment. After stabilization, sludge is dewatered in centrifuges to form a cake, a material that is dry enough to be loaded and hauled in a dump truck. Stabilized sludge cake can be disposed of in Class I Solid Waste Landfills. The stabilized cake can also be used as an agricultural soil supplement because it meets the requirements for Class B material, but only with State approved permits which require a substantial amount of documentation, monitoring and record keeping. After dewatering, the sludge cake can be further dried on paved drying beds and then composted to produce Class AA residuals, which can be sold as a soil supplement with relatively few restrictions. At the South District Plant, sludge cake is further dried on paved beds and a portion is composted to Class AA standards and sold as a soil supplement. The Department has discontinued the use of the sludge drying beds and composting facilities at the Central District Plant in order to reduce odors, which had caused complaints at a neighboring residential community. To this end, the Department has negotiated agreements to dispose of sludge cake; in accordance with these agreements, the sludge cake is disposed of by hauling and placing it in landfills or utilized as Class B agricultural soil supplement.

Disposal of treated wastewater at the North District Plant, which currently has a permitted treatment capacity of 120.0 mgd, is accomplished by discharge into the Atlantic Ocean and deep injection wells. The Central District Plant also disposes of effluent by discharge into the Atlantic Ocean. As noted below, state law now requires the Department to design and construct an alternative to the use of ocean outfalls by the end of 2025. *See* “REGULATORY MATTERS.”

The South District Plant disposes of its effluent through 17 deep injection wells to the Lower Floridan Aquifer at a depth below 2,400 feet. The South District Plant has a permitted treatment capacity of 112.5 mgd. In January 2015, the Department received operating permits for all injection wells from the Florida Department of Environmental Protection (“FDEP”).

The Department continues to explore different ways to reuse effluent. The practicality of reuse is affected by the cost of the added treatment, the cost of transmission and distribution systems, the possibility of contaminating the drinking water system through inadvertent cross connections, public attitudes about using treated wastewater and the quality of the water available for reuse. In April 2007, the Department completed an updated Reuse Feasibility Study. Some of the projects recommended in the Study were incorporated in the 20-year Water Use Permit and into the Multi-Year Capital Plan (as described below); however, as a result of water demand reductions through the Water Conservation Program, reuse is no longer required by the Water Use Permit. In 2018, the Department completed its Reuse Feasibility Study to address the reuse requirements in the Ocean Outfall Legislation. The most feasible future reuse opportunities are related to industrial reuse in partnership with a major user, such as Florida Power and Light, or other arrangements with multiple stakeholders that would make large-scale reuse projects viable. *See* “REGULATORY MATTERS.”

### **Impact of Hurricane Irma**

Hurricane Irma struck the County in September 2017 as a strong tropical storm. Although the storm caused widespread tree damage and disruption, it did not materially damage the Utility’s infrastructure or adversely impact Pledged Revenues. The Department did incur approximately \$26,000,000 in hurricane preparation costs but expects to be reimbursed by Federal Emergency Management Agency for most of these expenditures. There have been no other major storms that have impacted the Department since Hurricane Irma.

### **Environmental Quality Management**

The public’s concern for environmental quality is reflected in many of the Department’s activities, from meeting the effluent discharge quality limits and the changing water quality standards to providing facilities that are unobtrusive and have minimum adverse impact on the environment. Federal, state and local regulations regarding preservation of wetlands impact nearly all land development activities in South Florida, including those of the Department and private developers. The necessity of protecting wetlands has required revisions to the Department’s construction plans in the past, and will continue to do so with such requirements possibly increasing the cost of future Department projects. If a project is essential for the welfare of the community, and damage to valuable ecologic systems is unavoidable, the permits may be issued with provisions for mitigating the losses by constructing or upgrading wetlands, planting mangroves or some similar program at a different location.

Since few sites remain for future plant locations which are not wetlands or near existing residential neighborhoods, it is anticipated that future water and sewage treatment plant expansions will require special design features such as multistory construction to minimize land requirements, special architectural and acoustical treatments, and odor control systems to make them unobtrusive.

### **Regulations**

Other than the matters described in “REGULATORY MATTERS” the Department is in compliance with all other material federal, state and local rules and regulations.

## **Everglades Remedial Program**

The federal Water Resources Development Act of 2000 approved the Comprehensive Everglades Restoration Plan ("CERP"), which was developed by a multi-agency study team led by the U.S. Army Corps of Engineers. The CERP provides a framework and guide to restore, protect and preserve the water resources of central and southern Florida, including the Everglades. The CERP includes more than 60 projects, will take more than 30 years to construct, and will cost an estimated \$10.9 billion. Pursuant to conditions of the Water Use Permit, the Department has investigated the feasibility of utilizing reclaimed water to rehydrate the coastal wetlands in proximity to the South District Wastewater Treatment Plant. No final determination has been made at this time with respect to a CERP project to rehydrate the coastal wetlands, and the Department has no formal obligations to sponsor such a project.

## **Security**

Security at the Department's facilities has remained high since the September 11, 2001 attacks, and in 2002 the Board enacted an ordinance addressing long-term security at the Department's facilities, including wellfields and treatment plants. The ordinance specifically authorized the Department's Director to take any actions deemed necessary in an emergency, to secure the Department's facilities. The Director has already determined that a need exists to maintain increased security at the Department's facilities. The Department has established an identification badging office in order to comply with Ordinance 02-68. As part of the process for issuing identification badges, criminal background checks are conducted on employees, contractors and visitors requiring access to sensitive plant areas.

The Department has implemented a number of proactive measures to enhance the security of its water facilities as well as its response capabilities. Ten staff members have been licensed in the Risk Assessment Methodology Method for Water (RAM-W) for conducting vulnerability assessments. The vulnerability assessment of the water system was completed in March 2003 and submitted to the EPA as mandated. In November 2013, the Department of Homeland Security and the Army Corp of Engineers conducted a Site Assistance Visit in accordance with the National Infrastructure Protection Plan. The Department has prepared its Emergency Response Plan in accordance with the EPA regulations. This was submitted to the EPA prior to September 30, 2003 and updated in June 2014. The Emergency Response Plan has been completed for all three water plants. In accordance with federal requirements, the Department continues to assess, identify and implement feasible opportunities to minimize the vulnerability of the Department's facilities. This program is anticipated to cost in excess of \$16.5 million when fully implemented.

The EPA has not yet mandated performing vulnerability assessments of wastewater systems. The Department has performed vulnerability assessment of its wastewater system, which encompasses an assessment of its wastewater treatment facilities, the collection system, and the pumping and transmission system. The Department in conjunction with the Miami-Dade Police Homeland Security Bureau has implemented a security program consisting of security audits, physical security assessments, vulnerability assessments and security force integrity checks.

The Department has also expanded security by adding additional security supervisors to manage and coordinate all security operations at the Department's plants and facilities. Currently the Department is addressing hardening of all facilities by installing a state of the art CCTV surveillance system, access control, and improving and streamlining the command and control of security operations via the newly established security operations center.

## **Insurance**

The Department is insured against loss to facilities through a blanket property insurance program covering real and personal property, including coverage for boiler and machinery, flood and terrorism perils. Scheduled properties include various wastewater treatment plants, regional water treatment plants, pump stations, water storage facilities, maintenance facilities, ocean outfalls, headquarters building, and leased properties. The current schedule of values is approximately \$1.8 billion.



The current program has a limit of \$200 million with a deductible of \$1 million per occurrence for most perils, including terrorism. The program has a named windstorm deductible of \$35 million per occurrence and a boiler and machinery deductible of \$500,000 per accident. Terrorism coverage is provided for both certified and non-certified acts. The Department also purchases individual NFIP (National Flood Insurance Program) policies for buildings located in Special Flood Hazard Areas. The flood insurance program includes an additional \$10 million in coverage over the amount available under the NFIP and five percent (5%) of total insured values for each item in a flood loss not eligible for coverage under the NFIP, in each case subject to a \$1 million per occurrence minimum.

The Department is covered under the County's self-insurance program administered by the Risk Management Division of the General Services Department in accordance with Section 768.28, Florida Statutes as amended. F.S. §768.28 provides that tort claims against municipal governments are limited to \$200,000 per claim and \$300,000 in aggregate for any event or occurrence without a specific act of the Florida Legislature. This limitation applies to most of the liability claims that arise against the County or any local government in Florida, although certain liability claims such as claims under civil rights statutes, are not subject to these limitations.

## **WATER AND SEWER (WASTEWATER) CUSTOMERS AND REVENUES**

### **Accounts**

The Department receives revenues for the sale of its water and wastewater services from retail as well as wholesale customers. The numbers of retail customers for the past five fiscal years are as follows:

#### **Active Retail Customers For Fiscal Year Ended September 30,**

	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>
Water	432,315	436,862	441,059	443,615	447,209
Wastewater	349,778	354,006	357,882	361,055	363,444
Percent ratio wastewater customers to water customers	80.9%	81.0%	81.1%	81.3%	81.3%

*Source: The Department*

The ten largest customers for the Utility for Fiscal Year ended September 30, 2018, were:

#### **Water System**

<b>Name</b>	<b>Dollar Amount (in thousands)</b>	<b>Percent of Water Utility Gross Revenues</b>
City of Miami Beach	\$14,074	4.75%
City of Hialeah	10,987	3.72
City of North Miami	6,120	1.96
Miami-Dade County Aviation Department	3,777	1.17
Florida Power & Light Company	2,367	0.73
Florida Department of Corrections	1,796	0.55
City of Opa-locka	1,514	0.51
City of Homestead	1,220	0.41
Hialeah Gardens	1,171	0.40
Jackson Memorial Hospital	1,009	0.31

*Source: The Department*

### Wastewater System

Name	Dollar Amount (in thousands)	Percent of Wastewater Utility Gross Revenues
City of Hialeah	\$27,209	7.36%
City of Miami Beach	23,656	6.44
City of North Miami	10,536	2.86
City of North Miami Beach	3,826	1.01
City of Homestead	3,240	0.90
Miami-Dade County Aviation Department	3,206	0.83
City of Coral Gables	2,607	0.73
City of Opa-locka	2,093	0.57
Hialeah Gardens	2,015	0.55
Florida Department of Corrections	1,882	0.48

*Source:* The Department

### Rates

The Department's current schedule of water and wastewater rates is attached as APPENDIX E hereto.

For Fiscal Year 2019, the County water rates and water tier structure were not adjusted.

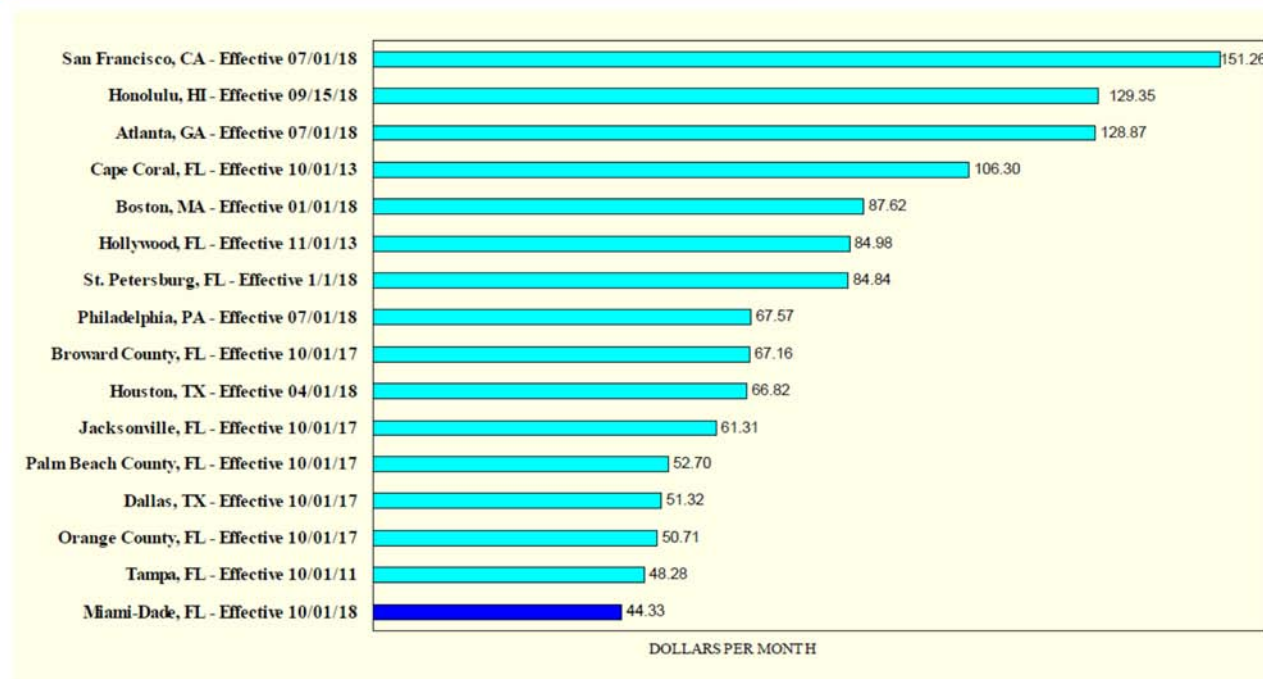
For wastewater usage, the County adjusted the Base Facility Charge, which is the wastewater fixed charge component based on the size of the water meter. This base rate increase is budgeted to result in an approximately \$14 million increase in revenues for Fiscal Year 2019.

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## Rate Comparison

The combined residential water and wastewater bills of the Department are generally lower than those of comparable water and wastewater utilities in other parts of the U.S. as shown in the following table:

### COMBINED WATER AND SEWER BILL FLORIDA MUNICIPALITIES AND MAJOR U.S. CITIES FOR THE MEDIAN RESIDENTIAL CUSTOMER\*



\* MEDIAN RESIDENTIAL CUSTOMER USING 5,236 GALLONS PER MONTH  
Note: Miami-Dade County, FL Adopted Rate October 1, 2018

Source: The Department

## Billing and Collection

The Department is responsible for all billing and collections. Of its approximately 447,000 customers, 431,000 are billed quarterly and 16,000 are billed monthly. Whether a customer is billed monthly or quarterly depends upon consumption. Once a customer's average monthly usage, established over a one-year period, exceeds 100,000 gallons, then the customer is billed monthly. All system-produced bills are normally mailed 2 to 3 days after meter readings are obtained. The past due date on all bills is 21 days after the billing date. A 10% late charge is assessed on any portion of the water and/or wastewater charge, which remains unpaid after the past due date and a delinquent bill is mailed. Forty-two days after billed, unpaid accounts with a balance greater than \$100 are included on a potential disconnect list. Accounts from this list are processed for disconnection of service. If an account remains unpaid 10 days after service has been discontinued, the customer is sent a final bill. A special assessment lien is filed against any owner-occupied real property, which has received services and has charges that are more than 60 days past due and unpaid. The Department may proceed against lessees to collect delinquent water and wastewater charges. In the event a variance or discrepancy in a customer's usage is discovered, the Department will investigate to determine the cause. Supplemented bills will be sent to the customer with adjustments and such bills are subject to the same deadlines and penalties as regularly prepared bills. The Department issues adjusted and corrected bills for various reasons such as leaks, misreadings, coding errors, administrative rulings, back billings and stopped or inaccurate meters.

Annually, the Department analyzes and records a bad debt reserve for accounts that may be written off. Additionally, the Department performs an annual write-off of retail accounts if the balance due is under \$25 and the final bill is more than two years old. The Department writes off accounts where the balance due is \$25 or more, is more than two years old, has been referred to a collection agency for at least one year and the Department determines that the amount is uncollectible. The write-off is for accounting purposes only. The Department continues to legally pursue payment from the delinquent customer.

The finances of the City of Opa-locka (“Opa-locka”) are under the control of a State of Florida special oversight board (the “State Board”). The state appointed members of the State Board to monitor the spending of Opa-locka. The State Board requested the assistance of the County with, among other things, the management of Opa-locka’s utility billings. The County and Opa-locka entered into an agreement for the billing of water, sanitary sewage and stormwater utility services for an initial ten-year period with two five year renewal options. The County commenced billing in August of 2018. The agreement also provides for certain delinquent charges and monies spent by the County to replace Opa-locka meters to be repaid over sixty (60) monthly payments, with interest. The County is evaluating the collection rate before commencing billing for meter replacements. In the interim, Opa-locka remains current with its financial obligations to the County.

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The following table sets forth the Department's collection rates for Fiscal Years 2007 through 2014, which are the Fiscal Years for which the most recent write-offs have been recorded:

		<b>Total Annual Aggregate of Write-Offs to date</b>		
<b>Year</b>	<b>Retail Billing</b>	<b>Amount</b>	<b>% of Annual Billings</b>	<b>Collection Rate in %</b>
2007	\$ 330,475,000	\$1,526,951.70	0.46%	99.54%
2008	342,303,000	777,315.73	0.23	99.77
2009	372,265,000	10,581.82	0.00	100.00
2010	393,420,000	439,534.03	0.11	99.89
2011	428,832,000	1,226,323.03	0.29	99.71
2012	429,003,000	1,563,989.52	0.36	99.64
2013	437,778,000	1,737,452.08	0.40	99.60
2014	465,057,000	651,284.01	0.14	99.86
<b>Total</b>	<b>\$3,199,133,000</b>	<b>\$7,933,431.92</b>	<b>0.25%</b>	<b>99.75%</b>

		<b>Total Annual Aggregate of Write-Offs to date</b>		
<b>Other (Non-Retail)</b>		<b>Amount</b>	<b>% of Annual Billings</b>	<b>Collection Rate in %</b>
<b>Year</b>	<b>Billed</b>			
2007	\$ 22,455,000	-	0.00%	100.00%
2008	22,927,000	-	0.00	100.00
2009	38,293,000	-	0.00	100.00
2010	40,486,000	\$ 4,363.88	0.01	99.99
2011	26,157,000	83,108.75	0.32	99.68
2012	24,589,000	36,310.47	0.15	99.85
2013	21,876,000	103,133.18	0.47	99.53
2014	28,022,000	99,907.35	0.36	99.64
<b>Total</b>	<b>\$224,805,000</b>	<b>\$326,823.63</b>	<b>0.15%</b>	<b>99.85%</b>

		<b>Total Annual Aggregate of Write-Offs to date</b>		
<b>Other (Connection Charges)</b>		<b>Amount</b>	<b>% of Annual Billings</b>	<b>Collection Rate in %</b>
<b>Year</b>	<b>Billed</b>			
2007	\$ 33,017,052	\$ 27,818.32	0.08%	99.92%
2008	32,326,506	120,752.27	0.37	99.63
2009	30,573,496	-	0.00	100.00
2010	15,978,088	-	0.00	100.00
2011	13,933,000	-	0.00	100.00
2012	20,509,000	-	0.00	100.00
2013	25,447,000	1,293.00	0.01	99.99
2014	31,161,000	-	0.00	100.00
<b>Total</b>	<b>\$202,945,142</b>	<b>\$149,863.59</b>	<b>0.7%</b>	<b>99.93%</b>

## **FINANCIAL OPERATIONS**

Utility Revenues, Operation and Maintenance Expenses, as well as certain assumptions and opinions pertaining to such financial data are described in the Audited Financial Report of the Department for Fiscal Year Ended September 30, 2017. *See* APPENDIX C – AUDITED FINANCIAL REPORT OF THE MIAMI-DADE WATER AND SEWER DEPARTMENT FOR FISCAL YEAR ENDED SEPTEMBER 30, 2017.

### **Historical Results of Operations and Debt Service Coverage**

The following table summarizes historical operating results for the Utility for Fiscal Years ended September 30, 2013 through 2018. The historical results have been prepared based on information provided in the Department's audited financial statements for Fiscal Years 2013 through 2017, and its unaudited financial statements for Fiscal Year 2018. The table also reflects the historical debt service coverage based on historical Pledged Revenues and debt service requirements.

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**HISTORICAL OPERATING RESULTS AND DEBT SERVICE COVERAGE**  
**(\$ in thousands)**  
**(Fiscal Year Ended September 30)**

	2013	2014	2015	2016	2017	2018 Unaudited <sup>(6)</sup>
<b>OPERATING REVENUES:</b>						
Retail	\$437,778	\$465,057	\$486,201	\$520,146	\$554,546	\$563,839
Wholesale	88,754	85,771	98,810	110,951	123,854	117,735
Other	21,876	28,022	28,305	28,685	28,932	30,275
Total operating revenues	\$548,408	\$578,850	\$613,316	\$659,782	\$707,332	\$711,849
<b>OPERATING AND MAINTENANCE EXPENSES:</b>						
Source of supply	\$ 10,874	\$ 10,788	\$10,931	\$14,284	\$14,193	\$9,534
Collection system	21,638	22,500	27,634	26,866	33,457	33,818
Pumping	36,508	37,355	39,384	41,532	44,519	45,357
Treatment	139,555	145,513	156,229	160,186	152,734	163,306
Transmission and distribution	27,882	28,844	30,892	30,554	31,228	36,142
Customer accounting and service	25,155	23,180	28,068	30,239	34,160	34,787
General and administrative	78,552	81,662	75,769	84,827	88,239	90,227
Total operating and maintenance expenses	\$340,164	\$349,842	\$368,907	\$388,488	\$398,530	\$413,171
Operating income before depreciation	208,244	229,008	244,409	271,294	308,802	298,679
<b>PRIMARY DEBT SERVICE COVERAGE:</b>						
Net Operating Revenues	\$208,244	\$229,008	\$244,409	\$271,294	\$308,802	\$298,679
Investment Earnings <sup>(1)</sup>	1,479	1,166	1,198	1,823	3,144	9,566
Net Transfers from (to) Rate Stabilization Fund	-	-	-	-	-	-
Net revenues available for debt service	\$209,723	\$230,173	\$245,607	\$273,116	\$311,946	\$308,245
Debt service requirements <sup>(2)</sup>	138,711	143,622	153,211	157,036	161,194	164,449
Actual coverage	1.51x	1.60x	1.60x	1.74x	1.94x	1.87x
Required coverage	1.25x	1.25x	1.25x	1.25x	1.25x	1.25x
<b>SUBORDINATED DEBT SERVICE COVERAGE:</b>						
Net revenues available for debt service	\$209,723	\$230,173	\$245,607	\$273,116	\$311,946	\$308,245
Less: Maximum principal and interest <sup>(3)</sup>	163,181	163,181	161,195	161,195	161,195	171,345
Adjusted net revenues	\$ 46,542	\$ 66,992	\$ 84,412	\$111,921	\$150,751	\$136,900
Debt service and reserve requirements	11,386	15,369	18,081	16,819	15,973	15,822
Actual coverage	4.09x	4.36x	4.67x	6.65x	9.44x	8.65x
Required coverage	1.00x	1.00x	1.00x	1.00x	1.00x	1.00x
<b>STATE REVOLVING FUND LOANS DEBT SERVICE:</b>						
Net revenues available for debt service	\$209,723	\$230,173	\$245,607	\$273,116	\$311,946	\$308,245
Less: revenue required for primary debt service coverage <sup>(4)</sup>	173,389	179,528	191,514	196,295	201,493	205,561
Adjusted net revenues	\$ 36,334	\$ 50,646	\$ 54,093	\$ 76,821	\$110,453	\$102,684
Debt service requirements <sup>(5)</sup>	11,386	15,369	18,081	16,819	15,973	15,822
Actual coverage	3.19x	3.30x	2.99x	4.57x	6.92x	6.49x
Required coverage	1.15x	1.15x	1.15x	1.15x	1.15x	1.15x

<sup>(1)</sup> Excludes interest income from Construction Fund.

<sup>(2)</sup> Represents debt service requirements on Outstanding Bonds for such Fiscal Year.

<sup>(3)</sup> Maximum Principal and Interest Requirements on the Bonds for such Fiscal Year.

<sup>(4)</sup> Represents 110% of primary debt service requirements.

<sup>(5)</sup> Represents debt service requirements on outstanding State Revolving Fund Loans for such Fiscal Year.

<sup>(6)</sup> Operating revenues and expenditures for Fiscal Year 2018 are actual results from financial statements generated by the Department on November 14, 2018 (Unaudited).

Source: Water and Sewer Department's Comprehensive Annual Financial Report For The Fiscal Year Ended September 30, 2017, and the Department's unaudited financial data for Fiscal Year 2018 (updated as of November 14, 2018)

## Management's Discussion

During Fiscal Years 2013 through 2018 the Board implemented several rate increases to address the operating and maintenance cost increases that occur as a normal part of business each year. These retail rate increases take into account the U.S. Department of Labor, Bureau of Labor Statistics, Consumer Price Index for All Urban Consumers Water and Sewerage Maintenance – U.S. City Average and are commonly referred to as “maintenance index” adjustments and Capital Program requirements. The Board’s actions have resulted in a 30% increase in revenues, from \$548 million to \$712 million in five years. Fiscal Year 2013 retail rates were maintained at the same rate as the prior fiscal year. The Board of County Commissioners adopted rate increases of 8% effective October 1, 2013, 6% effective October 1, 2014, 6% effective October 1, 2015 and 8% effective October 1, 2016. The Department implemented a rate restructuring effective October 1, 2017. The main driver of revenue growth has been rate increases. Consumption levels for both water and wastewater were stable during this period. In addition, the Fiscal Year 2019 Adopted Budget includes a retail sewer base facility charge increase of \$1.80 per 5/8 inch meter. This increase should continue to strengthen revenues as it is an increase in a fixed charge rather than an increase in a charge based on consumption.

A consent decree agreement (the “2014 Consent Decree”) was negotiated among the County, the U.S. Department of Justice, the State and FDEP that addresses regulatory violations resulting from failing infrastructure, which 2014 Consent Decree was presented to and adopted by the Board on May 21, 2013. On April 9, 2014, the U.S. District Court for the Southern District of Florida approved the 2014 Consent Decree. *See* “REGULATORY MATTERS – Sewer (Wastewater) System – Consent Decree.”

In Fiscal Year 2013, Senate Bill 444 Modifying the State of Florida Ocean Outfall Statute was signed into law by Governor Rick Scott, providing additional flexibility for the affected utilities to manage peak flows and to fulfill the wastewater reuse requirements in the statute.

The Department maintains both a General Reserve Fund and a Rate Stabilization Fund to provide for contingencies and to mitigate rate increases. As of the end of Fiscal Year 2018 the Department’s General Reserve Fund and Rate Stabilization Fund totaled over \$98 million. The Department is also required to maintain an operations and maintenance reserve equal to two months of budgeted operations and maintenance expenses. The Department is holding \$74.1 million in the operations and maintenance reserve for Fiscal Year 2018.

The Renewal and Replacement Fund is funded from budgeted revenues and expended typically in the same fiscal year for system maintenance and repair. As of September 30, 2018, the balance in the Renewal and Replacement Fund was approximately \$95.5 million. The Department also maintains a Plant Expansion Fund which is funded by connection fees and is restricted by law to funding projects that expand system capacity. The Department uses funds in the Plant Expansion Fund for qualifying expansion projects or qualifying expansion components of larger projects. As of September 30, 2018, the balance in the Plant Expansion Fund was approximately \$115.8 million.

The chart below provides the balances in the various Department funds as of September 30, 2018. As discussed above, certain funds are restricted to specific uses.

<b>Fund Balances <sup>(1)(2)</sup></b>	<b>(in millions)</b>
Revenue Fund	\$ 74.1
General Reserve	67.4
Rate Stabilization Fund	30.5
Renewal and Replacement Fund	95.5
Plant Expansion Fund	115.8

<sup>(1)</sup> As of September 30, 2018 (unaudited).

<sup>(2)</sup> Does not include Debt Service Fund.



## **Multi-Year Capital Plan**

The Department has for many years used a formal capital program and budgeting process. Under this process, capital programs are projected forward over a six-year period and beyond and a detailed budget is adopted and appropriated for the first year of each multi-year period. Both program and budget commitments are reviewed each year and modified as necessary.

Set forth in the following table is a summary of the MYCIP for Fiscal Years 2019 through 2024. The funding of the MYCIP includes proceeds of the Outstanding Bonds, Additional Bonds and Subordinate Obligations (including the CP Notes), as well as certain annual revenue sources of the Department. These MYCIP capital expenditures consist of the design, construction, construction management and program management expenses associated with capital improvements related to wastewater treatment, collection facilities, and pumping stations, the expansion and improvements to the water treatment plants and water main rehabilitation, and other similar projects. These projects are consistent with the improvements identified in the Water and Wastewater Facilities Master Plans, the Consent Decrees and the Interim Peak Flow Management Plan. The capital improvement projects are necessary to: (i) provide additional capacity to serve additional customers; (ii) meet the requirements of the regulatory actions imposed by FDEP and the EPA; (iii) provide back-up reserve capacity in the water and wastewater transmission systems; (iv) comply with level service requirements contained in the Comprehensive Development Master Plan; and (v) improve operating efficiencies of the Utility.

The Department's MYCIP provides that the Department intends to finance such plan with additional bond issues as needed to minimize the impact on rates in any individual year.

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**ADOPTED FY 2019 - 2024 MULTI-YEAR CAPITAL PLAN<sup>(1)</sup>**  
**(\$ in thousands)**

**WATER**

<b>Fund Description</b>	<b>Total Prior</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>Future<sup>(2)</sup></b>	<b>Total</b>
Water Renewal & Replacement Fund	\$149,259	\$ 58,491	\$ 39,500	\$ 39,500	\$ 39,500	\$ 39,500	\$ 39,500	\$ 39,500	\$ 444,750
Plant Expansion Fund – Water	10,206	7,995	10,550	9,056	5,728	10,000	2,806	-	56,341
State Revolving Loans – Water	23,008	-	-	-	-	-	-	-	23,008
Fire Hydrant Fund	6,398	3,500	3,500	3,500	3,500	3,500	3,500	7,831	35,229
General Obligation Bonds	18,826	3,042	2,735	1,611	374	-	-	-	26,588
Water Special Construction Fund	21,160	5,860	1,000	1,000	1,000	2,000	2,000	-	34,020
Future Water and Sewer Department Revenue Bonds	-	79,272	97,803	83,173	92,080	64,424	77,651	182,747	677,150
Construction – 2010 Bonds	36,396	-	-	-	-	-	-	-	36,396
Miami Springs Construction Fund	4,230	3,044	1,971	251	-	-	-	-	9,496
Future Funding	-	-	-	-	-	-	-	2,000	2,000
Water Construction Fund – 2013 Bonds	31,946	-	-	-	-	-	-	-	31,946
Commercial Paper - 2015	50,872	-	-	-	-	-	-	-	50,872
Commercial Paper - 2017	64,222	15,456	-	-	-	-	-	-	79,678
<b>TOTAL - WATER</b>	<b>\$416,523</b>	<b>\$176,660</b>	<b>\$157,059</b>	<b>\$138,091</b>	<b>\$142,182</b>	<b>\$119,424</b>	<b>\$125,457</b>	<b>\$232,078</b>	<b>\$1,507,474</b>

**WASTEWATER**

<b>Fund Description</b>	<b>Total Prior</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>Future<sup>(2)</sup></b>	<b>Total</b>
Wastewater Renewal & Replacement Fund	\$ 186,456	\$ 65,647	\$ 52,422	\$ 50,500	\$ 50,500	\$ 50,500	\$ 50,500	\$ 50,500	\$ 557,025
Plant Expansion Fund – Wastewater	97,544	33,449	50,886	41,132	48,480	49,486	25,709	-	346,686
General Obligation Bonds	16,160	6,958	12,977	16,850	20,523	21,358	24,000	24,741	143,567
Wastewater Special Construction Fund	8,558	3,000	2,500	2,500	2,500	2,500	7,592	-	29,150
Future Water and Sewer Department Revenue Bonds	-	134,379	275,866	344,995	399,425	394,664	551,456	5,763,572	7,864,357
State Revolving Loans – Wastewater	21,046	-	-	-	-	-	-	-	21,046
Construction – 2010 Bonds	23,855	-	-	-	-	-	-	-	23,855
Miami Springs Construction Fund	867	207	252	-	-	-	-	-	1,326
Future Funding	-	-	-	-	-	-	-	62,614	62,614
S Construction - 2013 Bonds	193,381	-	-	-	-	-	-	-	193,381
Commercial Paper – 2015	324,542	-	-	-	-	-	-	-	324,542
Commercial Paper – 2017	195,110	124,890	-	-	-	-	-	-	320,000
<b>TOTAL – WASTEWATER</b>	<b>\$1,067,519</b>	<b>\$368,530</b>	<b>\$394,903</b>	<b>\$455,977</b>	<b>\$521,428</b>	<b>\$518,508</b>	<b>\$659,257</b>	<b>\$5,901,427</b>	<b>\$ 9,887,549</b>
<b>COMBINED WATER AND WASTEWATER</b>	<b>\$1,484,042</b>	<b>\$545,190</b>	<b>\$551,962</b>	<b>\$594,068</b>	<b>\$663,610</b>	<b>\$637,932</b>	<b>\$784,714</b>	<b>\$6,133,505</b>	<b>\$11,395,023</b>

<sup>(1)</sup> This Table sets forth expenditures by funding sources for the proposed Multi-Year Capital Plan.

<sup>(2)</sup> Future is defined as Fiscal Years 2025 through 2030.

Source: The Department

## REGULATORY MATTERS

### Water System

Ground Water Under Direct Influence of Surface Water. On January 5, 2006, the EPA published the Final Long Term Enhanced Surface Water Rule (the “Surface Water Rule”), which does not apply to the Department because the Department does not use surface water and the groundwater used by the Department has not been determined to be under the direct influence of surface water. However, the Northwest Wellfield is located in an area designated by the Florida Legislature as the Miami-Dade County Lake Belt Area. In order to maximize the efficient recovery of limestone in such area, the Florida Legislature approved a plan that will allow rock mining in the vicinity of the Northwest Wellfield. As excavations get closer to the Northwest Wellfield, there is limited risk of the wells coming under the influence of surface water, which may result in the Surface Water Rule applying to such wells.

In January 2006, the Florida Legislature recognized the risk to the Northwest Wellfield and imposed a “water treatment plant upgrade fee” equal to \$0.15 per ton of limerock and sand sold within the Miami-Dade County Lake Belt Area. The fee became effective January 1, 2007, and was supposed to remain in effect until the total proceeds collected reach the actual amount necessary to design and construct the necessary water treatment plant upgrades. Such amount is to be determined in an open, public solicitation. The water treatment plant upgrade will consist of upgrading the filtration and disinfection processes to meet the requirements of the Surface Water Rule. In 2011, the Florida Legislature authorized the temporary diversion of the water treatment plant upgrade fee to be used to pay for seepage mitigation projects, including groundwater or surface water management structures designed to improve wetland habitat. This diversion will continue until a total of \$20 million has been diverted or until the State makes an actual determination of groundwater being under the direct influence of surface water (“GWUDI”), at which point the funds will be re-directed to the Department to advance the surface water treatment project. The Florida Legislature passed legislation in 2015 that reduced the fee to \$0.06 per ton until July 2018; after which time the fee was discontinued. The Department has evaluated the potential of reclassification of the Northwest Wellfield to GWUDI and has made preparations to address any risk through monitoring and preventative actions. At this time, upgrades to existing facilities are not anticipated.

Stage 1 and Stage 2 DBP Rules. The Disinfectants and Disinfection Byproducts Rule (the “Stage 1 DBPR”) effective January 2004, regulates disinfection byproducts (“DBPs”), which are formed when chlorine reacts with naturally occurring organic constituents in drinking water. The Department is in compliance with the Stage 1 DBPR having both modified its John E. Preston Water Treatment Plant and used alternate pretreatment approaches there to assure compliance.

The Disinfectants and Disinfection Byproducts Rule (the “Stage 2 DBPR”) effective January 2006, builds on Stage 1 and includes the following requirements:

- Initial distribution system evaluations (“IDSE”) to identify compliance monitoring locations with the high disinfection DBPs. The purpose of the IDSE is to determine locations of high total trihalomethanes and haloacetic acids. The results are used in conjunction with the Stage 1 DBPR compliance monitoring to identify and select Stage 2 DBPR compliance monitoring locations.
- Compliance is based on Locational Running Annual Averages, which averages the sample analytical results for water samples taken at a particular monitoring location during the previous calendar quarters.
- Requirements are specified for consecutive systems, which will apply to the Department’s wholesale customers.

The Department is in compliance with the Stage 2 DBPR.

Ground Water Rule. The Ground Water Rule (“GWR”) provides for increased protection against microbial pathogens in public water systems that use ground water sources. In 2009, the Florida Department of Health determined that all of the Department’s water treatment plants meet the 4-log virus treatment requirements of the GWR and approved the associated monitoring plans implemented by the Department to comply with the GWR.

Revised Total Coliform Rule. The Revised Total Coliform Rule (“RTCR”) became effective April 1, 2016. The RTCR establishes a maximum contaminant level (MCL) for *E. coli* and uses *E. coli* and total coliforms to initiate a “find and fix” approach to address fecal contamination that could enter into the distribution system. It requires public water systems (PWSs) to perform assessments to identify sanitary defects and subsequently take action to correct them. The Department is in compliance with this rule.

Lead and Copper Rule. The Lead and Copper Rule was promulgated in 1991 to address the control of copper and lead that may leach from home plumbing systems. The Department is in compliance with this rule.

### **Sewer (Wastewater) System**

North District Wastewater Treatment Plant. On February 20, 2017, the FDEP issued an operating permit under the National Pollutant Discharge Elimination System (the “NPDES Permit”), along with an Administrative Order (the “AO”). The AO includes schedules for compliance with the OOL, a Surface Water Quality Monitoring Plan, toxicity study, and effluent monitoring and sampling requirements, as well as a schedule for 2014 Consent Decree projects. The Department is in compliance with the NPDES Permit and the AO.

Central District Wastewater Treatment Plant. On January 13, 2016, the FDEP issued an operating permit and an Amendment to Administrative Order (the “AOA”) based on the point of discharge being within State waters. The Department is in compliance with the NPDES Permit, the AO and the AOA.

South District Wastewater Treatment Plant. On December 6, 2005, the EPA promulgated revisions to the Federal Underground Injection Control (“UIC”) Requirements for Class I Municipal Disposal Wells in Florida. The UIC rule provides a regulatory alternative for the operators of Class I municipal disposal wells in specific areas of Florida that have caused or may cause movement of fluid into underground sources of drinking water. The County’s upgraded High Level Disinfection (“HLD”) facility at the plant enables the Department to fully comply with these requirements.

South District Wastewater Treatment Plant Operating Permit. On September 19, 2017, the FDEP issued a new operating permit for the South District Wastewater Treatment Plant, with an effective date of December 10, 2017, which includes a schedule for completing some improvements at the plant. The Department is in compliance with the operating permit.

Sewer System Consent Decree. On May 21, 2013, the Board authorized the execution of a federal consent decree (“Federal Consent Decree”) between the County, the U.S. Department of Justice, the State and FDEP, for improvements to the County’s wastewater collection and treatment system. On June 6, 2013, the Department of Justice lodged the proposed Federal Consent Decree with the U.S. District Court for the Southern District of Florida in the lawsuit entitled United States, State of Florida and State of Florida Department of Environmental Protection v. Miami-Dade County, *Case No. 1:12-cv-24400-FAM*. On June 12, 2013 (the “Date of Lodging”), the Notice of Lodging was published in the Federal Register. The publication opened a 30-day public comment period on the proposed Federal Consent Decree. The effective date for the Federal Consent Decree was December 6, 2013, six months after the Date of Lodging. On April 9, 2014, the Court issued three Orders: (i) Granting Motion to enter Federal Consent Decree; (ii) Modifying Section X of the Federal Consent Decree (doubling the proposed stipulated penalties); and (iii) Requiring Status Reports.

The schedule for construction projects identified in the Federal Consent Decree began on the Date of Lodging. The schedules for the remaining deliverables dealing with assessments and reports began on the date of entry of the Federal Consent Decree. Penalty provisions became effective on the date of entry of the Federal Consent Decree. The Prior Consent Decrees were terminated upon entry of the Federal Consent Decree and the Federal Consent Decree supersedes the Prior Consent Decrees.

The Federal Consent Decree requires system improvements at the treatment plants and throughout the collection system valued at \$1.6 billion over a period of 15 years; continuation of the capacity maintenance program, including enforcement of the 10 hour criterion at pump stations; expansion of the pump station remote monitoring program (Supervisory Control and Data Acquisition – SCADA – system); maintenance and application of the wastewater collection and transmission system model; a spare parts program; application of these requirements to wholesale customers through the Volume Sewer Customer Ordinance administered by the Department of Regulatory

and Economic Resources; expansion of the Fats, Oils, and Grease control program; implementation of a sewer overflow response plan; enhancement of the information management system and the wastewater system asset management program; assessment of force mains; assessment of gravity sewers; enhancement of the pump station maintenance and operations program; enhancement of the wastewater treatment plant operations and maintenance program; and implementation of a financial analysis program to support the completion of all Federal Consent Decree deliverables on schedule. The Department has retained a firm to provide program and construction management services for the Federal Consent Decree program, two firms to provide design services for the Wastewater Treatment Plants (WWTPs) and the Wastewater Collection and Transmission System (WCTS), and a fourth firm to provide the CMOM Requirements. The Department has assigned dedicated internal staff to manage these projects. The Department is in compliance with the Federal Consent Decree.

Wastewater System Overflow Violations. Any unpermitted discharge from wastewater collection and treatment systems constitutes a violation of the Clean Water Act and can be subject to both federal and state enforcement action. Overflows may occur as the result of inadequate capacity, line blockages, construction and vandalism, pipeline failures due to age or corrosion, and equipment failures at pump stations and treatment plants. The Federal Consent Decree includes a civil penalty to account for overflows not previously included in the FDEP penalty program. During the five years between 2007 and 2011, the Department experienced annual overflow events ranging from 126 to 223 overflows resulting from line blockages. During the same period, the total estimated volume of overflows ranged from 1.8 million gallons in 2007 to 24.9 million gallons in 2010 (which included a single 72 inch force main failure that accounted for 20 million gallons of wastewater). Pipeline failures have accounted for the largest volume of wastewater system overflows, confirming the need for infrastructure replacement.

In April 2014, the County paid \$978,100 as a civil penalty for violations of the Clean Water Act and State environmental laws covering overflows documented during the five-year period from November 2007 through November 2012. The Federal Consent Decree provides for stipulated penalties ranging from \$1,000 to \$20,000 for sewage overflows depending on overflow volumes, when the overflows occur during the duration of the Federal Consent Decree and whether the overflows reach the waters of the United States.

During the period from 2015 through 2017, the EPA assessed stipulated penalties pursuant to Section X, Paragraph 42.(a) of the Consent Decree and the Order Modifying Section X of the Consent Decree, and FDEP assessed penalties for overflows that did not reach surface waters. The penalties assessed were not significant.

Elimination of the Use of Ocean Outfalls. Florida law was amended in 2008 to prohibit the construction of new ocean outfalls and the use of existing ones for disposal of average flows by 2025. The law was amended in 2013 to provide additional flexibility for the affected utilities to manage peak flows and to fulfill the mandated wastewater reuse requirements. The law requires the Department to (i) submit a plan by July 1, 2013 to meet the requirements of the legislation (see below description of the Department's submitted plan); and (ii) meet the provisions of the advanced wastewater treatment and management requirements by December 31, 2018, either by (a) provision of advanced wastewater treatment to all ocean outfall flows, or (b) reducing the volume of wastewater effluent disposed through ocean outfall flows between December 31, 2008 and December 31, 2025 so that the reduction in nutrients discharged would be the same as with advanced wastewater treatment, or (c) use of a combination of advanced wastewater treatment and diversion of ocean outfall flows to meet the nutrient reduction level required on December 31, 2018. After 2025, the outfalls can only be used for peak flow discharges not to exceed 5% of annual flows. By December 31, 2025, a fully functioning reclaimed water system must be installed using a minimum of 60% of the ocean outfall flows for irrigation, groundwater replenishment, industrial cooling or other acceptable forms of reclaimed water. The statute limits the required reuse to projects that are "technically and economically" feasible.

The Department submitted the Ocean Outfall Legislation (OOL) Compliance Plan (the "Plan") to the Secretary of FDEP on June 28, 2013. This is a comprehensive plan which also includes the wastewater facilities needed to meet future demands to the year 2035. The Plan proposes to redirect treated wastewater currently discharged through ocean outfalls to deep injection wells. The wastewater treatment process will be upgraded to meet FDEP's high level disinfection (HLD) standards. The Plan includes upgrades to the three existing wastewater treatment plants with a cost of approximately \$2 billion. The Department is in compliance with Ocean Outfall Legislation requirements and on track to meet the December 31, 2025 deadline.

In 2014, the Department retained a firm to serve as owner's representative for professional engineer services related to the State of Florida's Ocean Outfall Legislation and the County's Wastewater System. The firm has validated the Plan and is preparing scopes of work for design solicitations for the various treatment plant upgrades as well as a new wastewater treatment plant in the western part of the County as specified in the Plan. An updated Plan was submitted to the FDEP in July of 2017.

### **REPORT OF CONSULTING ENGINEER**

The County has retained Arcadis U.S., Inc. ("Arcadis"), Miami, Florida, as its consulting engineer to develop reports relating to the Utility, the MYCIP and certain financial matters. Planning and Economics Group, Inc., Miami, Florida, serves as a sub-consultant to Arcadis. Arcadis, along with Planning and Economics Group, Inc. (collectively, the "Consulting Engineer"), have prepared the Consulting Engineer's Report dated January 8, 2019, included as APPENDIX A to this Official Statement, which is included in this Official Statement in reliance upon the authority of such firms as experts in engineering and related financial matters. The Consulting Engineer's Report should be read in its entirety for a complete discussion of asset conditions, operating revenues, expenses of operation and maintenance, and the assumptions and rationale underlying its forecast. To the extent that actual conditions differ from those assumed in preparing such forecasted amounts, the actual results will vary from those shown therein.

The Consulting Engineer has formed certain opinions and reached certain conclusions as a result of the analyses performed and described in the Consulting Engineer's Report. These conclusions and opinions, include, but are not limited to, the following:

- Based on the assumptions applied in developing the financial projections, and described in the Consulting Engineer's Report (including the implementation of certain future rate increases needed to meet the debt service coverage ratio as described in the Report), the Department is expected to generate projected Pledged Revenues sufficient in the next five years to meet the payment or deposit requirements of:
  - all expenses of the Department related to operation, maintenance, repair and replacement;
  - all reserve funds required to be established out of such Pledged Revenues;
  - the principal and interest on all Outstanding Bonds and Subordinate Obligations issued under or pursuant to the Master Ordinance, including the Series 2019 Bonds, for which such Pledged Revenues are pledged, as the same become due and payable; and
  - the rate covenant set forth in Section 602 of the Master Ordinance.
- Based on onsite physical inspections and investigations conducted in 2016, 2017 and 2018, and discussions with key Department staff at that time, the water and wastewater systems are in fair operating condition with some components of the systems in more immediate need of renewal or replacement than others, with steps being taken to address the Department's renewal and replacement needs to return such systems to good operating condition. The projects contained in the Department's proposed five-year MYCIP for Fiscal Years 2019 through 2024 are part of an overall program to maintain or improve the water and wastewater systems in good operating condition.
- The existing water and wastewater infrastructure, together with planned system improvements, will provide the Department with adequate water and wastewater capacity to meet demands in the service area through Fiscal Year 2024.
- In Fiscal Year 2019, the Department continues to be under the negotiated Consent Decree with EPA and FDEP, which was lodged with the US District Court on June 6, 2013, and entered on April 9, 2014. This Consent Decree closed the Department's previous First Partial Consent Decree and the Second and Final Partial Consent Decree with EPA. The Consent Decree focuses primarily on system improvements at the treatment plants, the collection system, and the continuation of the capacity maintenance program, including enforcement of the 10-hour criterion at pump stations and the pump station remote monitoring program SCADA system.

- The Department is subject to the State of Florida Senate Bill 1302 (Chapter 2008-232) Laws of Florida, Section 403.086(9)) as amended in 2013 by Florida Senate Bill 444, that requires the six ocean outfalls along the southeast coast of Florida, that are being used for treated wastewater disposal, be eliminated as a primary means of domestic wastewater discharge by 2025. The Department operates two of the six ocean outfalls, one at the North District Wastewater Treatment Plant, and the second at the Central District Wastewater Treatment Plant. Meeting these requirements will significantly increase the capital infrastructure needs of the Department over the next 20 years.

## **INVESTMENT CONSIDERATIONS**

### **Climate Change**

The State of Florida is naturally susceptible to the effects of extreme weather events and natural disasters including floods, droughts, and hurricanes, which could result in negative economic impacts on coastal communities like the County. Such effects can be exacerbated by a longer-term shift in the climate over several decades (commonly referred to as climate change), including increasing global temperatures and rising sea levels.

The County is addressing the threat of climate change in the following ways: (1) implementing new policies and initiatives, including environmental protections, sustainability measures, and energy and water conservation; and (2) completing a systematic assessment of the future vulnerability of the most critical County-owned infrastructure and using that information to direct investment into protective measures for the County's most exposed assets. The County's climate change strategy is outlined in the GreenPrint link on the County's website (<http://www.miamidade.gov/GreenPrint/>) and in the Southeast Florida Regional Climate Change Compact's (the "Compact") Regional Climate Action Plan (<http://www.southeastfloridaclimaticcompact.org/wp-content/uploads/2018/04/RCAP-2.0-Abridged-Version.pdf>). For planning purposes the County relies upon the Compact's Unified Sea Level Rise Projection for Southeast Florida.

### **Cyber-Security**

Computer networks and systems used for data transmission and collection are vital to the efficient operations of the County. County systems provide support to departmental operations and constituent services by collecting and storing sensitive data, including intellectual property, security information, proprietary business process information, information applying to suppliers and business partners, and personally identifiable information of customers, constituents and employees. The secure processing, maintenance and transmission of this information is critical to departmental operations and the provision of citizen services. Increasingly, governmental entities are being targeted by cyberattacks seeking to obtain confidential data or disrupt critical services. A rapidly changing cyber risk landscape may introduce new vulnerabilities that attackers/hackers can exploit in attempts to effect breaches or service disruptions. Employee error and/or malfeasance may also contribute to data loss or other system disruptions. Any such breach could compromise networks and the confidentiality, integrity and availability of systems and the information stored there. The potential disruption, access, modification, disclosure or destruction of data could result in interruption of the efficiency of County commerce, initiation of legal claims or proceedings, liability under laws that protect the privacy of personal information, regulatory penalties, disruptions in operations and the services provided, and the loss of confidence in County operations, ultimately adversely affecting County revenues. The County has established a dedicated Enterprise Security Office tasked with the protection of County digital assets through a defense in depth approach to risk and vulnerability mitigation, implementation of policy and compliance standards and cyber incident response capabilities.

## **LITIGATION**

The County is a defendant from time to time in various lawsuits. No litigation questioning the corporate existence of the County or the right of its officials to their respective offices, or questioning or affecting the validity of the Series 2019 Bonds or the Bond Ordinance is pending. Furthermore, to the knowledge of the Office of the County Attorney, no litigation that would materially adversely affect the ability of the County to consummate its obligations under the Bond Ordinance, including its payment obligations thereunder, is threatened.

## **ENFORCEABILITY OF REMEDIES**

The remedies available to the owners of the Series 2019 Bonds upon an Event of Default under the Bond Ordinance are in many respects dependent upon regulatory and judicial actions that are often subject to discretion and delay. Under existing laws and judicial decisions, the remedies provided for under the Bond Ordinance may not be readily available or may be limited. The various legal opinions to be delivered concurrently with the delivery of the Series 2019 Bonds will be qualified to the extent that the enforceability of certain legal rights related to the Series 2019 Bonds is subject to various limitations including those imposed by bankruptcy, reorganization, insolvency or other similar laws affecting the enforcement of creditors' rights generally and by equitable remedies and proceedings generally.

## **TAX MATTERS**

In the opinion of Squire Patton Boggs (US) LLP and D. Seaton and Associates, P.A., Bond Counsel, under existing law: (i) interest on the Series 2019 Bonds is excluded from gross income for federal income tax purposes under Section 103 of the Internal Revenue Code of 1986, as amended (the "Code"), and is not an item of tax preference for purposes of the federal alternative minimum tax, and (ii) the Series 2019 Bonds and the income thereon are exempt from taxation under the laws of the State of Florida, except estate taxes imposed by Chapter 198, Florida Statutes, as amended, and net income and franchise taxes imposed by Chapter 220, Florida Statutes, as amended. Bond Counsel expresses no opinion as to any other tax consequences regarding the Series 2019 Bonds.

The opinion on federal tax matters will be based on and will assume the accuracy of certain representations and certifications, and continuing compliance with certain covenants, of the County contained in the transcript of proceedings and that are intended to evidence and assure the foregoing, including that the Series 2019 Bonds are and will remain obligations the interest on which is excluded from gross income for federal income tax purposes. Bond Counsel will not independently verify the accuracy of the County's representations and certifications or the continuing compliance with the County's covenants.

The opinion of Bond Counsel is based on current legal authority and covers certain matters not directly addressed by such authority. It represents Bond Counsel's legal judgment as to exclusion of interest on the Series 2019 Bonds from gross income for federal income tax purposes but is not a guaranty of that conclusion. The opinion is not binding on the Internal Revenue Service ("IRS") or any court. Bond Counsel expresses no opinion about (i) the effect of future changes in the Code and the applicable regulations under the Code or (ii) the interpretation and the enforcement of the Code or those regulations by the IRS.

The Code prescribes a number of qualifications and conditions for the interest on state and local government obligations to be and to remain excluded from gross income for federal income tax purposes, some of which require future or continued compliance after issuance of the obligations. Noncompliance with these requirements by the County may cause loss of such status and result in the interest on the Series 2019 Bonds being included in gross income for federal income tax purposes retroactively to the date of issuance of the Series 2019 Bonds. The County has covenanted to take the actions required of it for the interest on the Series 2019 Bonds to be and to remain excluded from gross income for federal income tax purposes, and not to take any actions that would adversely affect that exclusion. After the date of issuance of the Series 2019 Bonds, Bond Counsel will not undertake to determine (or to so inform any person) whether any actions taken or not taken, or any events occurring or not occurring, or any other matters coming to Bond Counsel's attention, may adversely affect the exclusion from gross income for federal income tax purposes of interest on the Series 2019 Bonds or the market value of the Series 2019 Bonds.

Interest on the Series 2019 Bonds may be subject to a federal branch profits tax imposed on certain foreign corporations doing business in the United States and to a federal tax imposed on excess net passive income of certain S corporations. Under the Code, the exclusion of interest from gross income for federal income tax purposes may have certain adverse federal income tax consequences on items of income, deduction or credit for certain taxpayers, including financial institutions, certain insurance companies, recipients of Social Security and Railroad Retirement benefits, those that are deemed to incur or continue indebtedness to acquire or carry tax-exempt obligations, and individuals otherwise eligible for the earned income tax credit. The applicability and extent of these and other tax consequences will depend upon the particular tax status or other tax items of the owner of the Series 2019 Bonds. Bond Counsel will express no opinion regarding those consequences.



Payments of interest on tax-exempt obligations, including the Series 2019 Bonds, are generally subject to IRS Form 1099-INT information reporting requirements. If a Series 2019 Bond owner is subject to backup withholding under those requirements, then payments of interest will also be subject to backup withholding. Those requirements do not affect the exclusion of such interest from gross income for federal income tax purposes.

Bond Counsel's engagement with respect to the Series 2019 Bonds ends with the issuance of the Series 2019 Bonds, and, unless separately engaged, Bond Counsel is not obligated to defend the County or the owners of the Series 2019 Bonds regarding the tax status of interest thereon in the event of an audit examination by the IRS. The IRS has a program to audit tax-exempt obligations to determine whether the interest thereon is includible in gross income for federal income tax purposes. If the IRS does audit the Series 2019 Bonds, under current IRS procedures, the IRS will treat the County as the taxpayer and the beneficial owners of the Series 2019 Bonds will have only limited rights, if any, to obtain and participate in judicial review of such audit. Any action of the IRS, including but not limited to selection of the Series 2019 Bonds for audit, or the course or result of such audit, or an audit of other obligations presenting similar tax issues, may affect the market value of the Series 2019 Bonds.

Prospective purchasers of the Series 2019 Bonds upon their original issuance at prices other than the respective prices indicated on the inside cover of this Official Statement, and prospective purchasers of the Series 2019 Bonds at other than their original issuance, should consult their own tax advisors regarding other tax considerations such as the consequences of market discount, as to all of which Bond Counsel expresses no opinion.

### **Risk of Future Legislative Changes and/or Court Decisions**

Legislation affecting tax-exempt obligations is regularly considered by the United States Congress and may also be considered by the State legislature. Court proceedings may also be filed, the outcome of which could modify the tax treatment of obligations such as the Series 2019 Bonds. There can be no assurance that legislation enacted or proposed, or actions by a court, after the date of issuance of the Series 2019 Bonds will not have an adverse effect on the tax status of interest on the Series 2019 Bonds or the market value or marketability of the Series 2019 Bonds. These adverse effects could result, for example, from changes to federal or state income tax rates, changes in the structure of federal or state income taxes (including replacement with another type of tax), or repeal (or reduction in the benefit) of the exclusion of interest on the Series 2019 Bonds from gross income for federal or state income tax purposes for all or certain taxpayers.

For example, federal tax legislation that was enacted on December 22, 2017 reduced corporate tax rates, modified individual tax rates, eliminated many deductions, repealed the corporate alternative minimum tax and eliminated the tax-exempt advance refunding of tax-exempt bonds, among other things. Additionally, investors in the Series 2019 Bonds should be aware that future legislative actions might increase, reduce or otherwise change (including retroactively) the financial benefits and the treatment of all or a portion of the interest on the Series 2019 Bonds for federal income tax purposes for all or certain taxpayers. In all such events, the market value of the Series 2019 Bonds may be affected and the ability of holders to sell their Series 2019 Bonds in the secondary market may be reduced.

Investors should consult their own financial and tax advisors to analyze the importance of these risks.

### **Original Issue Premium**

The Series 2019 Bonds ("Premium Bonds") may be offered and sold to the public at a price in excess of their stated redemption price at maturity (the principal amount). That excess constitutes bond premium. For federal income tax purposes, bond premium is amortized over the period to maturity of a Premium Bond, based on the yield to maturity of that Premium Bond (or, in the case of a Premium Bond callable prior to its stated maturity, the amortization period and yield may be required to be determined on the basis of an earlier call date that results in the lowest yield on that Premium Bond), compounded semiannually. No portion of that bond premium is deductible by the owner of a Premium Bond. For purposes of determining the owner's gain or loss on the sale, redemption (including redemption at maturity) or other disposition of a Premium Bond, the owner's tax basis in the Premium Bond is reduced by the amount of bond premium that is amortized during the period of ownership. As a result, an owner may realize taxable gain for federal income tax purposes from the sale or other disposition of a Premium Bond for an amount equal to or less than the amount paid by the owner for that Premium Bond. A purchaser of a Premium Bond in the initial public offering who holds that Premium Bond to maturity (or, in the case of a callable

Premium Bond, to its earlier call date that results in the lowest yield on that Premium Bond) will realize no gain or loss upon the retirement of that Premium Bond.

*Owners of Premium Bonds should consult their own tax advisors as to the determination for federal income tax purposes of the existence of bond premium, the determination for federal income tax purposes of the amount of bond premium properly accruable or amortizable in any period with respect to the Premium Bonds, other federal tax consequences in respect of bond premium, and the treatment of bond premium for purposes of state and local taxes on, or based on, income.*

#### **DISCLOSURE REQUIRED BY FLORIDA BLUE SKY REGULATIONS**

Florida law requires the County to make a full and fair disclosure of any bonds or other debt obligations which it has issued or guaranteed and which are or have been in default as to principal or interest at any time after December 31, 1975 (including bonds or other debt obligations for which it has served as a conduit issuer). Florida law further provides, however, that if the County in good faith believes that such disclosures would not be considered material by a reasonable investor, such disclosures may be omitted. The County is not and has not been in default as to principal and interest on bonds or other debt obligations which it has issued as the principal obligor or guarantor.

There are several special purpose governmental authorities of the County that serve as conduit issuers of private activity bonds for purposes such as housing, industrial development and health care. Defaults have occurred in connection with some of those private activity bonds; however, such defaults affect only the defaulted issues and have no effect on the payment of the Series 2019 Bonds. The County has no obligation to pay such bonds and the conduit issuers had only a limited obligation to pay such bonds from the payments made by the underlying obligors with respect to such issues. Therefore, the County in good faith believes that defaults relating to conduit issuers are not material with regard to the Series 2019 Bonds and any disclosure concerning any defaults of conduit financings is not necessary.

#### **CONTINUING DISCLOSURE**

##### **General Undertaking**

The County has covenanted in the Series 2019 Resolution, in accordance with the provisions of, and to the degree necessary to comply with, the secondary disclosure requirements of Rule 15c2-12 (the “Rule”) of the Securities and Exchange Commission (the “SEC”), to provide or cause to be provided for the benefit of the beneficial owners of the Series 2019 Bonds to the Municipal Securities Rulemaking Board (the “MSRB”) via its Electronic Municipal Market Access system (“EMMA”) and in an electronic format prescribed by the MSRB and such other municipal securities information repository as may be required by law or applicable regulation, from time to time (each such information repository, a “MSIR”), the information set forth in the Series 2019 Resolution, commencing with the Fiscal Year ending September 30, 2018. See “APPENDIX H - CONTINUING DISCLOSURE UNDERTAKING.”

The County has selected Digital Assurance Certification, L.L.C. (“DAC”) to serve as the County’s disclosure dissemination agent for purposes of filing the information as required by the Rule with the MSRB in an electronic format prescribed by the MSRB. During any period that DAC or any other party is acting as disclosure dissemination agent for the County with respect to the County’s continuing disclosure obligations, the County will comply with the provisions of any agreement by and between the County and any such disclosure dissemination agent.

The County has reserved the right to modify from time to time the specific types of information provided or the format of the presentation of such information, to the extent necessary or appropriate in the judgment of the County; provided that the County has agreed that any modification will be done in a manner consistent with the Rule.

## **Procedures and Past Performance**

The County has procedures in place with respect to its continuing disclosure undertakings and, as noted above, utilizes DAC to assist it in its compliance. The following information describes the instances of non-compliance with such undertakings, known to the County, in the past five years.

The County inadvertently failed to provide timely notice of the occurrence of the County's failure to comply with the terms of the rate covenant in the master ordinance (the "Seaport Bond Master Ordinance") for its revenue bonds secured by the Net Revenues of the Seaport Department (the "Seaport Revenue Bonds") and general obligation bonds secured by both the Net Revenues of the Seaport Department and the obligation of the County to budget from ad valorem taxes levied on property in the County without limit as to rate or amount (the "Seaport General Obligation Bonds"), for Fiscal Year 2013. Based on an adjustment to Seaport Revenues for a credit due under a cruise line incentive agreement required by the County's outside auditor in the course of performing its annual audit for Fiscal Year 2013, it was determined that the Seaport Department did not have sufficient Seaport Revenues to meet the rate covenant in the Seaport Bond Master Ordinance for Fiscal Year 2013. Due to the timing of the adjustment, the County failed to timely file notice within ten days of the occurrence of the notice event, as required by the Rule. The notice filing with respect to the failure to meet the terms of the rate covenant was cured on April 3, 2014.

With respect to the County's Guaranteed Entitlement Refunding Revenue Bonds, Series 2007 (the "Series 2007 Guaranteed Entitlement Revenue Bonds"), the County has included agreed-upon annual financial information relating to such bonds in its Annual Report to Bondholders filed each year with EMMA, but failed to provide proper indexing of such information in relation to the Series 2007 Guaranteed Entitlement Revenue Bonds. This indexing discrepancy was remedied by the County on April 30, 2014, and reflected correctly on EMMA as of May 1, 2014.

In addition, the County inadvertently failed to file notices of ratings downgrades by S&P of MBIA Insurance Corporation ("MBIA") affecting the insured ratings on certain bonds issued by the County and insured by MBIA. Each of these notice failures was cured by the County on November 22, 2013, April 1, 2014, and April 21, 2015.

The County is the sole borrower under loans from the Sunshine State Governmental Financing Commission (the "Commission"), funded by the Commission's fixed-rate Revenue Bonds (Miami-Dade County Program), Series 2010A-1, 2010B-1, 2011A, 2011B-1, and 2011C-1 (collectively, the "Commission Bonds") and, as such, an "obligated person" under the Rule. Pursuant to its undertakings with the Commission, the County is required to provide certain annual financial information, including its comprehensive annual financial report, for filing by the Commission with the MSRB by June 1 of each year, along with County event and late filing notices, as required by the Rule. While the County independently filed its required annual financial information for Fiscal Years 2011 through 2014 with the MSRB, such information was not cross-referenced to the CUSIP numbers for the Commission Bonds. In September 2015, the Commission made the corrective filings needed to incorporate the County's annual financial information for Fiscal Years 2011 through 2014 into the continuing disclosure archive for the Commission Bonds.

## **Limited Information; Limited Rights of Enforcement**

The County's obligation under its continuing disclosure undertaking with respect to the Series 2019 Bonds is limited to supplying limited information at specified times and may not provide all information necessary to determine the value of the Series 2019 Bonds at any particular time.

The County has agreed that its continuing disclosure undertaking is intended to be for the benefit of the Beneficial Owners of the Series 2019 Bonds and shall be enforceable by such Beneficial Owners if the County fails to cure a breach within a reasonable time after receipt of written notice from a Beneficial Owner that a breach exists; provided, however, that any Beneficial Owner's right to enforce the provisions of the undertaking shall be on behalf of all Beneficial Owners and shall be limited to a right to obtain specific performance of the County's obligations with respect to continuing disclosure under the Bond Resolution in a federal or state court located within the County, and any failure by the County to comply with the provisions of the undertaking shall not be a default with respect to the Series 2019 Bonds.

## **EMMA**

Under existing law, County filings of continuing disclosure under the County's continuing disclosure undertaking must be made through EMMA. Investors can access EMMA at [www.emma.msrb.org](http://www.emma.msrb.org) and follow the instructions provided on such website to locate filings by the County with respect to the Series 2019 Bonds. While all filings under the Rule must be made through EMMA, filings made by the County prior to July 1, 2009, with respect to its continuing disclosure obligations relating to the Outstanding Bonds cannot be found through EMMA and must be located through the pre-existing MSIRs.

## **RATINGS**

S&P, Moody's and Fitch (each as defined below) have assigned ratings of "AA-" (stable outlook), "Aa3" (stable outlook) and "A+" (stable outlook), respectively, to the Series 2019 Bonds. Such ratings, including any related outlook with respect to potential changes in such rating, reflect only the views of such organizations and are not a recommendation to buy, sell or hold the Series 2019 Bonds. An explanation of the procedures and methodology used by each rating agency and the significance of such ratings should be obtained from the rating agency furnishing the same, at the following addresses: S&P Global Ratings ("S&P"), 55 Water Street, New York, New York 10041; Moody's Investors Service, Inc. ("Moody's"), 7 World Trade Center, 250 Greenwich Street, 23rd Floor, New York, New York 10007; and Fitch Ratings ("Fitch"), 33 Whitehall Street, New York, New York 10004. Generally, a rating agency bases its rating on the information and materials furnished to it and on investigations, studies and assumptions of its own. There is no assurance that any such ratings will continue for any given period of time or that such ratings will not be revised downward or withdrawn entirely by the rating agencies concerned, if in the judgment of such rating agencies, circumstances so warrant. Any such downward revision or withdrawal of such ratings may have an adverse effect on the market price of the Series 2019 Bonds.

## **INDEPENDENT ACCOUNTANTS**

The financial statements of the Department for the Fiscal Year ended September 30, 2017, included in APPENDIX C were audited by Marcum, LLP, independent certified public accountants. Marcum, LLP (1) has not been engaged to perform, and has not performed since the date of its report on such financial statements, any procedures with respect to such financial statements and (2) has not performed any procedures relating to this Official Statement. The consent of Marcum, LLP for the use of the financial statements herein has not been sought. *See "APPENDIX C – Audited Financial Report of the Miami-Dade Water and Sewer Department for Fiscal Year Ended September 30, 2017."*

## **PENSIONS AND OTHER POSTEMPLOYMENT BENEFITS**

The Department, as an agency of the County, participates in and contributes to the Florida Retirement System. *See "Note 9 – Pension Plan" in "APPENDIX C – AUDITED FINANCIAL REPORT OF THE MIAMI-DADE WATER AND SEWER DEPARTMENT FOR FISCAL YEAR ENDED SEPTEMBER 30, 2017."* The County also provides health care and non-pension benefits to retired employees eligible to participate in the County's postemployment benefit plan as described in "Note 14 – Postemployment Benefits Other Than Pensions" included in Appendix C.

## **FINANCIAL ADVISOR**

Public Resources Advisory Group, St. Petersburg, Florida, is the Financial Advisor to the County with respect to the issuance and sale of the Series 2019 Bonds. The Financial Advisor has assisted the County in the preparation of this Official Statement and has advised the County as to other matters relating to the planning, structuring and issuance of the Series 2019 Bonds. The Financial Advisor is not obligated to undertake and has not undertaken to make an independent verification or to assume responsibility for the accuracy, completeness or fairness of the information contained in this Official Statement.

Public Resources Advisory Group is an independent advisory firm and is not engaged in the business of underwriting, trading or distributing municipal or other public securities.

## **UNDERWRITING**

Morgan Stanley & Co., LLC, as representative, and the other underwriters listed on the cover page (collectively, the “Underwriters”), have agreed pursuant to a bond purchase agreement between the County and the Underwriters with respect to the Series 2019 Bonds (the “BPA”), subject to certain conditions, to purchase the Series 2019 Bonds from the County at a purchase price equal to the par amount of the Series 2019 Bonds, plus original issue premium of \$29,826,132.55, less an underwriters’ discount of \$1,031,485.65 (0.442119% of the principal amount of the Series 2019 Bonds). The initial public offering prices and yields set forth on the inside cover of this Official Statement may be changed by the Underwriters and the Series 2019 Bonds may be offered and sold to certain dealers (including dealers depositing such Series 2019 Bonds into investment trusts) and others at the prices lower than or yields higher than such public offering yields. The Underwriters reserve the right to over allot or effect transactions that stabilize or maintain the market prices of the Series 2019 Bonds at levels above that which might otherwise prevail in the open market and to discontinue such stabilizing, if commenced, at any time.

The Underwriters will be compensated by a fee and/or an underwriting discount that will be set forth in the BPA to be negotiated and entered into in connection with the issuance of the Series 2019 Bonds. Payment or receipt of the underwriting fee or discount will be contingent on the closing of the transaction and the amount of the fee or discount may be based, in whole or in part, on a percentage of the principal amount of the Series 2019 Bonds. While this form of compensation is customary in the municipal securities market, it presents a conflict of interest since the Underwriters may have an incentive to recommend to the County a transaction that is unnecessary or to recommend that the size of the transaction be larger than is necessary unless a larger deal size is deemed by the issuer to be financially beneficial.

Certain of the Underwriters and their respective affiliates are full service financial institutions engaged in various activities, which may include sales and trading, commercial and investment banking, advisory, investment management, investment research, principal investment, hedging, market making, brokerage and other financial and non-financial activities and services. Certain of the Underwriters and their respective affiliates have provided, and may in the future provide, a variety of these services to the County and to persons and entities with relationships with the County, for which they received or will receive customary fees and expenses.

In the ordinary course of their various business activities, certain of the Underwriters and their respective affiliates, officers, directors and employees may purchase, sell or hold a broad array of investments and actively trade securities, derivatives, loans, commodities, currencies, credit default swaps and other financial instruments for their own account and for the accounts of their customers, and such investment and trading activities may involve or relate to assets, securities and/or instruments of the County (directly, as collateral securing other obligations or otherwise) and/or persons and entities with relationships with the County. Certain of the Underwriters and their respective affiliates may also communicate independent investment recommendations, market color or trading ideas and/or publish or express independent research views in respect of such assets, securities or instruments and may at any time hold, or recommend to clients that they should acquire, long and/or short positions in such assets, securities and instruments. Such investment and securities activities may involve securities and instruments of the County.

In addition, certain of the Underwriters have entered into distribution agreements with other broker-dealers (that have not been designated by the County as Underwriters) for the distribution of the Series 2019 Bonds at the original issue prices. Such agreements generally provide that the relevant Underwriter will share a portion of its underwriting compensation or selling concession with such broker-dealers.

## **RELATIONSHIPS OF PARTIES**

A number of the firms serving as Bond Counsel, Disclosure Counsel or Underwriters’ counsel (1) have represented and may continue to represent one or more of the Underwriters in connection with other transactions in jurisdictions other than the County and (2) represent the County on certain other matters and represent certain other clients in matters adverse to the County.

## **EXPERTS**

The report of the Consulting Engineer to the Department included in APPENDIX A to this Official Statement was prepared by Arcadis, Miami, Florida, and Planning and Economics Group, Inc., Miami, Florida in connection with the Series 2019 Bonds.

## **LEGAL MATTERS**

Certain legal matters incident to the issuance of the Series 2019 Bonds and with regard to the tax-exempt status of the interest on the Series 2019 Bonds (*see* “TAX MATTERS”) are subject to the legal opinions of Squire Patton Boggs (US) LLP, Miami, Florida, and D. Seaton and Associates, P.A., Miami, Florida, Bond Counsel to the County, copies of whose legal opinions will be delivered with the Series 2019 Bonds. Certain other legal matters will be passed upon for the County by the Office of the Miami-Dade County Attorney. Certain legal matters relating to disclosure will be passed upon for the County by Hunton Andrews Kurth LLP, Miami, Florida, and DiFalco & Fernandez LLLP, Miami, Florida, Disclosure Counsel. Liebler, Gonzalez & Portuondo, Miami, Florida, is acting as counsel to the Underwriters solely for the purposes of preparing the bond purchase agreement and any agreements among the Underwriters; they have not been asked to and are not passing on the accuracy or completeness of this Official Statement.

The proposed text of the legal opinions of Bond Counsel is set forth as APPENDIX F to this Official Statement. The proposed text of the legal opinion to be delivered to the County by Disclosure Counsel is set forth as APPENDIX G to this Official Statement. The actual legal opinions to be delivered may vary from the text of APPENDIX F or APPENDIX G, as the case may be, if necessary, to reflect facts and law on the date of delivery of the Series 2019 Bonds.

While Bond Counsel has participated in the preparation of certain portions of this Official Statement, it has not been engaged by the County to confirm or verify, and except as may be set forth in the opinions of Bond Counsel delivered to the Underwriters, expresses and will express no opinion as to the accuracy, completeness or fairness of any statements in this Official Statement, or in any other reports, financial information, offering or disclosure documents or other information pertaining to the County or the Series 2019 Bonds that may be prepared or made available by the County, the Underwriters or others to the Holders of the Series 2019 Bonds or other parties.

The legal opinions of Bond Counsel, Disclosure Counsel and the Office of the Miami-Dade County Attorney are based on existing law, which is subject to change. Such legal opinions are further based on factual representations made to Bond Counsel, Disclosure Counsel and the Office of the Miami-Dade County Attorney as of the date thereof. Bond Counsel, Disclosure Counsel and the Office of the Miami-Dade County Attorney assume no duty to update or supplement their respective opinions to reflect any facts or circumstances, including changes in law, that may thereafter occur or become effective.

The legal opinions to be delivered concurrently with the delivery of the Series 2019 Bonds express the professional judgment of the attorneys rendering the opinions regarding the legal issues expressly addressed therein. By rendering a legal opinion, the opinion giver does not become an insurer or guarantor of the result indicated by that expression of professional judgment, of the transaction on which the opinion is rendered, or of the future performance of parties to the transaction. Nor does the rendering of an opinion guarantee the outcome of any legal dispute that may arise out of the transaction.

## **CERTIFICATE CONCERNING THE OFFICIAL STATEMENT**

Concurrently with the delivery of the Series 2019 Bonds, the County will furnish its certificate, executed by the County’s Finance Director and the Department’s Director to the effect that, to the best of their knowledge, this Official Statement, as of its date and as of the date of delivery of the Series 2019 Bonds, does not contain any untrue statement of material fact and does not omit any material fact that should be included herein for the purpose for which the Official Statement is to be used, or which is necessary to make the statements contained herein, in light of the circumstances under which they were made, not misleading.

## **MISCELLANEOUS**

References to the Bond Ordinance and certain other contracts, agreements and other materials not purporting to be quoted in full are brief outlines of certain provisions and do not purport to summarize or describe all the provisions of such documents. Reference is hereby made to such documents and other materials for the complete provisions, copies of which will be furnished by the County upon written request.

Any statements in this Official Statement involving matters of opinion, whether or not expressly so stated, are intended as such and not as representations of fact. Statements in this Official Statement, while not guaranteed, are based upon information which the County believes to be reliable.

The delivery of this Official Statement by the County has been duly authorized by the Board.

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**APPENDIX A**  
**CONSULTING ENGINEER'S REPORT**

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Miami-Dade Water & Sewer Department

## CONSULTING ENGINEER'S REPORT

Water and Sewer System Revenue Bonds, Series  
2019

January 8, 2019

## CONSULTING ENGINEER'S REPORT

## CONSULTING ENGINEER'S REPORT

Water and Sewer System Revenue  
Bonds, Series 2019

**Arcadis U.S., Inc.**

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John R. Kersten  
Vice President

### PLANNING & ECONOMICS GROUP

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Isabel Gonzalez-Jettinghoff  
President

Prepared for:

Mr. Kevin Lynskey

Director

Miami-Dade Water and Sewer Department

3071 SW 38<sup>th</sup> Avenue

Miami, Florida 33146

Prepared by:

Arcadis U.S., Inc.

201 South Biscayne Boulevard

28th Floor

Suite 2845

Miami

Florida 33131

Tel 305 913 1316

Our Ref.:

04613080.0006

Date:

January 8, 2019

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Mr. Kevin Lynskey  
Miami-Dade Water and Sewer Department  
3071 SW 38th Avenue  
Miami, Florida 33146

Arcadis U.S., Inc.  
201 South Biscayne Boulevard  
28th Floor  
Suite 2845  
Miami  
Florida 33131  
Tel 305 913 1316  
Fax 305 913 1301  
www.arcadis.com

Subject:

Consulting Engineer's Report, Water and Sewer System Revenue Bonds, Series 2019

WATER RESOURCES

Dear Mr. Lynskey:

Date:  
January 8, 2019

Arcadis U.S., Inc. (Arcadis), in association with Planning & Economics Group Inc., (jointly referred to as the "Consultant") has been engaged by the Miami-Dade Water and Sewer Department (the "Department") to prepare the Consulting Engineer's Report for the proposed issuance of the Series 2019 Bonds, pursuant to Miami-Dade County Ordinance 93-134, as amended (the Master Bond Ordinance). The report has been prepared for inclusion into the Official Statement for the Series 2019 Bonds.

Contact:  
John Kersten

Phone:  
(407) 408-1885

The purpose of the report and its accompanying analysis is to assess the feasibility of issuing the Series 2019 Bonds, after a review by the Consultant of the operations, condition assessment, and finances of the Department. The report presents certain operating aspects of the Department, summaries of facility inspections and a five-year feasibility analysis.

Email:  
John.Kersten@arcadis.com

Our ref:  
04613080.0006

The Series 2019 Bonds proceeds will be used for the following purposes:

**Florida License Numbers**

- Refund all or a portion of the outstanding Miami-Dade County, Florida Water and Sewer System Commercial Paper Notes Series A-1 (Tax-Exempt), and Miami-Dade County, Florida Water and Sewer System Commercial Paper Notes, Series B-1 (Tax-Exempt);
- Make a deposit to the Reserve Account for the Series 2019 Bonds; and
- Pay the cost of issuance of the Series 2019 Bonds, which may include the cost of the premium for municipal bond insurance.

**Engineering**  
7917

Geology  
GB564

Surveying  
LB7062

Under the terms of the Department's Master Bond Ordinance, an outside bond engineering consultant is engaged to annually inspect and evaluate approximately one-third of the water and wastewater system. The results of these inspections conducted by the Consultant are documented in annual reports for FY 2017 that describe the condition of the inspected facilities. The Consultant

has, as the Department's current bond engineering consultant, as part of this report, conducted inspections of facilities that were scheduled to be inspected for the preparation of the FY 2017 annual report.

Based on this study we offer the following statements and conclusions concerning the Department's financial and operational conditions with respect to the issuance of the Series 2019 Bonds:

1. Based on onsite physical inspections and investigations of major system facilities conducted in 2016, 2017, and 2018, and discussions with key Department staff at that time, it is our opinion that the water and wastewater systems are in adequate operating condition with some components of the systems in more immediate need of renewal or replacement (R&R) than others. Steps are being taken by the Department to address the facilities' R&R needs to return them to good operating condition. The Department has also identified and addressed critical needs in the system's underground infrastructure. The projects contained in the Department's proposed MYCIP for fiscal years 2019 through 2024 are part of an overall program to maintain or improve the water and wastewater systems in good operating condition.
2. Based on review of the organizational structure of the Department, and interviews with key managers, conducted in 2018, it is our opinion that the Department is organized in a manner which provides for delegation of management authority and responsibility through the various organizational levels.
3. Based on actual and estimated future annual financial operations of the Department, it is our opinion that, with the implementation of rate increases noted in our analysis, the Department will generate projected Pledged Revenues sufficient during the next five years to meet the Department's principal financial requirements:
  - a. Fund all expenses of operation, maintenance, repair and replacement of the Department;
  - b. Fund all reserve funds required to be established out of such Pledged Revenues;
  - c. Fund the principal and interest on all Outstanding Bonds and Subordinate Obligations issued under, or pursuant to, the Master Bond Ordinance, as the same become due and payable, for which such Revenues are pledged; and
  - d. Meet requirements set forth in sections 208 and 602 of the Master Bond Ordinance, which requires the Department to meet specific debt service coverage ratios;
  - e. Fund the costs of issuance.
4. In our opinion, water and wastewater rates, fees, and charges, including projected increases are within generally acceptable ranges for such services and are collectible.
5. The existing water and wastewater infrastructure, together with planned system improvements, will provide the Department with adequate water and wastewater capacity to meet demands in the service area through Fiscal Year 2024.
6. Repairing and replacing linear aging underground infrastructure is at the forefront of the Department's concerns. The Department has made a concerted effort to assess the condition of its most critical water and wastewater underground infrastructure and has made a priority the repairing, rehabilitating or replacing of vulnerable water transmission and sewage collection lines.

7. On May 21, 2013, the Board of County Commissioners adopted Resolution R-393-13 approving the execution of the Consent Decree (Case: No. 1:12-cv-24400-FAM) between Miami-Dade County, the United States of America, the State of Florida and the Florida Department of Environmental Protection (FDEP). This Consent Decree closed the Department's previous First Partial Consent Decree and the Second and Final Partial Consent Decree with the EPA. The Consent Decree focuses primarily on system improvements at the treatment plants, the collection system, and the continuation of the capacity maintenance program, including enforcement of the 10-hour criterion at pump stations and the pump station remote monitoring program (SCADA system). The Consent Decree identifies project costs of \$1.6 billion, which is reflected in the Department's Five-Year Capital Improvement Program. As a part of the terms and conditions of the Consent Decree, the Department must submit monthly status reports detailing the status of specific activities necessary to meet the requirements of the Consent Decree. It is important to note that all projects contained in the Consent Decree are included in the CIP, but as projects develop, schedules for completion may be modified, with the approval of the EPA.
8. The Department is subject to the State of Florida Senate Bill 1302 (Chapter 2008-232, Laws of Florida, Section 403.086 (9)), as amended in 2013 by Florida Senate Bill 444, that requires the six ocean outfalls along the southeast coast of Florida, that are being used for treated wastewater disposal, be eliminated as a primary means of domestic wastewater discharge by 2025. The Department also needs to reduce nutrient discharges by 2018 and reuse 60 percent of the wastewater flows by 2025. The Department operates two of the six ocean outfalls; one at the North District Wastewater Treatment Plant (NDWWTP) and the second at the Central District Wastewater Treatment Plant (CDWWTP). Meeting these requirements will significantly increase the capital infrastructure needs of the Department over the next 20 years.

During the review, the Consultant used and relied upon certain information provided by sources which the Consultant believes to be reliable. The Consultant believes the information provided is true, correct and reasonable for the purposes of this Report. The Consultant has not made an independent analysis, to verify all the information provided, or to render an independent judgment of the validity of all the information provided by others. As such, the Consultant cannot, and does not, guarantee the accuracy thereof to the extent that such information, data, or opinions were based on information provided by others. In preparing this Report and the opinions presented herein, the Consultant has made certain assumptions with respect to conditions that may exist, or events that may occur in the future. The review was performed in accordance with generally accepted engineering practice.

Kevin Lynskey  
Miami-Dade Water and Sewer Department  
January 8, 2019

The review included such observations and analyses as the Consultant, in its professional capacity, deemed necessary for this Report. The Consultant believes that the use of this information and these assumptions is reasonable for purposes of this Report. However, some events may occur, or circumstances change, that cannot be foreseen or controlled by the Consultant and that may render these assumptions incorrect. To the extent the actual future conditions differ from those assumed herein or provided to the Consultant by others, the actual results may differ, in some cases materially, from those that have been forecast in this Report.

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PLANNING & ECONOMICS GROUP

John R. Kersten  
Vice President

Isabel Gonzalez-Jettinghoff  
President



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# 1 INTRODUCTION

## 1.1 Background

Miami-Dade County is located along the southeast tip of the Florida peninsula, bounded by Biscayne Bay and the Atlantic Ocean to the east, Everglades National Park to the west, the Florida Keys to the south, and Broward County to the north. It occupies an area of more than 2,000 square miles, one-third of which is in the Everglades National Park. The total population served by the County is more than 2.7 million, with approximately 1.4 million in its 34 municipalities and the rest in the unincorporated area. Due to its proximity and high volume of travel and trade within the region, Miami-Dade County is often referred to as the “Gateway to Latin America and the Caribbean.”

In October 1972, the Board of County Commissioners (BCC) of Miami-Dade County, Florida created the Miami-Dade Water and Sewer Authority for the purpose of establishing an agency responsible for providing water and wastewater services throughout the County. In 1973, all properties of the water and wastewater systems of the City of Miami and of the County were put under the control of the Department. The BCC changed the status of the Authority to that of a County department effective November 1, 1983, under the provisions of Miami-Dade County Ordinance 83-92, establishing the “Miami-Dade Water and Sewer Authority Department.” On October 19, 1993, the Department changed its name to the Miami-Dade Water and Sewer Department.

The Department’s Water System, considered the largest water utility in the Southeast United States, serves approximately 447,209 retail customers and 15 wholesale customers within the County. Water is drawn primarily from the surficial Biscayne Aquifer, a non-artesian (or near surface) aquifer which underlies an area of about 3,200 square miles in Miami-Dade, Broward and Palm Beach counties. The water system consists of three regional water treatment plants (WTPs). Currently, five small auxiliary treatment facilities serve the southernmost area of the County. Three of these systems will be replaced with the proposed South Miami Heights WTP. The Hialeah Reverse Osmosis WTP, a joint venture between the Department and City of Hialeah, is completed and currently adds 7.5 MGD of capacity to the system. There are 15 major wellfields comprised of 95 individual wells, which supply untreated water to the WTPs. Distribution throughout the service area of more than 400 square miles is performed via seven remote finished water storage and pumping facilities through approximately 8,200 miles of water mains ranging in size from 2-inches to 72-inches in diameter.

The Wastewater System serves approximately 363,444 retail customers and 13 wholesale customers, consisting of 12 municipal customers and the Homestead Air Reserve Base. It consists of three regional wastewater treatment plants (WWTPs), 1,000 sewage pump stations, and nearly 6,300 miles of collection and transmission pipelines.

On May 21, 2013, the Board of County Commissioners authorized the execution of a Consent Decree (CD) between the County, the United States of America, the State of Florida, and the Florida Department of Environmental Protection (FDEP); for the Department’s improvements to the wastewater collection and transmission system and the treatment plants. This Consent Decree was filed in Federal Court on June 6, 2013 and entered on April 9, 2014 and resulted in the termination and closing of two existing Consent Decrees. The CD requires the County to Implement a Capacity, Management, Operations and

Maintenance (CMOM) Program to document and enhance many of its existing programs. On March 28, 2017, the County came to an agreement with the US EPA and the FDEP to submit an updated CMOM consolidated schedule after all programs had been approved. This updated schedule was submitted for review and approval on August 2018 showing completion of the CMOM programs by 2030. It also requires the Department to upgrade its collection, transmission, and treatment facilities by completing over 80 individual capital improvement projects throughout the wastewater system. Implementation of the Consent Decree is underway, and the County is in full compliance with all CD requirements. The current estimated cost for completing the CD program is approximately \$1.6 billion.

## **1.2 Purpose of the Series 2019 Bonds**

The Series 2019 Bonds are being issued to provide funds, together with any other available funds of the Miami-Dade Water and Sewer Department to (i) refund all or a portion of the outstanding Miami-Dade County, Florida Water and Sewer System Commercial Paper Notes, Series A-1 (Tax -Exempt) and outstanding Miami-Dade County, Florida Water and Sewer System Commercial Paper Notes, Series B-1 (Tax- Exempt); (ii) make a deposit to the Reserve Account; and (iii) pay the costs of issuance of the Series 2019 Bonds, which may include payment of the premium for a municipal bond insurance policy securing the Series 2019 Bonds.

## **2 DEPARTMENT ORGANIZATION AND MANAGEMENT**

### **2.1 County-Wide Organization**

The Miami-Dade Water and Sewer Department (MDWASD), a department of Miami-Dade County (County), is under the supervision of the Mayor and is administered under policy decisions of the Board of County Commissioners (BCC). The organizational structure is comprised of:

- County Electorate
- Mayor
- Board of County Commissioners
- County Attorney's Office
- Water and Sewer Department (See Figure 2-2)

### **2.2 Water and Sewer Department Organization and Management**

Figure 2-1 presents the organizational structure of the Department, which was approved by the County on March 16, 2007, and implemented on October 1, 2007, the start of the fiscal year.

The Department's Director is appointed by the Mayor and oversees the overall management and direction of the Department. Two Deputy Directors, serving under the guidance of the Director, are responsible for Operations and Capital Improvements Regulatory Compliance. The Assistant Directors are responsible for Inter-governmental and Internal Operations, Customer Initiatives and Support, Water System Operations, Wastewater System Operations, Contract Compliance and Monitoring, Capital Program Management, Utility Engineering and Construction, and Planning and Regulatory Compliance. The Chief

Financial Officer is responsible for providing budgetary, capital planning and coordination, and performance improvement activities for the Department as well as the oversight of the entire financial operations of the Department.

## Miami-Dade Water and Sewer Department Organizational Chart

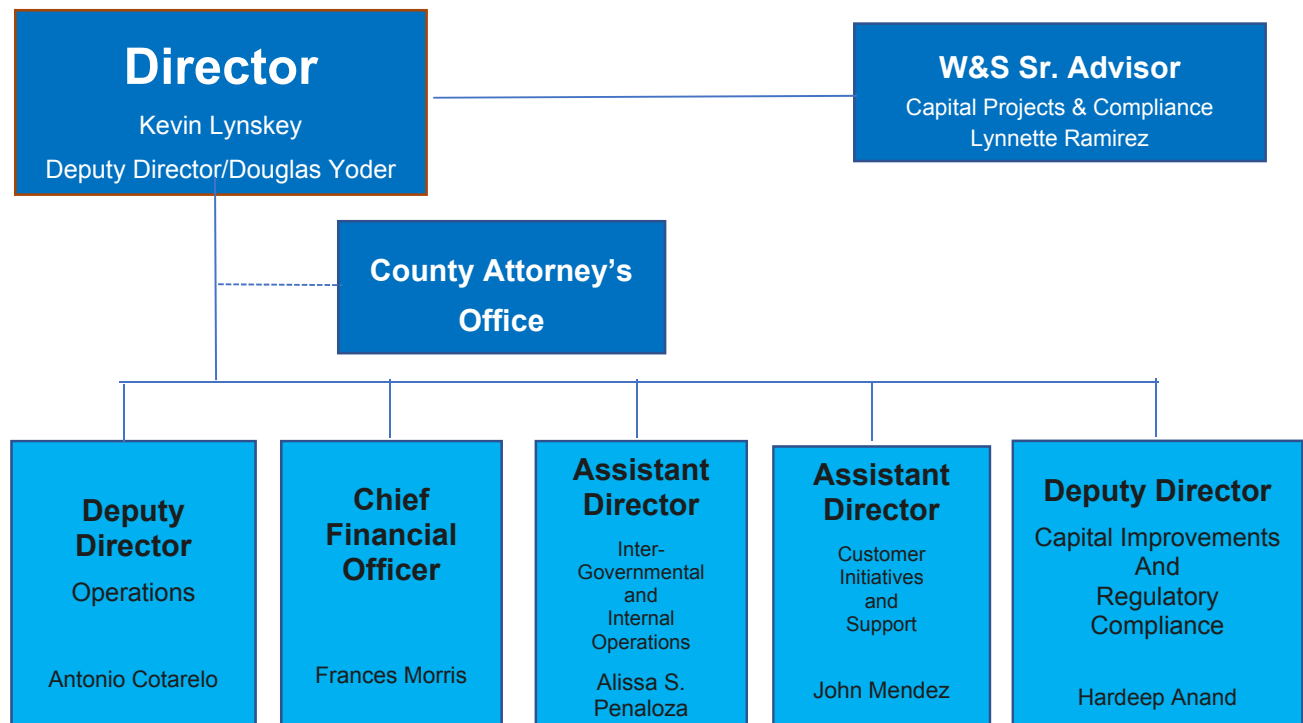


Figure 2-1 Organizational Structure of the Water and Sewer Department

The Assistant Directors of the Department are accountable for several divisions and sections within the organization. Each division has a Division Chief who is typically responsible for various sections that are led by Section Heads. The Assistant Director of Inter-governmental and Internal Operations is only responsible for sections or units within the organization and reports directly to the Director. The Customer Initiatives and Support Office also reports directly to the Director.

### 2.2.1 Office of the Director, Kevin Lynskey

The Office of the Director is responsible for overall administration of the Department, internal and external communications, media and customer relations, governmental affairs and public records requests. The office staff reporting directly to the Office of the Director is comprised of the Deputy Directors of



Operations and Capital Improvements Regulatory Compliance, the Chief Financial Officer, and the Assistant Directors of Inter-governmental and Internal Operations, and Customer Initiatives and Support. Specifically, the Office of the Director is responsible for:

- Formulating and establishing departmental policy and directing the overall operations;
- Coordinating activities with the County Executive's Office;
- Coordinating items submitted to the BCC;
- Directing state and federal legislative actions;
- Liaising with municipalities;
- Planning and coordinating capital improvement funding plans; and
- Reporting and monitoring the Department's operating resources allocation planning, including the development of the water and wastewater rates.

#### 2.2.1.1 Deputy Director/Senior Advisor, Douglas Yoder

Mr. Yoder serves as a senior advisor to the Director, providing policy review and analysis on operational, planning, development, financial, and inter-governmental issues to the Director and senior management and undertakes special projects as directed. This work relies upon extensive experience within the Department, within the County government, with the major utility research and policy associations, and with local, state, and federal regulatory agencies.

#### 2.2.1.2 Water and Sewer Sr. Advisor, Capital Projects & Compliance, Lynnette Ramirez, PE

Ms. Ramirez serves as a senior advisor to the Director, providing guidance over all activities related to the Capital Improvement Program and Regulatory Compliance of the Department. In addition, she is responsible for overseeing the County's Consent Decree (CD) which requires the implementation of a Capacity, Management, Operations and Maintenance (CMOM) Program, and the completion of over 80 individual capital improvement projects related to upgrades in its collection, transmission, and treatment facilities.

#### 2.2.1.3 Deputy Director of Operations, Antonio Cotarelo, PE

The Operations Group is responsible for:

- Directing water and wastewater operations; and
- Defining and monitoring operating goals and procedures for operations.

Water System Operations supplies customers with an uninterrupted supply of high-quality drinking water that meets federal, state, and local public health and environmental standards, in addition to managing the water resources for the Department. This group is responsible for the administration and operation of

the Water Production and Maintenance Division, Water Distribution Division, and Laboratory Division. The responsibilities of the divisions are as follows:

- The Water Transmission and Distribution Division is responsible for installation, repair, relocation, and replacement of all water mains and valves in the Department's water system and responding to emergencies.
- The Water Production and Maintenance Division, which consists of the Alexander Orr, Jr. Water Treatment Plant (WTP); Hialeah WTP; Preston WTP; Northwest Wellfield; and the South Dade Water System, is responsible for operating the WTPs, water pumping stations and reclaimed water system; along with providing electrical and structural maintenance for treatment facilities and pumping stations.
- The Laboratory Services Division is responsible for conducting all testing necessary to demonstrate compliance with Federal, State and County drinking water and wastewater regulations.
- Meter Installation Division.

Wastewater System Operations is responsible for treatment of all wastewater in accordance with federal, state and local public health and environmental standards, in addition to the disposal of all residuals/effluent. This group consists of the Pump Station Division, Wastewater Treatment and Maintenance Division, Wastewater Collection and Transmission Line Division, and the Telemetry, Supervisory Control and Data Acquisition Systems (SCADA) Division. The responsibilities of the division are as follows:

- The Pump Station Division is responsible for the operation of the Department's greater than 1,000 pump stations, as well as for coordinating personnel and materials needed to ensure that all lift station equipment is mechanically, electrically, and structurally operational.
- The Wastewater Treatment and Maintenance Division is responsible for the operation of the WWTPs and main pumping stations, and the mechanical, electrical, and structural maintenance for the WWTPs.
- The Wastewater Collection and Transmission Line Division is responsible for the installation, repair, relocation, and replacement of all gravity sewer lines, force mains, valves, sewer laterals, and manholes County-wide.
- The Telemetry (SCADA) Division is responsible for the operation and maintenance of the Department's SCADA network and system.

#### 2.2.1.4 Deputy Director, Capital Improvements and Regulatory Compliance, Hardeep Anand, PE

The Capital Improvements and Regulatory Compliance group is composed of three assistant directors: Planning and Regulatory Compliance, Utility Engineering and Construction, and Capital Program Management.

The Capital Improvements and Regulatory Compliance group is responsible for:

- Directing department-wide capital project planning, design, and construction, as well as regulatory compliance activities;
- Managing and overseeing the execution of the Department's capital improvement program;
- Directing permitting and program management for capital improvement projects;
- Ensuring compliance with state and federal agreements;
- Development of Department design and construction standards; and
- Planning the Department's future capital improvement program, considering infrastructure and regulatory drivers.

#### 2.2.1.5 Chief Financial Officer, Frances Morris

The Chief Financial Officer is responsible for providing budgetary, capital planning and coordination, and performance improvement activities for the Department as well as the oversight of the entire financial operations of the Department. The group consists of the Controller Division, Information Technology Division, Budget and Capital Financing Division, System Implementation Section, Contract Compliance and Quality Assurance, Quality Assurance and Quality Control, Contract Compliance and Monitoring Division, and Performance Management Division. The responsibilities of the division and sections are as follows:

- The Chief Financial Officer is responsible for all financing activities of the Department, including swap arrangements, interim and long-term financing, and State of Florida Revolving Fund (SRF) loan program loans.
- The Controller Division consists of a Special Projects Section; General Accounting Section; Customer Accounting Section; Special Billing and Collection Section; and Financial Reporting and Systems Development Section. This division is responsible for general ledgers, asset management, accounts payable, retail billing, special billing and collection, financial reporting and inventory control functions, and preparing financial statements and internal monthly management reports.
- The System Implementation Section is responsible for developing enhanced business processes to maximize the use of the Customer Care and Billing System (CCB), Enterprise Resource Planning, and Equipment Asset Management System enterprise software systems.
- The Cash and Grants Management is responsible for preparing and monitoring grant and loan applications; and performing all cash management, swap receipt analysis, debt service transfers, and construction fund reconciliations, monitoring compensating balance arrangements and investments.
- The Contract Processing Section is responsible for overseeing all payments made to the County's Internal Services Department (ISD), including issuing task orders, ensuring task orders comply with all County policies and procedures, and ensuring that payment requests are consistent with work to be done.
- Management and Performance Improvement Section is responsible for preparing the strategic and business plan, monitoring performance measures, facilitating process improvement teams,

coordinating the employee suggestion programs, managing projects and identifying opportunities to improve the performance of the Department.

- Budget Management Section is responsible for the development and monitoring of the Department's operating budget, and overall financial requirements. Designs rates, fees and charges to recover operating and maintenance costs, debt service payments, transfers to capital funds, and monitors reserve levels.
- Information Technology is responsible for developing, designing, maintaining and managing all of the Department's information systems, including hardware, networking, and software
- Capital Planning and Coordination Section is responsible for coordinating the development, funding, monitoring and implementation of the multi-year capital improvement plan (MYCIP). Determines and sizes the Department's future bond needs.

#### **2.2.1.6 Assistant Director – Customer Initiatives and Support Services, John Mendez**

Customer Initiatives and Support Services is responsible for directing general maintenance and human resources activities; and maintaining the Department's grounds and facilities. The group consists of the General Maintenance Division, along with the Retail Customer Service Division, and the Human Resources and Support Division.

#### **2.2.1.7 Assistant Director – Inter-governmental and Internal Operations, Alissa S. Penaloza**

Responsibilities for the Inter-governmental and Internal Operations include policy and legislation, procurement (goods and services, construction, architectural and engineering selection), security, public affairs, and real estate. These are under the Public Affairs Division, the Legislative and Inter-governmental Affairs Division, the Procurement and Stores Division, and the Security and Communications Division.

The Intergovernmental and Internal Operations group is directly responsible for:

- Directing, coordinating and monitoring local, state and federal legislative and policy initiatives and mandates
- Directing and managing department-wide procurement activities
- Directing, coordinating and monitoring compliance of safety measures and security standards at Departmental facilities
- Coordinating and directing communication initiatives and activities with internal and external stakeholders
- Managing the Department's real estate portfolio and coordinating all real estate

Overall responsibility of providing security for all the Department's facilities. Responsibilities include the physical aspects of the program, such as guard services; alarm monitoring; electronic intrusion and detection services; performing internal and external investigations at all Department facilities; and

managing the emergency management process both at the Department and at the County's Emergency Operations Center (EOC). This Division also works in conjunction with Miami-Dade County's Homeland Security Bureau.

## 3 SOCIOGRAPHIC AND DEMOGRAPHIC DATA

### 3.1 County History

The County is the largest county in the southeastern United States in terms of population. The County currently covers 2,209 land square miles, located in the southeastern corner of the State, and includes, among other municipalities, the cities of Miami, Miami Beach, Coral Gables, and Hialeah. In 2017, the population of the County was estimated to be 2.75 million.

The County was created on January 18, 1836 under the Territorial Act of the United States. It included the land area now forming Palm Beach County and Broward County, together with the land area of the present County. In 1909, Palm Beach County was established from the northern portion of what was then Dade County. In 1915, Palm Beach County and the County contributed nearly equal portions of land to create what is now Broward County. There have been no significant boundary changes to the County since 1915.

### 3.2 Economy (County)

The County's economy has transitioned from mixed service and industrial in the 1970s to a service economy. The shift to services is led by expansion of international trade, the tourism industry, and health services. Wholesale and retail trades have become stronger economic forces in the local economy and are projected to continue. This reflects the County's position as a wholesale center in Southeast Florida, serving a large international market. The tourism industry remains one of the largest sectors in the local economy.

### 3.3 Employment Data

Per Capita Personal Income for the Country, Southeast, Florida, and Miami-Dade County is presented in Table 3-1 below. As can be seen in the following table, the per capita personal income across all geographic areas has increased between 2010 and 2017.

Table 3-1 Per Capita Personal Income\*

Year	USA	Southeast	Florida	Miami-Dade
2010	\$40,545	\$36,475	\$38,511	\$38,245
2011	42,727	38,112	40,120	39,009
2012	44,582	39,418	40,944	39,513
2013	44,826	39,271	40,582	39,119
2014	47,025	41,206	43,146	41,989
2015	48,940	42,950	45,352	44,470
2016	49,831	43,723	46,148	44,380

2017	\$51,640	\$45,198	\$47,684	\$46,048
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**SOURCES:**

U.S. Department of Commerce Bureau of Economic Analysis; SAINC1 Personal Income Summary; Florida Research and Economic Information Database Application; October 2017.

\* All dollar estimates are in current dollars (not adjusted for inflation)

Tables 3-2 and 3-3 present data relative to the largest public and private employers in Miami-Dade County.

**Table 3-2 Thirteen Largest Public Employers**

Employers Name	Number of Employees
Miami-Dade County Public Schools	33,477
Miami-Dade County	25,502
U.S. Federal Government	19,200
Florida State Government	17,100
Jackson Health System	9,797
City of Miami	3,997
Florida International University	3,534
Homestead AFB	2,810
Miami VA Healthcare System	2,500
Miami-Dade College	2,390
City of Miami Beach	1,971
US Southern Command	1,600
City of Hialeah	1,578

**SOURCE:**

The Beacon Council, Miami, Florida, Miami Business Profile 2018

**Table 3-3 Fifteen Largest Private Employers**

Employers Name	Number of Employees
University of Miami	12,818
Baptist Health South Florida	11,353
American Airlines	11,031

Nicklaus Children's Hospital	3,500
Mount Sinai Medical Center	3,321
Florida Power and Light	3,011
Carnival Cruise Line	2,991
Royal Caribbean International/Celebrity Cruises	2,989
Wells Fargo	2,050
Bank of America Merrill Lynch	2,000
Fountainbleau Miami Beach	1,987
Burger King Corporation	1,885
JP Morgan Chase	1,300
Eulen America	1,205
Federal Express	1,161

SOURCE:

The Beacon Council, 2018

### 3.4 Population Data

Table 3-4 presents demographic data pertaining to population in incorporated and unincorporated areas of Miami-Dade County.



Table 3-4 Trend and Forecasts, Population in Incorporated and Unincorporated Areas

Year	Population Incorporated Areas	Population Unincorporated Areas	Total	Percentage Growth in Population*
<b>Trends:</b>				
2000	1,049,074	1,204,288	2,253,362	8.1
2010	1,386,864	1,109,571	2,496,435	10.8
2011	1,407,480	1,109,057	2,516,537	0.8
2012 Estimate	1,429,993	1,121,297	2,551,290	1.4
2013 Estimate	1,444,554	1,137,821	2,582,375	1.2
2014 Estimate	1,467,113	1,146,579	2,613,692	1.2
2015 Estimate	1,493,477	1,160,457	2,653,934	1.5
2016 Estimate	1,524,063	1,176,731	2,700,794	1.8
2017 Estimate	1,551,506	1,191,589	2,743,095	1.6
2018 Estimate	1,575,590	1,203,732	2,779,322	1.3
<b>Forecasts:</b>				
2020	N/A	N/A	2,872,760	3.4
2025	N/A	N/A	3,062,631	6.6
2030	N/A	N/A	3,215,054	5.0

#### SOURCES

U.S. Census Bureau, Decennial Census Reports for 1960-2010. Miami-Dade County, Department of Planning and Zoning, Research Section; October 2012. Projections provided by Florida Legislature Office of Economic and Demographic Research; April 2017 and 2018

\* Change in population from the year indicated on the prior line, not necessarily annual growth

## 4 WATER SYSTEM

This section presents the findings on the Department's Water System. These are presented in three primary discussions: 1) a description of the Water System, 2) a review of the regulatory issues and compliance for the Water System, and 3) an assessment of the general condition of the Water System's infrastructure.

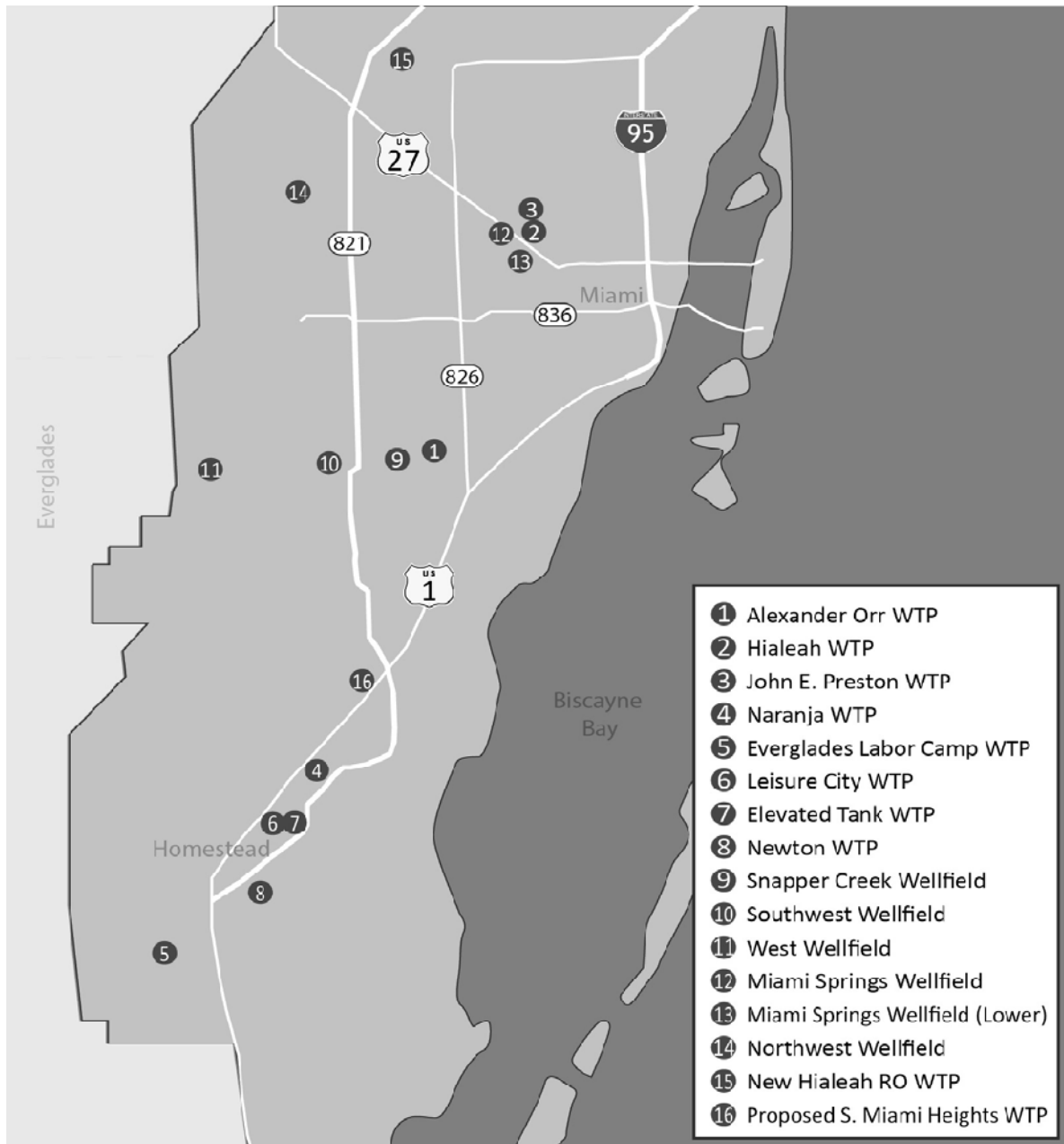
### 4.1 Introduction

The Water System consists of three regional water treatment plants (WTPs), the South Dade Water System (a series of wellfields and 5 small treatment facilities), treated water storage and pumping facilities, and approximately 8,574 miles of water transmission and distribution pipelines. The regional facilities are the Hialeah, John Preston, and Alexander Orr WTPs, which have a total combined rated treatment capacity of 481 million gallons per day (MGD) (448 MGD permitted capacity). The Hialeah and Preston plants serve the northern part of the system, the Alex Orr plant serves the central part of the system, and five small wellfields and treatment facilities, referred to as the South Dade Water System that serves the southernmost part of the County. The South Dade Water System has a permitted capacity of 14.2 MGD collectively. The location of major treatment facilities and wellfields are shown in Figure 4-1 below.

The overall annual average daily flow of the entire system was approximately 326 MGD in FY 2017. Raw water supply for the three treatment plants is currently drawn from 95 Biscayne Aquifer wells located in the major remote wellfields (Miami Springs, Northwest, West, Southwest, Snapper Creek, Hialeah and, John Preston) and several wells onsite at the three treatment plants. The South Dade Water System is served by 12 Biscayne Aquifer wells located at the five smaller wellfields mentioned above. The facilities utilize processes that include lime softening (i.e., reduction of hardness), filtration, and disinfection. Conditioning agents are used (e.g., phosphate, fluoride), to further enhance the stability and aesthetic quality (such as taste and color) of the treated water. Processes are employed to generally facilitate the handling, reduction, recycling and disposal of residuals produced by the treatment process. The South Dade Water System relies on disinfection and conditioning agents for treatment.

In response to continued growth, the Department identified in its 1997 Water Facilities Master Plan the need for a WTP and wellfield in South Miami-Dade near the 2000 Urban Development Boundary (UDB) to be located in South Miami Heights. The proposed South Miami Heights WTP is planned to replace three of the small treatment plants of the South Dade Water System. This plant will be a 20 MGD membrane softening and RO plant and will have the capacity to treat water from both the Biscayne and Floridan aquifers. The schedule for the construction of this facility is being evaluated in the context of water supply and demand to determine the appropriate timing for the project.

Distribution of finished water throughout the service area is accomplished with the use of six remote finished water storage and pumping facilities as well as storage and pumping stations located at the water treatment facilities. The elevated storage located at the NE 79<sup>th</sup> Street facility has been removed in recent years and no longer functions as a remote water storage area. The water system serves approximately 447,209 retail customers in a service area of approximately 400 square miles.



**Figure 4-1 Facility Location Map**

In accordance with the Master Bond Ordinance, the system is inspected on a rotating basis with all facilities inspected at least once every three years. Table 4-1 provides a summary of system assets inspections for operating FYs 2015, 2016, and 2017.

## 4.2 Raw Water Supply

The Department draws its raw water primarily from the surficial Biscayne Aquifer, which underlies an area of approximately 3,200 square miles in Miami-Dade, Broward, and Palm Beach Counties. Table 4-1 provides a summary of each of the Miami-Dade County permitted Biscayne aquifer wells. John Preston, Northwest, Alexander Orr, Snapper Creek, Southwest, West and South Dade wellfields all have back-up emergency power generators.

**Table 4-1 Summary of Biscayne Aquifer Wellfields**

WELLFIELDS	WTP SERVED	DESIGN CAPACITY (MGD)	NUMBER OF WELLS	PERMITTED ALLOCATION (Million Gallons per Day)
Hialeah	Hialeah/Preston	12.54	3	25,550 <sup>1</sup>
John Preston	Hialeah/Preston	53.28	7	-
Miami Springs				
Upper	Hialeah/Preston	79.30	Upper-12	-
Lower			Lower-8	
Medley (Stand-by)	Hialeah/Preston	48.96	Stand-by-4	-
Northwest	Hialeah/Preston	149.35	15	35,332 <sup>4</sup>
Alexander Orr	Orr	74.40	10	14,600 <sup>2</sup>
Snapper Creek	Orr	40.00	4	7,993
Southwest	Orr	161.20	17	39,931
West	Orr	32.40	3	5,475
South Miami Heights	Proposed SMH WTP	10.00	Proposed- 5	1,095 <sup>3</sup>
			Leisure City-4	
South Dade	South Dade Water System	19.01	Everglades-3	2,847
			Elevated Tank-2	
			Newton-2	

## Naranja-1

<sup>1</sup>Combined permitted capacity for the Hialeah, Preston and Miami Springs Upper and Lower well fields

<sup>2</sup>Combined permitted capacity for the Alex Orr, West, Southwest and Snapper Creek well fields

<sup>3</sup>New South Miami Heights water treatment plant to be redesigned to be able to treat both Biscayne and Floridian Aquifer waters.

<sup>4</sup>The Northwest wellfield does not have a withdrawal limit, but it has an Operation Plan limit of 98.6 MGD

Five additional Biscayne Aquifer wells in the South Dade raw water service area are being proposed. These new wells were to be at Former Plant (one well), and Roberta Hunter Park (four wells). These wells were originally intended to supply the new South Miami Heights WTP and would have replaced the Leisure City, Elevated Tank and Naranja wellfields. However, since the continued construction of this WTP has been placed on hold, the Department is not moving forward with these additional wells. Table 4-2 below provides a summary of each of the Miami-Dade County UFA wells.

**Table 4-2 Summary of Upper Floridian Aquifer Wellfields**

WELLFIELDS	WTP SERVED	DESIGN CAPACITY (MGD)	NUMBER OF WELLS	PERMITTED ALLOCATION (MGY)
Hialeah RO WTP	New Hialeah RO WTP	20.00	10 <sup>1</sup>	4,855
Southwest-Wellfield ASR	Alex Orr	10.00	2	1,522
West Wellfield ASR	Alex Orr	15.00	3	2,283
South Miami Heights	Proposed SMH WTP	24.00	7	8,494

<sup>1</sup> The schedule for the construction of this facility is being evaluated in the context of water supply and demand to determine the appropriate timing for the project.

## 4.3 Water Treatment Plants

The Department operates three regional WTPs: Hialeah, Preston, and Alex Orr; and smaller plants that are part of the South Dade Water System. The Hialeah RO WTP is not currently being operated by the Department. Table 4-3 summarizes the plant capacities and actual flows. A description of each WTP is provided in the subsections below.

**Table 4-3 WTP Capacities and Flows**

CHARACTERISTIC	FACILITY			
	Hialeah / Preston	Alexander Orr	Hialeah RO	South Dade Water System <sup>1</sup>
Permitted Plant Rated Capacity (MGD)	225.0 <sup>2</sup>	256.0 <sup>3</sup>	10.0 <sup>5</sup>	14.2
Actual Flows <sup>4</sup>				

Average Daily (MGD)	128.8	181.1	7.3 <sup>6</sup>	7.1
Peak Day (MGD)	151.0	212.2	7.9	8.7

1. Represents five smaller WTPs in southern Miami-Dade County.
2. Hialeah WTP permit capacity is 60 MGD and the John Preston WTP permit capacity is 165 MGD for a total of 225 MGD.
3. Treatment Facility capacity is 256 MGD but the permit is currently limited to 214.74 MGD, based on water allocation.
4. For the 12 months ending September 30, 2018.
5. Treatment plant capacity is 10 mgd, but permitted capacity is only 7.5 mgd. Approximately 50% of its capacity services the City of Hialeah and 50% MDWASD's system.
6. Average daily operating flows for the Hialeah RO facility have typically been around 7.5 MGD and it is currently not operated by the Department.

#### 4.3.1 Hialeah WTP

The Hialeah WTP was originally placed into operation in 1924 with a design capacity of 10 MGD. The facility has since undergone several modifications and expansions, which have increased the design capacity to 60 MGD. An interconnect between the Hialeah WTP and the Preston WTP allows for finished water to be routed to the Hialeah WTP low service pumps, thus increasing the finished water pumping capacity of that plant. According to Monthly Operating Reports (MORs) for the 12-month period ending September 30, 2017, the average daily flow was 55.1 MGD.

The Hialeah WTP unit processes include lime softening, recarbonation, chlorination and ammoniation for disinfection, fluoridation, and filtration to provide potable water to the public. The Hialeah WTP utilizes 20 air-stripping towers for removal of volatile organic contaminants (VOCs), which occur in the raw water drawn from the Hialeah and Miami Springs wellfields. The primary treatment components of the Hialeah WTP treatment process include sand traps and mix tanks, mechanical flocculators, clarifiers, recarbonation basins, chlorine contact basin, sand filters, and packed tower aeration for VOC stripping.

#### 4.3.2 John Preston WTP

The John Preston WTP (Preston WTP) was originally placed into operation in 1968 with a design capacity of 60 MGD. Several additions to the treatment process have brought the current design capacity to 165 MGD. MORs for the Preston WTP for the 12-month period ending September 30, 2017, indicates that the average daily flow was 76.4MGD.

The primary unit processes of the Preston treatment plant include lime softening (ferric-enhanced) units (Accelerators), recarbonation, dual media filtration, and disinfection using chloramination (i.e., chlorine combined with ammonia). The Preston WTP also utilizes 44 air-stripping towers for the removal of vinyl chloride and THMs from the raw water.

#### 4.3.3 Alexander Orr, Jr. WTP

The Alexander Orr, Jr. WTP (Orr WTP) was placed into operation in 1954 and has since undergone several modifications and expansions. The plant has a design capacity of 256 MGD. MORs for the Orr WTP for the 12-month period ending September 30, 2017, indicate that the average daily flow was 181.4 MGD.

The Orr WTP unit processes include lime softening, recarbonation, filtration, and disinfection (chlorination) to provide potable water to the public. Because of relatively low background levels of

natural organic compounds in the source water supplied by the Biscayne Aquifer to the Orr WTP, the lime softening process is effective in “softening” the water and complying with disinfection byproducts (DBP) standards.

#### **4.3.4 Hialeah RO WTP**

The Hialeah RO WTP entered into operation in November 2013 and is operated under a JPA between the County and the City of Hialeah. The plant was approved to operate at a capacity of 7.5 MGD with an additional 2.5 MGD capacity becoming available at a later date, if needed. The Hialeah RO WTP did not pass the initial acceptance test conducted in October 2013. Several attempts were made to pass the required acceptance test, which was ultimately successful on May 9, 2015. The plant was operational and provided an average daily flow of 5.9 MGD to the County and City of Hialeah during FY 2017 and met all applicable water quality requirements required by law. It should be noted that the plant operated at a consistent 7.5 MGD during FY 2017, other than the months of April 2017 to August 2017, when the plant operated at approximately half of the current capacity, ranging from 3.0 MGD to 4.7 MGD. The design-build-operate contractor continues to make repairs so that the City and Department can formally accept the plant.

#### **4.3.5 South Dade Water System**

The five small plants (Everglades Labor Camp, Newton, Naranja, Leisure City, and Elevated Tank WTPs) that make up the South Dade Water System utilize an in-line disinfection process with free chlorine and stabilization with the addition of sodium hexametaphosphate. All of the facilities used chlorine gas for disinfection, but within the last two years were retrofitted with bulk sodium hypochlorite onsite storage and feed pumps. Raw water is pumped directly from onsite wells and sodium hypochlorite is injected into the stream. The annual average daily flow from South Dade Water System in FY 2017 was 7.3 MGD, as indicated in MORs.

It is anticipated that the Naranja, Leisure City, and Elevated Tank WTPs will be replaced by the 20 MGD South Miami Heights WTP, a membrane softening and RO plant. The first stages of construction began in FY 2004 with the completion of the perimeter wall and other sections of the exterior. Installation of traffic lights and turn lanes comprising the entranceway into the facility began in FY 2005. Part of the raw water transmission mains that will serve the plant from its future wellfields were completed early during FY 2008. A parking lot and finished water mains were constructed during FY 2008 through FY 2011. The High Service Pump Station and reservoir were completed in FY 2012.

In July 2012, the South Florida Water Management District (SFWMD) issued a modified 20-Year Water Use permit to the Department authorizing an allocation of 3 MGD withdrawal rate from the Biscayne aquifer and 23.27 MGD from the Floridan Aquifer from the proposed wellfields to supply the water treatment plant.

The South Miami-Heights water treatment plant and associated water system improvements encompass the following projects:

- Biscayne Aquifer raw water supply wells and associated transmission mains
- Membrane softening and brackish RO water treatment plant

- RO Treatment for the Upper Floridan Aquifer raw water
- Upper Floridan Aquifer raw water supply wells and associated transmission mains
- Treated water reservoir and high service pumping station
- Treated water transmission mains
- Deep well injection

Due to the decrease in water demands, further construction of the South Miami Heights WTP has been placed on hold indefinitely. Guidance is being sought from the BCC to defer the “Design-Build-Finance-Operate-Maintain Services for South Miami Heights Water Treatment Plant” Program.

## 4.4 Transmission and Distribution

The potable water distribution network throughout the County consists of approximately 8,200 miles of pipe spanning over 400 square miles of service area. Pipe sizes range from 2-inch to 96-inch finished water transmission mains, with the majority of pipes between 8 and 10-inches.

All three treatment facilities are interconnected via the water distribution system and treated potable water can be transferred from north to south. The Hialeah and Preston water treatment facilities serve primarily the northern areas of Dade County and Alexander Orr and the South Dade systems serving the central area and most of the south areas of Dade County. The water transmission facilities are also referred to as part of the Department’s regional system. The regional system, the costs of which are allocated to all of the Department’s water customers, serve the entire system, both retail and wholesale customers. The distribution system serves only retail customers.

### 4.4.1 Hialeah/Preston Service Area

The Hialeah and Preston WTP service area utilizes a combined network of high-pressure and low-pressure systems with remote storage and pumping capabilities to service the north end of the County. The low-pressure system begins at the Hialeah WTP with a 42-inch main heading due east along N.W. 62nd Street and 36-inch and 42-inch mains heading southeast along Okeechobee Road from the plant. A series of pump stations are used to form the low-pressure loop in the southeast area from the plant. The 42-inch main along N.W. 62nd Street connects with the 67th Street pumping station where the water is redirected south through a 30-inch main. The 30-inch main continues south where it connects to the N.W. 36th Street pump station and ultimately to the Golf Grounds pump station, completing the north and east ends of the triangular loop. The mains along Okeechobee Road connect with the 30th Avenue booster pump station, which discharges into two 36-inch mains that connect to the Golf Grounds pump station and complete the low-pressure loop.

The northern section of the Hialeah/Preston service area is serviced by a high-pressure system consisting of five in-plant high service pumps with a total pumping capacity of 34 MGD. A high-pressure loop begins at the Preston WTP where a 60-inch main heads north along N.W. 57th Avenue to N.W. 191st Street, where it heads east. The 48-inch line then turns south at N.E. 20th Avenue and connects to a 54-inch main that connects to the N.W. 67th Street pumping station. The City of Hialeah, a wholesale customer receives water from the high-pressure system.



The treated water reservoirs from Preston and Hialeah are connected with an existing 60-inch interconnecting pipe. Currently, the Preston WTP provides treated water that is delivered to the Hialeah WTP's finished water reservoir and is pumped to the low-pressure system.

#### 4.4.2 Alexander Orr Service Area

The Orr WTP utilizes several points of entry into the distribution system for finished water. These include three mains of 48, 60, and 72-inch diameter from the East Pump Room and two 72-inch mains from the west pump room. Pressure is maintained throughout the distribution network by head pressure provided by high service pumps at the WTP. There is limited use of booster pump stations in the finished water transmission system.

#### 4.4.3 South Dade Water System Service Area

The distribution system for the five small plants of the South Dade Water System consists primarily of small diameter water mains ranging from 4 to 16-inches. While all of the WTPs have their own water main loops and service areas, the existing interconnectivity between the Leisure City, Elevated Tank, and Naranja WTPs allows the plants to form one major loop around a majority of the service area. Nearly 63 percent of the service area is served by this major loop that is bound on the north by S.W. 248th Street, on the south by S.W. 304th Street, on the east by S.W. 117th Avenue, and on the west by S.W. 172nd Street. The service area covers much of the southernmost part of the County with the exception of the Cities of Homestead and Florida City, which provide their own water service.

### 4.5 Storage and Re-pumping

Storage is available at each of the WTPs as well as throughout the distribution system. Table 4-4 provides a summary of the available on and offsite storage of the system and the re-pumping capacity of the system pump stations.

Table 4-4 Summary of Storage Facilities

FACILITY/LOCATION	DESCRIPTION	STORAGE CAPACITY (MG)	NUMBER OF PUMPS
<b>ONSITE STORAGE</b>			
Hialeah WTP	Ground Storage	3.0	5
	Clear Well	1.7	–
John Preston WTP	Ground Storage Tank 1	9.0	6
	Ground Storage Tank 2	14.0	–
	Clear Well	1.1	–
<b>Total Onsite Hialeah-Preston</b>		<b>28.8</b>	
	Ground Storage Tank 1	19.0	9

Alexander Orr WTP	Ground Storage Tank 2	20.0	—
	Ground Storage Tank 3	20.0	—
	Clear Well	1.6	—
<b>Total Onsite Orr</b>		<b>60.6</b>	
<b>Total Onsite Storage</b>		<b>89.4</b>	
<b>OFFSITE STORAGE</b>			
N.W. 20th St.	Ground Storage Tank	7.5	3
N.W. 36th St.	Ground Storage Tank	5.0	2
N.W. 67th St.	Ground Storage Tank	8.2	5
N.W. 30th Ave.	Ground Storage Tank	2.5	2
Carol City	Ground Storage Tank	3.0	4
<b>Total Offsite Storage</b>		<b>26.2</b>	
<b>Total System Storage</b>		<b>115.6</b>	

#### 4.5.1 Hialeah/Preston

The current available storage for the Hialeah/Preston WTPs is sufficient based on the current total plant capacity of the two plants. The criteria for storage is based on the ability to provide adequate fire flow, emergency storage, and equalization storage. The Hialeah/Preston WTPs utilize both onsite and remote storage facilities.

The Hialeah WTP and portions of the Preston WTP distribution network utilize a network of remote storage and pumping facilities to effectively transport water through the low-pressure system. The pumping stations serve in concert with the N.W. 20th Street (Golf Grounds) (3 pumps), Carol City (4 pumps), N.W. 30th Avenue (2 pumps), N.W. 36th Street (2 pumps), and N.W. 67th Street (5 pumps) remote storage facilities to maintain the flow throughout the low-pressure system.

#### 4.5.2 Alexander Orr

There are no remote storage/booster pump facilities within the area served by the Alexander Orr WTP. The storage system for the Alexander Orr WTP consists of three ground storage tanks with a total capacity of 59 million gallons (MG) and a 1.6 MG clear well located at the WTP. With free chlorine as a primary disinfectant, none of the storage at the WTP has to be reserved for disinfection. The high service pumps at the plant have the capacity to pump 550 MGD. A new 5 MG tank (at the site of the South Miami Heights WTP) has been completed to serve the south end of the service area.

### 4.6 Residuals Handling and Disposal

The three large regional water treatment facilities use lime softening as the primary treatment of the groundwater. The residuals generated in the process are comprised almost entirely of calcium carbonate

(CaCO<sub>3</sub>) solids. Approximately seventy percent (70%) of the source water hardness is removed in the lime clarifiers and is extracted from the clarifiers as CaCO<sub>3</sub> residuals.

The Hialeah and John Preston plants discharge the calcium carbonate residuals from the lime softening process through a 12-in diameter line from the Hialeah plant and a 16-in diameter line from the John Preston plant to either the Miami Springs and/or Northwest Wellfield residuals lagoons. Both lines are approximately 8 miles in length. The line from the John Preston plant also has a 12-inch branch that allows for discharge to the south side of the Miami Springs lagoon. Also, valving is in place to allow the Hialeah sludge pumps to discharge through the 16-inch sludge pipeline that serves the John Preston plant residuals system and vice versa.

The Hialeah WTP also includes a lime recalcination facility. This facility is a rotary kiln-natural gas fired type facility. Dewatered lime is then recycled through the process of recalcination. The lime kiln burns CaCO<sub>3</sub> and produces up to 100-115 tons per day of calcium oxide (CaO) which is then slaked and returned for reuse in the lime softening process. The plant also treats the residuals generated at the Preston WTP from accelerator units 1, 2, and 3. The released carbon dioxide (CO<sub>2</sub>) is captured and used in the recarbonation process at the plant. The airveyor system is used to pneumatically transfer lime from the lime storage silos at the recalcination plant back to lime feed silo at the lime slurry feed plant. The rotary kiln was completely re-lined and the electrical and control system was replaced and upgraded in 2010.

At the Alexander Orr plant, fifty percent of the residuals generated in the lime softening process are stored and processed through a lime recalcination facility similar to the one at the Hialeah plant. Any excess calcium carbonate from the treatment processes is sent to the sludge holding cells at the Southwest wellfield or the cells at the Orr plant.

The lime kiln burns CaCO<sub>3</sub> and produces up to 140 tons per day of calcium oxide (CaO) which is then slaked and returned to the headworks for reuse in the lime softening process. The released carbon dioxide (CO<sub>2</sub>) is captured and used in the recarbonation process at the plant. In 2010 the Department replaced the control panel for the airveyor system to include a programmable logic controller (PLC). The airveyor system is used to pneumatically transfer lime from the lime storage silos at the recalcination plant back to lime feed silos at the two lime slurry feed plants.

In May 2009 the Department completed the expansion of the lagoon in the Northwest wellfield. The expansion added an additional 20 acres to the existing lagoon. The department is currently evaluating alternatives for additional future calcium carbonate disposal.

The new Hialeah RO WTP produces brine as the byproduct or residuals of the RO treatment process. The brine is disposed of through the use of the deep injection well.

## **4.7 Regulatory Compliance Review**

The Department's Water System is operated in accordance with numerous local, state, and federal regulations that dictate water supply quantity and water quality for treated water. These regulations also cover distribution/transmission systems, conservation, public communications, residuals management and treatment, and monitoring/reporting. Federal regulations are typically delegated to state level agencies for review and enforcement.

#### **4.7.1 Water Use Permit**

The South Florida Water Management District (SFWMD) governs the use of the State's water resources in Southeast Florida through the water use permitting process.

The SFWMD, in an effort to ensure that water needed for Everglades restoration projects is available, has created the Regional Water Availability Rule, which was finalized on April 3, 2007. This rule limits the amount of water available for consumptive use in the Lower East Coast (LEC) service areas and applies to anyone applying for a new or modified WUP. It stipulates that applications for new or modified WUPs cannot cause a net increase in the volume or change in timing of water withdrawn from LEC water body over its baseline water use. This caps withdrawals from the Biscayne Aquifer, while not placing additional restrictions on Floridan Aquifer withdrawals.

On November 15, 2007, the SFWMD approved and issued the Department its Consolidated Public Water Supply (PWS) Water Use Permit (WUP) - Water Use Permit No. 13-00017-W.

In December 2009, the Department submitted an application for a permit modification to the SFWMD pertaining to the Department's alternative water supply plan. The modifications were requested as a result of the lower demands experienced and population projections. The modifications requested include:

- Remove proposed upper Floridan aquifer blending wells
- Re-start operation of 5 aquifer storage and recovery wells
- Increase number of upper Floridan aquifer wells at new Hialeah wellfield from 7 to 14 wells (2 operated as standby/backup wells) with a capacity of approximately 2 million gallons per day (MGD) per well and delay construction timelines for the plant
- Delay the timelines by one year for the South District groundwater recharge project and the West District canal recharge projects
- Defer implementation of the North and Central District WWTPs reuse projects to the compliance date in the Ocean Outfall legislation

In November 2010, the SFWMD issued a revised Water Use Permit No. RE-ISSUE 13-00017-W which expires in 2030.

In May 2011, the Department submitted a second application for a second permit modification to SFWMD pertaining to the Department's alternative water supply plan. The proposed modifications were requested based on current water use reductions, as a result of the successful implementation of the Department's Water Conservation Plan, and the two day a week landscape irrigation restrictions by county wide ordinance.

The Department requested the modifications to the overall alternative water supply/reclamation program in order to increase cost effectiveness. These modifications include:

- Modify the water supply to the proposed South Miami Heights water treatment plant. This involves redesigning the facility to be able to treat both Biscayne and Floridan aquifer water. This will reduce the need for having to produce highly treated wastewater to recharge the Biscayne aquifer at the Zoo

Miami property. Modifications to the Department's water reclamation plan will require the membrane treatment processes at this plant be redesigned to be able to treat water from the Floridan aquifer.

- Remove the requirement to construct the water reclamation facility at the SDWWTP to produce highly treated wastewater to recharge the Biscayne Aquifer at the Zoo Miami property.

In July 16, 2012, the SFWMD issued a revised Water Use Permit No. RE-ISSUE 13-00017-W which expires in December 16, 2030.

In June 2014, the Department submitted a third application for additional permit modifications pertaining to the Department's revised population projections based on the 2010 Census, lower water demand projections and subsequent modifications to the Department's alternative water supply plan. The application also included a request for extension of the permit. The requested modifications included updated population data, revised water demand projections and modifications to the alternative water supply projects to support water demands through 2033.

On February 9, 2015, the SFWMD issued a revised Water Use Permit No. 13-00017-W which expires in February 9, 2035. The purpose of the reissued permit is to address the limits of the Department's withdrawals from the Biscayne and Upper Floridan Aquifers as shown in **Table 4-5**. In addition, the reissued permit revised the reuse requirement from 170 MGD to 117.5 MGD, removed the requirement to provide 37 MGD of advanced treated reclaimed water to recharge the Alexander Orr plant wellfields, and removed the requirement to provide 7 MGD of reclaimed water from the North District WWTP.

On September 21, 2015, the SFWMD issued a water use modification letter to Permit 13-00017-W. The modification letter revised Special Permit Condition (SPC) number 38 which now requires submittal of quarterly updates, instead of an annual update, regarding the status of the agreement process for the City of Hialeah. Other corrections included flow meter calibration due dates (SPC 12), and revisions to the frequency for pump age requirements, from semi-annually to quarterly, which affected SPC 13, 16, 22, and 26 through 35.

The Department may seek an additional modification to the water use permit to reflect the delay in construction of the South Miami Heights WTP in the near term.

**Table 4-5 Annual Withdrawal Allocations (MG)**

EFFECTIVE DATES	BISCAYNE AQUIFER ANNUAL LIMIT	FLORIDAN AQUIFER ANNUAL LIMIT
2/9/2015 through 2/9/2035	127,567.50	13,348.05

In addition to the above-listed withdrawals, the WUP contains 57 limiting conditions pertaining to topics such as wellfield protection, monitoring, and water conservation and reuse. Some of the particularly noteworthy requirements are in the following list. These requirements reflect the high standards the Department is held to because of the size and extent of its system.

- Every ten years, the Department must submit a water use compliance report for review and approval by the SFWMD. The Department submitted to the SFWMD in November 2014 the 20-Year Water Supply Facilities Work Plan (2014-2033) in compliance with this requirement of the permit.
- The Department must develop alternative water supplies according to the schedule in the permit. These projects include 27.5 MGD total of Floridan aquifer RO treatment at the Hialeah and South Miami Heights RO treatment plants. Progress on these projects must be reported annually.
- By January 1, 2025, the Department must implement a minimum of 117.5 MGD of reuse projects. The exact volume of reclaimed water applied will depend on the treatment losses resulting from the processes that are implemented. The Department shall submit an annual report detailing the status of these reuse projects.
- The Water Conservation Plan submitted by the Department and approved by SFWMD must be implemented, as approved, and the Department shall submit annual water conservation activity reports.
- The Department shall determine the water losses in the distribution system on a quarterly basis and report the findings on an annual basis. If the losses reported exceed 10% of the treated water produced, the Department must include in the annual report a description of additional actions to be implemented in the following year(s) to reduce the losses to less than 10%.

#### 4.7.2 Alternative Water Supply, Water Reclamation and Water Demands

The Department's Alternative Water Supply Program includes the projection of finished water demand, increases in supply, and actual demand. Originally, in 2007, the demand was projected to increase from 340 MGD in 2006 to approximately 410 MGD in 2030. However, due to the SFWMD water restrictions implemented in 2007, the Department's Water Use Efficiency Program, the County's Permanent Landscape Irrigation Restrictions Ordinance establishing permanent irrigation restrictions and mandatory year-round two days a week landscape irrigation conservation measures, less population growth than expected, the decline in economic activity, and weather factors, demand dropped from 340 MGD to 305.7 MGD in 2012. Subsequently, the Department requested to the SFWMD the revisions to the 20-year WUP described in Section 4.7.1 above.

Tables 4-6 and 4-7 list the proposed AWS Projects and Development Deadlines and the Proposed Water Reclamation Projects Deadlines approved by the SFWMD. These tables reflect Exhibits 13 and 14, respectively, in the most recent Water Use Permit No. RE-ISSUE 13-00017-W, dated February 9, 2015.

**Table 4-6. AWS Project Development Deadlines Tied to Increased Withdrawal above the Base Condition Water Use<sup>1</sup>**

PROJECT / MILESTONE	AVERAGE DAILY FLOW (MGD)	MILESTONE COMPLETION DATE
Hialeah Floridan Aquifer R.O. WTP Phase 1a	7.5 mgd	
Notice to Proceed Design / Permit		Completed

PROJECT / MILESTONE	AVERAGE DAILY FLOW (MGD)	MILESTONE COMPLETION DATE
Notice to Proceed Construction		Completed
Turnover / Project Completion		Completed
<b>Hialeah Floridan Aquifer R.O. WTP Phase 1b</b>	2.5 mgd	
Notice to Proceed Design / Permit		Completed
Notice to Proceed Construction		Completed
Turnover / Project Completion		Completed <sup>2</sup>
<b>South Miami Heights WTP (R.O. portion)</b>	12.45 mgd	
Notice to Proceed Design / Permit		Completed
Notice to Proceed Construction		TBD <sup>3</sup>
Turnover / Project Completion		TBD
<b>South Miami Heights WTP (R.O. addition)</b>	5.0 mgd	
Notice to Proceed Design / Permit		Completed
Notice to Proceed Construction		TBD
Turnover / Project Completion		TBD

1. Represents Exhibit 13 in the revised Water Use Permit No. RE-ISSUE 13-00017-W dated February 9, 2015.

2. Project has been completed however the City and Department have not formally accepted the plant.

3. The South Miami Heights WTP project has been placed on hold indefinitely for the purpose of evaluating water supply demands.

**Table 4-7. Reuse Projects and Deadlines<sup>1</sup>**

PROJECT	RECLAIMED WATER GENERATED FROM AND AMOUNT TO BE TREATED	QUANTITY OF RECLAIMED WASTEWATER APPLIED	RECLAIMED WATER USED FOR	IMPLEMENTATION DEADLINE
1	North District WWTP (Permitted) 4.44 mgd	4.44 mgd	2.94 mgd Industrial & 1.5 mgd Public Access	Existing
2	Central District WWTP (Permitted) 7.84 mgd	7.84 mgd	7.84 mgd Industrial Only	Existing

3	South District WWTP (Permitted) 4.17 mgd	4.17 mgd	3.73 mgd Industrial & 0.443 Public Access	Existing
<b>TOTAL EXISTING PROJECTS (PERMITTED) = 16.5 mgd</b>				
4	South District WWTP 9.2 mgd	9.2 mgd	Floridan aquifer recharge. The scope of these projects will be determined as part of the Ocean Outfall legislation implementation plan submitted to the Secretary of FDEP on June 28, 2013. <sup>2</sup>	Dec. 31, 2025 <sup>2</sup>
5	Central District WWTP 9.2 mgd	9.2 mgd		Dec. 31, 2025 <sup>2</sup>
6	West District Reclamation Plant 9.2 mgd	9.2 mgd		Dec. 31, 2025 <sup>2</sup>
7	South District WWTP 90 mgd	90 mgd	FPL Turkey Point (TP) Units 5 & 6 cooling TP Unit 7 cooling	Dec. 31, 2025 <sup>4</sup>
<b>TOTAL NEW PROJECTS = 117.5 mgd<sup>3</sup></b>				
<b>Dec. 31, 2025</b>				
<b>GRAND TOTAL = 134 mgd</b>				

1. This table represents Exhibit 14 in the latest revised Water Use Permit No. RE-ISSUE 13-0017-W. The Department submitted an Ocean Outfall legislation implementation update to the FDEP on July 1, 2016 and a Compliance Plan on June 2017, with a list of updated reclaimed water projects.
2. These projects are recommended for removal in the Ocean Outfall legislation implementation plan.
3. The revised alternative water supply plan requires 117.5 mgd of total new projects.
4. The project to send treated effluent to Turkey Point is still included in the compliance plan as a separate project. The Department will provide the Reuse Feasibility Study Update to FDEP when it is completed.

The following sections provide a summary of AWS projects.

### 4.7.3 Water Conservation Plan

The County's 20-year Water Use Efficiency (WUE) Program was implemented utilizing the FDEP Conserve Florida Guide to comply with the original WUP requirements.

The County's Water Use Efficiency Standards for new residential and commercial developments, which were enacted by the BCC on January 1, 2009, are being implemented through the Florida building code as a technical amendment for Miami-Dade County. These standards include technical amendments to the Building Code to require maximum water conservation flow rates for plumbing fixtures.

The County continues to utilize and promote additional water conservation activities including:

- Implementation of the Permanent Landscape Irrigation Restrictions Ordinance establishing permanent irrigation restrictions and mandatory year-round two days a week landscape irrigation. In May 2009, changes were made to the County's landscape ordinance, affecting new construction.



Landscaping must meet regulations that follow Florida Friendly Principles and abide by stricter water-efficiency guidelines for all private property and public rights-of-way.

- Enactment of Ordinance 09-35, adopted May 5, 2009, amending Miami-Dade County Landscape Ordinance (Chapter 18A) to supplement outdoor water conservation measures.
- Enacted a tiered water rate structure which includes a surcharge for high water use to encourage water conservation.
- Other water conservation efforts include:
  - Indoor Conservation Programs:
    - Showerhead Exchange
    - Multi-family Showerhead Retrofit
    - Residential High Efficiency Toilet Rebates
    - Multi-Family High Efficiency Toilet Rebates
    - Fixing Leaks and Water Conservation Guidelines
  - Outdoor Conservation Programs:
    - Landscape Irrigation Evaluations
    - Rain Barrel Workshops
    - Water-wise and Sub-meters Guidelines
  - Children's Outreach Programs: Annual Every Drop Counts Poster Contest
  - Business Conservation Programs:
    - Green Lodging
    - Lodging Showerhead Retrofits
    - Lodging Toilet Rebates
    - Green Restaurant Audits
    - Non-Residential Industrial, Commercial, and Institutional Faucet Aerators Retrofit
    - Industrial-Commercial-Institutional Evaluations
    - Green Business Certification Program

The County has experienced reductions in finished water demands, which are currently 19 MGD lower than the actual demands in 2006. These reduced demands are the result of lower than anticipated population growth, the above-mentioned WUE Program, and Water Loss Reduction Program efforts, such as the adoption of year-round permanent irrigation restrictions and water loss reduction initiatives.

As of December 31, 2017, the Department has achieved 15.3 MGD in water savings, exceeding the calendar year 2017 water savings goal of 12.5 MGD through implementation of these best management practices and annual planned goals for water savings.

#### **4.7.4 Water Loss Reduction Plan Implementation**

The Department is continuously implementing improvements to provide for efficiencies in the Water System. As part of the process, the Department has performed Real Water Loss audits using International Water Association (IWA) and American Water Works Association (AWWA) methodologies. Major findings were:

- Between 2007 and 2015, the Department's water system Infrastructure Leakage Index (ILI) has varied between 8.9 and 11.16. The ILI is a performance indicator of real (physical) water loss from the supply network of water distribution systems. The ILI for 2016 was calculated to be 10.96.
- The Department recorded a slight increase in water loss from 2015 to 2016. However, the 2016 audit value for water produced increased while the water billed through meters remained relatively consistent compared to 2015. The measured water loss increase was minimal and could be the result of increased data accuracy. Still this would indicate that progress still needs to be made by the Department in implementing the water loss reduction activities.

The Department has increased its efforts to more accurately understand and audit all the variables within the AWWA standard water audit. In order to make informed decisions, a significant amount of meter testing, and analysis of leakage and water supplies has improved the validation. The estimated validation utilizing the AWWA grading has increased from 77 to 78 (out of 100) between 2015 and 2016. This increase in grading signifies a better overall understanding of the water system, including a slightly more accurate description in the financial audit of the system and unbilled meter usage.

Through the review period of FY 2017, the Department continued to take the necessary steps required to reduce water loss throughout the System, which included: continued annual testing of meters 3 inches and larger; semi-annual testing of wholesale meters; implementation of a prioritized leak repair classification protocol; hiring additional staff to repair leaks; increased data management; and staff re-organization.

#### **4.7.5 Automatic Meter Reading (AMR)/Advanced Metering Infrastructure (AMI) Pilot Implementation**

In 2010, the Department initiated the expansion of the AMI network with the installation of additional AMI meters from Sensus Metering Systems, Inc. The AMR/AMI pilot program was extended into the Miami Springs service area and added 4,300 meters to the AMI system. The Department commenced full operation of the pilot program in 2014 and have continued to improve its understanding of the operations, benefits, and challenges of implementing AMI systems in 2015. During FY 2015, the resulting data from the implementation and operation of the AMI system was evaluated. The Department considered utilizing AMI throughout the service area, however, this initiative is currently on-hold until further notice.

### **4.8 Water Quality Regulations**

The Department is subject to the requirements of the Safe Drinking Water Act (the "SDWA") of 1974, as amended in 1986 and 1996. The 1986 Amendments extended the regulatory responsibility of the U.S.

Environmental Protection Agency (USEPA) to include, among other things, the development of drinking water standards for 83 contaminants, criteria by which surface water supplies would be required to utilize filtration performance standards for disinfection, and the banning of lead-containing materials from distribution and home plumbing systems. The 1996 Amendments changed the emphasis of developing rules only slightly, but the Amendments did stress some new issues such as the protection of source waters, annual reports to consumers on the quality of their drinking water, regulation of filter backwash water within treatment facilities, and the establishment of a state revolving loan fund. Since 1998, several new rules have been implemented, as discussed below.

The Department conducts over 210,000 tests annually on drinking water samples collected from WTPs, water storage facilities and the distribution system. The Department's Regulatory Compliance and Monitoring Division staff tracks the development of regulations and provides input into the formulation of the regulations. The Department also conducts research (laboratory, pilot and plant scale) to ensure the Department is positioned to meet future regulations.

The Department's treated water quality meets and exceeds all existing drinking water regulations. It also anticipates meeting all recently promulgated and future regulations for microbial and turbidity parameters, disinfection byproducts, synthetic organic compounds, volatile organic compounds, inorganic compounds, radionuclides, and aesthetic parameters such as taste and odor. In 2017, the Department did not exceed any of the parameters that were detected. Many other treated water quality parameters are routinely tested but not detected. Applicable regulatory requirements are outlined in Table 4-8.

**Table 4-8 Regulatory Requirements**

REGULATORY REQUIREMENT	SUMMARY OF REQUIREMENT	COMPLIANCE STATUS
Lead and Copper Rule (LCR), 56 FR 26460 - 26564, June 7, 1991	The Lead and Copper Rule was promulgated in June 1991. It addresses the control of copper and lead that may leach from home plumbing systems.	In Compliance
Total Coliform Rule (TCR) 54 FR 27544-27568, June 29, 1989, Vol. 54, No. 1241	The Total Coliform Rule (TCR) requires water systems to monitor for total and fecal Coliform at specific locations throughout the distribution system.	In Compliance
Stage 1 Disinfectants and Disinfection Byproducts Rule (Stage 1 DBPR)  63 FR 69390 - 69476, December 16, 1998, Vol. 63, No. 241	This rule regulates levels of disinfectants and disinfection by-products.	In Compliance
Stage 2 DBPR  71 FR 388, January 4, 2006, Vol. 71, No. 2		

REGULATORY REQUIREMENT	SUMMARY OF REQUIREMENT	COMPLIANCE STATUS
<p>Consumer Confidence Report (CCR) Rule</p> <p>63 FR 44511, August 19, 1998, Vol. 63, No. 160</p>	<p>Requires the Department to issue an annual report on treated water quality to its consumers</p>	<p>In Compliance</p>
<p>Filter Backwash Recycling Rule (FBRR)</p> <p>66 FR 31086, June 8, 2001, Vol. 66, No. 111</p>	<p>The rule requires recycle flows to pass through all processes of the treatment plant in order to maintain removal credit for Cryptosporidium.</p>	<p>In Compliance</p>
<p>Source Water Assessment Program</p>	<p>The 1996 Safe Drinking Water Act (SDWA) Amendments required each state to develop a Source Water Assessment Program, designed to stress protection of the source water prior to treatment.</p>	<p>In Compliance</p>
<p>Radionuclides Rule</p> <p>66 FR 76708</p> <p>December 7, 2000</p> <p>Vol. 65, No. 236</p>	<p>The rule limits combined radium-226 and 228 and gross alpha and established a new limit for uranium.</p>	<p>In Compliance</p>
<p>Arsenic and Clarifications to Compliance and New Source Monitoring Rule</p> <p>66 FR 6976 (January 22, 2001)</p>	<p>The Arsenic Rule revised the arsenic maximum contaminant level (MCL) from 50 µg/L to 10 µg/L.</p>	<p>In Compliance</p>
<p>Ground Water Rule (GWR)</p> <p>71 FR 65574, November 8, 2006, Vol. 71, No. 216</p> <p>Correction 71 FR 67427, November 21, 2006, Vol. 71, No. 224</p>	<p>The Groundwater Rule (GWR) is designed to provide enhanced protection to users of groundwater from fecal contamination, which may arise from surface sources such as septic system or leaking sewage lines.</p>	<p>In Compliance</p>

REGULATORY REQUIREMENT	SUMMARY OF REQUIREMENT	COMPLIANCE STATUS
<p>Chemical Contaminants Rules</p> <p>Phase I, July 7, 1987 (52 FR 25690)</p> <p>Effective: 1991</p> <p>Phase II, January 1991 (56 FR 3526)</p> <p>Effective: 1992</p> <p>Phase IIB, July 1991 (56 FR 30266)</p> <p>Effective: 1993</p> <p>Phase V, July 1992 (57 FR 31776)</p> <p>Effective: 1994</p>	<p>The Chemical Contaminant Rules regulate 65 contaminants in three categories: inorganic contaminants, volatile organic contaminants, and synthetic organic contaminants.</p>	In Compliance
<p>Candidate Contaminant List (CCL) and Unregulated Contaminant Monitoring (UCM)</p>	<p>US EPA is required to develop a list of candidate contaminants for future regulation once every five years.</p> <p>The latest list (CCL 3) contains 104 chemicals and 12 microbiological contaminants</p>	In Compliance
<p>Florida Administrative Code 62-550 and 62-555</p>	<p>Florida Administrative Codes (FAC) 62-550 and 62-555 contain the majority of FDEP regulations regarding drinking water standards, monitoring, and reporting, as well as public water system construction, operations, and maintenance.</p>	In Compliance
<p>Miami-Dade County Potable Water Standards (Ord. No. 04-214, §§ 1, 5, 12-2-04; Ord. No. 08-55, § 2, 5-6-08)</p>	<p>Miami-Dade County Department of Regulatory and Economic Resources administers compliance with Potable Water Standards for Miami-Dade County as per Section 24-43.3</p>	In Compliance

Ground Water Under Direct Influence of Surface Water. On January 5, 2006, the EPA published the Final Long-Term Enhanced Surface Water Rule (the "Surface Water Rule"), which does not apply to the Department because the Department does not use surface water and the groundwater used by the Department has not been determined to be under the direct influence of surface water. However, the Northwest Wellfield is located in an area designated by the Florida Legislature as the Miami-Dade County Lake Belt Area. In order to maximize the efficient recovery of limestone in such area, the Florida Legislature approved a plan that will allow rock mining in the vicinity of the Northwest Wellfield. As

excavations get closer to the Northwest Wellfield, there is limited risk of the wells coming under the influence of surface water, which may result in the Surface Water Rule applying to such wells.

In January 2006, the Florida Legislature recognized the risk to the Northwest Wellfield and imposed a “water treatment plant upgrade fee” equal to \$0.15 per ton of limerock and sand sold within the Miami-Dade County Lake Belt Area. The fee became effective January 1, 2007 and was supposed to remain in effect until the total proceeds collected reach the actual amount necessary to design and construct the necessary water treatment plant upgrades. Such amount is to be determined in an open, public solicitation. The water treatment plant upgrade will consist of upgrading the filtration and disinfection processes to meet the requirements of the Surface Water Rule. In 2011, the Florida Legislature authorized the temporary diversion of the water treatment plant upgrade fee to be used to pay for seepage mitigation projects, including groundwater or surface water management structures designed to improve wetland habitat. This diversion will continue until a total of \$20 million has been diverted or until the State makes an actual determination of groundwater being under the direct influence of surface water, at which point the funds will be re-directed to the Department to advance the surface water treatment project. The Florida Legislature passed new legislation in 2015 that would reduce the fee to 6 cents per ton until July 2018. At this time, this fee has been discontinued indefinitely and upgrades to the existing facilities are not anticipated.

## 4.9 Condition of Water System Assets

In evaluating the condition of the Water System assets, the Consultant conducted inspections of selected system facilities and reviewed the Department’s program for the inspection and rehabilitation of large transmission water lines. In accordance with the Master Bond Ordinance, the system is independently inspected on a rotating basis, with all facilities inspected at least once every three years. The system assets that were inspected for FY 2015 include the Hialeah WTP, the Miami Springs Upper and Lower Wellfields, the Northwest Wellfield, and the South Dade Water System. The system assets that were inspected for FY 2016 include the Alexander Orr WTP, the Alexander Orr Wellfield, the Snapper Creek Wellfield, the Southwest Wellfield, the West Wellfield and the South Miami Heights Wellfield. The water system assets that were inspected for FY 2017 include the John Preston WTP, the John Preston (on-site) Wellfield, the Northwest Wellfield, and the Medley (stand-by) Wellfield. The following remote booster pumping stations and storage facilities were also inspected for FY 2017: Carol City Ground Storage Tanks, NW 67<sup>th</sup> Street Ground Storage Tanks, NW 36<sup>th</sup> Street Ground Storage Tank, NW 30<sup>th</sup> Avenue Ground Storage Tank, NW 20<sup>th</sup> Street Storage Tank and the Golf Grounds Pumping Station. The NE 79<sup>th</sup> Street Elevated Storage Tank site has been re-purposed and no longer functions as a water storage facility; hence, the site was not inspected.

Note that the New Hialeah RO WTP was not inspected since it is currently not being operated by the Department and is not considered part of the Department’s water assets.

Note that the visual inspections for the assets in each fiscal year were performed in the [subsequent](#) fiscal year. However, the evaluation of the system is based on the overall operation of the current fiscal year. The fiscal years referenced in this report are related to the operating year. Table 4-9 shows the

relationship between the operating fiscal year and inspection fiscal year. Table 4-10 provides a summary of system asset inspections for FYs 2015, 2016, and 2017.

**Table 4-9 Relationship Between Operating Fiscal Year and Inspection Fiscal Year**

Operating Fiscal Year	Inspection Fiscal Year
FY 2015	FY 2016
FY 2016	FY 2017
FY 2017	FY 2018

**Table 4-10. Water System Assets**

FACILITY	OPERATING YEAR		
	FY 2015	FY 2016	FY 2017
<b>WATER TREATMENT PLANTS</b>			
Hialeah	■		
Alexander Orr		■	
John Preston			■
<b>WELLFIELDS</b>			
Miami Springs (Upper and Lower)	■		
John Preston			■
Hialeah	■		
Snapper Creek (Alexander Orr WTP)		■	
West (Alexander Orr WTP)		■	
Southwest (Alexander Orr WTP)		■	
Northwest			■
South Dade Water System	■		
South Miami Heights		■	
Southwest-Wellfield ASR		■	
West-Wellfield ASR		■	
Medley (Stand-by) Wellfield			■
<b>SOUTH DADE WATER SYSTEM</b>			

FACILITY	OPERATING YEAR		
	FY 2015	FY 2016	FY 2017
Everglades	■		
Leisure City	■		
Elevated Tank	■		
Naranja	■		
Newton	■		
<b>REMOTE BOOSTER PUMPING STATIONS AND STORAGE FACILITIES</b>			
Carol City Ground Storage Tank			■
NW 67th Street Ground Storage Tank			■
NW 36th Street Ground Storage Tank			■
NW 30th Avenue Ground Storage Tank			■
NW 20th Street Storage Tanks Ground Storage Tank			■
Golf Grounds Pumping Station			■

Asset conditions were assessed on a good-fair-poor scale, which is outlined as follows:

Good – Midterm service without notable measures of degradation (in the prime of its useful life)

Fair – Long term service without notable measures of degradation (still in its useful part of its life)

Poor – Managing risk; Assets may require replacement (approaching or past expected end of life)

The following sections present a summary of inspection findings. Any deficiencies and needs identified through the inspection process are addressed and corrected in the Department's annual operating strategy and O&M and Capital budget.

#### 4.9.1 Water Treatment Plant Inspections

##### 4.9.1.1 Hialeah Water Treatment Plant

Arcadis inspected the Hialeah WTP on September 29, 2016. Key processes visited included sand traps and mixing tanks, mechanical flocculators, clarifiers, recarbonation tank, settling basin, disinfection, dual media filtration, clearwells, air stripping, and secondary disinfection. Additional processes include the



wash water return pumps, and addition of lime, silica, fluoride, sodium hexametaphosphate and chlorine throughout the treatment processes.

Generally, the equipment was found to be in good condition. Identified areas for improvement are addressed as part of the Department's renewal and replacement initiatives to replace obsolete equipment and improve reliability. Where identified, deficiencies are further assessed and prioritized, and remedial measures are implemented by the Department.

The majority of the mechanical and HVAC assets at the Hialeah WTP are in good condition, although some assets fall under the fair and poor categories. The mechanical maintenance staff adheres to the programmed maintenance schedules by regularly performing major overhauls of critical equipment and proceeding with capital improvements to replace assets when they reach the end of their useful lives. No major deficiencies in the overall plant's HVAC system were observed during the inspection.

Overall, electrical and instrumentation equipment at the Hialeah WTP is in good condition. Motor control centers (MCCs) have warning labels for "High Voltage" and, for the most part, are labelled with arc flash requirements. The MCC in the West Pump Room is noted to be in fair condition due to age, but is still performing its function, and corrosion is observed on the wash water pump pit electrical cabinet. Otherwise, the electrical control equipment appears to be maintained.

The condition of the structural assets within the Hialeah WTP range from good to poor. All above grade water bearing structures generally are in good condition. Improvement opportunities identified include:

- Cracks on the sidewalk and spalling concrete on the support beams at the recarbonation basins.,
- Exposed support beams, rust on structural members, and uneven concrete surfaces along with temporary shoring and bracing to support the concrete overhead of the Lime Slaker Room.

Note that the structural maintenance effort includes regular scheduled refurbishment of the facility's water and non-water bearing structures. The flocculators and clarifiers are inspected annually, or sooner if they are taken down for service, and any corrective action (listed below) is taken at that time. The settling basins are inspected, and conditions are addressed when they undergo their 5-year cleaning and preventive maintenance (PM). This refurbishment cycle adequately maintains the structures by providing significant protection against premature aging and associated degradation detrimental to water production. The non-water bearing structures are repaired/repainted on an as-needed basis.

Again, as noted above, any deficiencies and needs identified through the inspection process are addressed for correction through the Department's annual operating strategy and O&M and Capital budget.

#### 4.9.1.2 Alexander Orr Water Treatment Plant

Arcadis inspected the Alexander Orr WTP and raw water supply wells on the plant site on August 8, 2017 to evaluate the overall condition of structural, mechanical, and electrical assets. The original facility is approximately 63 years old. Key processes visited included the lime softening units, recarbonation processes, settling basins, chlorination and ammonization for disinfection, fluoridation, the dual-media filtration system, clear wells, storage reservoirs, and the East and West high service pump stations. Additional areas inspected include the wash water return pumps, the ammonia and fluorosilicic acid area, the chlorination (chlorine gas) room, emergency diesel generators, control rooms and the lime recovery

facility. Due to the relatively low background levels of natural organic compounds in the water supplied by the Biscayne aquifer to the WTP, the lime softening process is effective in softening the water and complying with disinfection by-products (DBP) standards.

The majority of the mechanical and HVAC assets at the Alexander Orr WTP are in good condition, although some assets fall under the fair and poor categories. The mechanical maintenance staff adheres to the programmed maintenance schedules by regularly performing major overhauls of critical equipment and proceeding with capital improvements to replace assets when they reach the end of their useful lives. Most of the mechanical assets have spare parts or a standby unit that can be put into service while the primary unit is receiving maintenance.

The routine and preventative maintenance practices of the mechanical maintenance staff provide adequate coverage to maintain the equipment. The following upgrades and improvements were recently implemented or are underway at the Alexander Orr WTP:

- Replacement of piping, flanges, valves, and actuators located in sludge pump stations and the filter pipe gallery.
- Recently upgraded sodium hypochlorite system is expected to be improved with the installation of two 150,000-gallon tanks. New electric switch gear located near the new hypochlorite system is approaching completion.
- A new lab is being procured, along with a new electrical system.

Though the overall condition and maintenance practices are good, at the time of inspection some deficiencies were observed. The following components were noted to be in fair or poor condition:

- Heavy corrosion was observed on base frames of Pump Nos. 1, 2, and 3 in Sludge Pump Station No. 1. Recently replaced piping and flanges required painting.
- Heavy corrosion was observed on base frame of Pump No. 7 in Sludge Pump Station No. 2. Recently installed piping required painting.
- Pump No. 3 in Sludge Pump Station No. 3 had a leaking pump seal and heavy corrosion on discharge piping.
- Heavy corrosion was observed on base frame of Pump No. 2 and light corrosion was observed on Pump No. 1 in Sludge Pump Station No. 4. Newly installed valve also required painting.
- Discharge head was leaking from a coupling at hydrofluorosilicic acid metering Pump No. 2.

In general, the heating, ventilation and air conditioning (HVAC) systems of the buildings at the WTP appear to be in good condition and are typically maintained monthly. No major deficiencies in the overall plant's HVAC system were observed during the inspection.

For the most part, electrical and instrumentation equipment at the WTP varies from fair to good condition. The electrical and instrumentation equipment appears to be maintained as staff continues to replace aged and obsolete equipment that lack the availability of spare parts.

The condition of the structural assets within the WTP range are in good condition. All above grade water bearing structures are generally in good condition. The structures (all process reinforced concrete tanks), well houses, east pumping station, west pumping station and various other buildings are continuously

maintained to protect them from the normal wear and tear. These activities encompass cleaning, repairing, sealing and filling of minor cracks, painting and coating of surfaces and structural members. The softening basins, settling basins and filter basins appear to be in good structural condition. Minor concrete spalling/cracking was observed in reservoir basins. Improvement opportunities identified include:

- Spalling concrete on the support beams at the filter pipe gallery.
- Exposed support beams, rust on structural members, and uneven concrete surfaces, along with temporary shoring and bracing to support the concrete overhead in the Lime Slaker Room.

The structural maintenance effort includes regular scheduled refurbishment of the facility's water and non-water bearing structures. The softening tanks, sedimentation basins, filter basins and reservoir basins are inspected frequently, and a more detailed inspection occurs if a basin is taken down for service, and any corrective action (listed below) is taken at that time. This refurbishment cycle adequately maintains the structures by providing significant protection against premature aging and associated degradation detrimental to water production. The non-water bearing structures are repaired/repainted on an as-needed basis.

Generally, given the environmental conditions, the facility appears to be in good condition and operating reliably. Identified areas for improvement are addressed as part of the Department's renewal and replacement initiatives to replace obsolete equipment and improve reliability. Where identified, deficiencies are further assessed and prioritized, and remedial measures implemented by the Department.

#### 4.9.1.3 John Preston Water Treatment Plant

Arcadis inspected the John Preston WTP and raw water supply wells on the plant site on September 17, 2018 and September 18, 2018 to evaluate the overall condition of structural, mechanical, and electrical assets. The original facility is approximately 50 years old. Key processes visited include, but are not limited to, the lime softening units, recarbonation processes, sand filters, chlorination and ammonization for disinfection, fluoridation, air stripping towers, and the high service pump station. Additional assets inspected include wash water return pumps, lime slakers, lime slurry pumps, sludge transfer pumps, fuel tanks, emergency diesel generators, electrical control rooms, and the chemical feed building.

The mechanical maintenance staff at the John Preston WTP maintains the equipment in good condition by replacing aged equipment with newer components and incorporating a thorough preventative maintenance (PM) program. The preventative/predictive maintenance program includes, but is not limited to:

- Softening Units – Major PM and cleaned as needed.
- Sludge Pumps – Renew and replacement activities as needed.
- Filtration System – Major PM and replacement of filter media as required.

Additionally, the oil lubricated bearings in the large motors on the high service pumps and the well motors are tested using an oil analysis on a 26-week schedule. Crank case oil testing and analysis is routinely performed on standby generator engines, natural gas and diesel pump engines per the factory preventive maintenance schedules. Scheduled PM on pumps and treatment units may be altered due to unplanned shutdowns, equipment failure or changes in operational needs.

The majority of the mechanical and HVAC assets at the John Preston WTP are in good condition, although some assets fall under the fair and poor categories. The mechanical maintenance staff adheres to the programmed maintenance schedules by regularly performing major overhauls of critical equipment and proceeding with capital improvements to replace assets when they reach the end of their useful lives. Most of the mechanical assets have spare parts or a standby unit that can be put into service while the primary unit is receiving maintenance.

The routine and preventative maintenance practices of the mechanical maintenance staff provide adequate coverage to maintain the equipment. The following upgrades and improvements were recently implemented or are underway at the John Preston WTP:

- Existing radiators for Diesel Generators 1, 2, and 3 located in Generator Building No. 1 are being replaced with a recently installed external water-cooling system. New radiators should be brought online in 2019.
- Two grit belt conveyors were recently replaced for the lime slakers.
- Lime Softening Unit No. 4 was out of service undergoing regular maintenance and cleaning during the time of inspection.
- Protective coating on piping in the Pipe Gallery is being maintained. Some pipes have been recently painted and others are in the process of being painted.
- A new motor was recently installed for Pump No. 1 in Sludge Pump Station 3.

At the time of inspection, the following components were out of service or offline and under complex preventative maintenance:

- Filters No. 13, No. 16, and No. 19 were out of operation and required repairs during the time of inspection due to severe filter tile damages that occurred during backwash flushing operations. The Department is looking to replace clay bottom basins with stainless steel filter bottoms in the near future.
- Lime Softening Units No. 1, No. 5, and No. 6 were out of operation and undergoing major rehabilitation during the time of inspection.

Though the overall condition and maintenance practices are good, some deficiencies were observed. The following components were noted to be in fair or poor condition:

- Moderate to severe corrosion and peeling paint was observed on caustic pump piping in the Polymer Building.
- Lime slurry pumps (11), lime sludge pumps (6), and lime slurry mixers were in fair condition due to the nature of their function and the corrosive environment of the Lime Building. One lime slurry feed pump was out of service and one slurry transfer pump was being overhauled during the time of inspection.
- Moderate to severe corrosion was observed on the mixer motor bases for Lime Softening Units No. 7 and No. 8. Both motors were in poor operating condition during the time of inspection.
- The platform for Chlorine Contact Basin No. 2 was severely corroded and required rehabilitation or replacement. The motor and drive for the platform had been removed and are being replaced.
- Piping insulation for the carbon dioxide system was missing or damaged and require replacement.
- Corrosion and peeling paint were observed on pumps, motors, and associated piping for Sludge Pump Station 1, 2, and 3.

- Minor to moderate corrosion and peeling paint was observed on pumps and appurtenances of the Wash Water System. One pump motor was operating in poor condition during the time of inspection.

In general, the heating, ventilation and air conditioning (HVAC) systems of the buildings at the WTP appear to be in good condition and are typically maintained monthly. No major deficiencies in the overall plant's HVAC system were observed during the inspection.

Generally, given the environmental conditions and age of system components, the facility appears to be in good condition and operating adequately. Identified areas for improvement will be addressed as part of renewal and replacement initiatives to replace obsolete equipment and improve reliability. Where noted, deficiencies will be further assessed and prioritized, and remedial measures implemented in an appropriate timeframe by the Department.

For the most part, electrical and instrumentation equipment at the WTP varies from fair to good condition. The electrical and instrumentation equipment appears to be maintained as staff continues to replace aged and obsolete equipment that lack the availability of spare parts. The following is a general summary of electrical and instrumentation observations seen during the visit to the John Preston WTP:

- Most equipment within environmentally controlled areas is in good condition. In these locations, equipment has generally been in service for mid to long term, though without notable measures of degradation.
- In non-environmentally controlled areas, equipment condition is largely as expected in their respective environments. Minimum corrosion was observed, particularly at the base of unit substations and transformers located outside, as well as equipment within wet and corrosive areas such as the wash water receiver system, caustic and chlorine systems, and lime slaker areas. Enclosure degradation has been remedied with touch up paint on substation, transformer and other electric equipment enclosures.
- Motor control centers (MCCs) and switchgear have warning labels for "High Voltage," however, there are many electrical equipment enclosures not marked with arc flash labels. The overall site arc flash risk assessment should be established/updated to account for existing site conditions and new labels should be affixed as required.
- Instrumentation located outside appeared to be generally in fair condition. Various items appeared inoperable. Observed LCD screens, for the most part, were still visible.

The condition of the structural assets within the WTP range from fair to good. All above grade water bearing structures are generally in good condition. The structures (all process reinforced concrete tanks), well houses, pumping stations, and various other buildings are continuously maintained to protect them from the normal wear and tear. These activities encompass cleaning, repairing, sealing and filling of minor cracks, painting and coating of surfaces and structural members. The lime softening units and filters appear to be in good structural condition. Minor weathering and staining were observed on the concrete exterior of lime softening basins.

Deficiencies noted include corroded and damaged building expansion joints, leakage stains around pipe wall penetrations, areas of peeling paint, cracks in concrete at wall joints, and corrosion on internal walls of the Filter Pipe Gallery Building. Minor damage of concrete wall surfaces of Generator Building 1 was observed around some ventilation fans, as well as small areas of exposed rebar, staining and peeling of paint on interior concrete walls. Structural damage was also observed in various locations of the Lime

Slaker Building interior including exposed rebar and corrosion and minor damage of concrete walls and ceilings.

The structural maintenance effort includes regular scheduled refurbishment of the facility's water and non-water bearing structures. The softening tanks, wash water tank, filter basins and reservoir basins are inspected frequently, and a more detailed inspection occurs if a structure is taken down for service, and any corrective action (listed below) is taken at that time. This refurbishment cycle adequately maintains the structures by providing significant protection against premature aging and associated degradation detrimental to water production. The non-water bearing structures are repaired/repainted on an as-needed basis. Refurbishment includes cleaning, removing deteriorated materials, replacing deteriorated materials, filling cracks, sealing leaks, repainting and recoating.

Again, as noted above, any deficiencies and needs identified through the FY 2018 inspection process will be addressed for correction through the Department's annual operating strategy and O&M and Capital budget.

## **4.9.2 Water Wellfield Inspections**

### **4.9.2.1 Hialeah Raw Water Supply Wells**

The raw water supply wells at the Hialeah WTP (Supply Well Nos. 11, 12 and 13) were found to be in good to fair condition. Structural deficiencies (i.e. cracks in the concrete floor slab, poor roof condition with termite damage, and no well casing) were identified at Supply Well No. 12. The electrical panel at Supply Well No. 13 is enclosed in a wooded enclosure, which is a flammable material and does not meet code. The deficiencies are addressed as part of renewal and replacement initiatives established by the Department.

### **4.9.2.2 Miami Springs Lower Wellfield**

The Miami Springs Lower Wellfield was inspected on September 30, 2016 to assess the general condition of the structural, mechanical, and electrical assets. The wellfield is comprised of eight well pumping stations, Supply Well Nos. 1 through 8. The asset and process condition of Supply Well Nos. 1 through 4, 7 and 8 were good. Additional painting of the piping and mechanical equipment is needed on Supply Well Nos. 1 and 8.

Deficiencies were noted on Supply Well Nos. 5 and 6. While functional, Supply Well No. 5 was assessed as poor asset condition. Significant rust was evident on the roof and floor of the pump house, the screen on the suction side vent was damaged, and it appears that a retrofit to add mechanical seals was unsuccessful. At the time of inspection, the well was out of service. Supply Well No. 6 was assessed as fair asset condition. The upper bearing drain line is plumbed to the well casing, the electrical system is outdated, and the location of the flow meter could potentially cause hydraulic constraints. Furthermore, there is corrosion on the pump and pump base. These deficiencies are addressed as part of renewal and replacement initiatives established by the Department.

#### 4.9.2.3 Miami Springs Upper Wellfield

The Miami Springs Upper Wellfield was inspected on September 30, 2016 to assess the general condition of the structures and mechanical assets. An additional inspection took place on February 16, 2017 to assess the condition of the electrical assets. The wellfield is comprised of 12 well pumping stations, Supply Well Nos. 9, 10, and 14 through 23. The asset and process condition of Supply Well Nos. 9, 10, 14, and 16 through 23 ranged from good to fair. Supply Well No. 15 was assessed as being in poor asset condition and fair process condition.

The typical deficiencies identified at the 12 supply wells of the Miami Springs Upper Wellfield included corrosion of various mechanical and piping components and paint / coating systems required on equipment and structures. Supply Well No. 9 was out-of-service at the time of the inspection but could still be operated manually. Of more immediate concern is the wooden electrical enclosures for the medium voltage, 2,400 V electrical components in the electrical distribution systems in all of the well houses. Wooden enclosures are flammable and do not meet code. It is recommended that these enclosures be replaced with NEMA-rated metal enclosures. It is also recommended that medium voltage equipment be maintained at a defined frequency. If no preventive maintenance plan exists for this work, the Consultant recommends following electrical maintenance frequencies as listed in American National Standards Institute (ANSI) / InterNational Electrical Testing Association (NETA) Maintenance Testing Specifications.

These deficiencies are addressed as part of renewal and replacement initiatives established by the Department.

#### 4.9.2.4 Alexander Orr Raw Water Supply Wells

The raw water supply wells at the Alexander Orr WTP were inspected on August 9, 2017 to assess the general condition of the structural, mechanical, and electrical assets. The wellfield is comprised of ten well pumping stations and water supply Wells Nos. 1 through 8, which were found to be in good condition. All ten wells have flow indicator transmitters/recorders, pressure transmitters, power monitors and telemetry equipment to provide for monitoring of pump power, pump run status, discharge pressure and well flows. The Department conducts routine inspections and preventive maintenance of the well houses and equipment. The well houses and structures, while aged, are being maintained and are in good working condition. Supply Well No. 9 was not operating at the time of the inspection.

Electrical equipment is largely as expected in non-air-conditioned environments and is generally in fair condition. Minimum corrosion was observed, particularly on unit substations and transformers located outside of the wellhouses. Enclosure degradation has been remedied with touch up paint. Substations, transformers and motor starter arc flash labels are dated 2004 and should be updated to account for any changes in the electrical distribution system that could affect listed incident energies.

Instrumentation transmitter/recorders were located inside and appeared to be in good working condition.

Any deficiencies are addressed as part of renewal and replacement initiatives established by the Department.



#### 4.9.2.5 Snapper Creek Raw Water Supply Wells

The Snapper Creek Wellfield was inspected on August 9, 2017 to assess the general condition of the structural, mechanical, and electrical assets. The wellfield is comprised of 4 well pumping stations, Supply Well Nos. 21 through 24. At the time of the inspection, the turbine pump for Supply Well No. 21 was undergoing maintenance. The supply wells appeared to be in good condition for mechanical and structural items.

Electrical equipment is located in non-air-conditioned environments and is generally in poor to fair condition. Metallic equipment enclosures and wireways show heavy corrosion, particularly at Well Nos. 21 and 22. There are signs of sustained water splash on the enclosures, switches, indicator lights, etc. The isolation switch on the panel door of the disconnect at Well No. 21 was found inoperable, while wireways and panel instrument holes were left uncovered leaving electrical components susceptible to the environment. Motor starters are missing arc flash labels. An overall site arc flash risk assessment should be completed, and new labels should be affixed as required.

Instrumentation transmitter/recorders were located inside and appeared to be in good working condition.

Any deficiencies are addressed as part of renewal and replacement initiatives established by the Department.

#### 4.9.2.6 Southwest Raw Water Supply and ASR Wells

The Southwest Wellfield was inspected on August 9, 2017 to assess the general condition of the structural, mechanical, and electrical assets. The wellfield is comprised of 17 wells serving the Biscayne aquifer, including water supply Wells Nos. 11 through 20, Wells 25 through 28, Wells 32 through 34, and ASR Wells Nos. 4 and 5. The wellfield also includes an ultraviolet (UV) disinfection system. The emergency power at the wellfield is provided by 4 natural gas-powered generators that supply 4,160 volts to the switchgear located in an adjacent room. Each well can be remotely controlled via the SCADA system. The piping and valves for all wells appear to be in good condition. The motor operated valves are well maintained and operational. The vertical turbine pumps of most water supply wells appear to be in fair condition. ASR Wells No. 4 and No. 5 were not in operation and were severely deteriorated. This deterioration is largely due to poor material selection that is not compatible with Floridian aquifer brackish water.

Most electrical equipment within air-conditioned spaces is noted to be in fair condition, but still perform per function. In non-environmentally controlled areas, minimum corrosion was observed, particularly on transformers located outside. Enclosure degradation has been remedied with touch up paint. Overgrown vegetation was observed at Well Nos. 18, 25, 26, 27, 28 and 33.

Motor control centers (MCCs), starters, and switchgear arc flash labels are dated between 2004 and 2005 and should be updated to account for any changes in the electrical distribution system that could affect listed incident energies.

Instrumentation transmitter/recorders were located inside and appeared to be in good working condition.



Any deficiencies are addressed as part of renewal and replacement initiatives established by the Department.

#### 4.9.2.7 West Raw Water Supply and ASR Wells

The West Wellfield was inspected on August 9, 2017 to assess the general condition of the structural, mechanical, and electrical assets. The wellfield is comprised of 6 wells serving the Biscayne aquifer, water supply Wells Nos. 29 through 31, and ASR Wells Nos. 1 through 3. The wellfield also includes an ultraviolet (UV) disinfection system. Each well can be remotely controlled via the SCADA system.

The piping and valves for all water supply wells appear to be in good condition. The motor operated valves are well maintained and operational. The pumps of most water supply wells appear to be in fair condition. ASR Wells No. 1, No. 2, and No. 3 were not in operation and were severely deteriorated. This deterioration is largely due to poor material selection that is not compatible with Floridian aquifer brackish water.

Most electrical equipment within air-conditioned spaces is noted to be in good condition and perform per function. Main switchgear, however, has device openings from removed equipment on the front of the gear that need to be appropriately covered/closed. In non-environmentally controlled areas, minimum corrosion was observed, particularly on unit substations and transformers located outside. Enclosure degradation has been remedied with touch up paint.

Motor control centers (MCCs) and switchgear arc flash labels are dated 2004 and should be updated to account for any changes in the electrical distribution system that could affect listed incident energies.

Instrumentation located outside appeared to be generally in fair to good condition. No sunshields were provided for instruments located in the sun, however, observed LCD screens were still readable.

Any deficiencies are addressed as part of renewal and replacement initiatives established by the Department.

#### 4.9.2.8 South Miami Heights Raw Water Supply Wells

The South Miami Heights Wellfield was not in operation at the time of the inspection.

#### 4.9.2.9 John Preston Raw Water Supply Wells (On-Site)

The raw water supply wells at the John Preston WTP were inspected on September 18, 2018 to assess the general condition of the structural, mechanical, and electrical assets. The wellfield is comprised of seven well pumping stations and water supply Wells Nos. 1 through 7. In general, six of the seven wells were found to be in good condition. The housing structure for Well No. 3 was found to be in poor condition since the compacted soil on which the building was located eroded, making it unstable and unsafe to enter.

All wells have flow indicator transmitters/recorders, pressure transmitters, power monitors and telemetry equipment to provide for monitoring of pump power, pump run status, discharge pressure and well flows. The Department conducts routine inspections and preventive maintenance of the well houses and equipment.

Electrical equipment is largely as expected for non-air-conditioned environments and is generally in fair condition. Minimal corrosion was observed, being that electrical control panels were located within the well houses. Distribution panel boards seemed as if they may be beyond their useful lives for some of the supply wells. Remaining electrical equipment and instrumentation transmitter/recorders were located inside and appeared to be in good working condition.

Any deficiencies are addressed as part of renewal and replacement initiatives established by the Department.

#### 4.9.2.10 Northwest Water Supply Wells

The Northwest Wellfield was inspected on September 18, 2018 to assess the general condition of the structural, mechanical, and electrical assets. The wellfield is comprised of fifteen well pumping stations, Supply Well Nos. 1 through 15. At the time of the inspection, all wells appeared to be in good operation condition and were assessed overall as being in fair condition due to age for mechanical and structural components. Typically, the Department operates six to seven wells at a time.

Electrical equipment is located in non-air-conditioned environments and is generally in fair condition. Seals were broken on the majority of the low voltage distribution panels and the intrusion of dust and insects was observed in most of the electrical equipment and instrumentation. The generator building is adjacent to Supply Well No. 1 and was noted to be in fair condition due to age and the inoperable HVAC system during the time of inspection; maintenance staff appeared to be in the process of repairing/replacing HVAC components. Due to the lack of potable water, the Department installed a fire suppression system at the Supply Well No. 1 site available for use in case of a fire emergency in the generator building. This suppression system appears to be in good condition.

Any deficiencies are addressed as part of renewal and replacement initiatives established by the Department.

#### 4.9.2.11 Medley (Stand-by) Wells

The raw water supply wells at the Medley Wellfield were inspected on September 18, 2018 to assess the general condition of the structural, mechanical, and electrical assets. The wellfield is comprised of four well pumping stations and water supply Wells No. 1, No. 2, No. 3, and No. 5. Currently, Well No. 3 is capped and will potentially not be used in the future. Note that this standby wellfield is not used by the Department unless there is an emergency situation.

In general, the mechanical and structural components of all four wells were found to be in good condition.

All wells have flow indicator transmitters/recorders, pressure transmitters, power monitors and telemetry equipment to provide for monitoring of pump power, pump run status, discharge pressure and well flows. However, all equipment is locked, and staff physically needs to unlock it in order to start-up operations. The Department conducts routine inspections of the well houses and equipment.

Electrical equipment is located in non-air-conditioned environments and is generally in fair condition. Little to no corrosion was observed and equipment panel seals were intact. Although not in operation, all electrical equipment appeared to be in good working condition.

Instrumentation transmitter/recorders were located inside and appeared to be in good working condition.

### **4.9.3 South Dade Water System Inspections**

The South Dade Water System was inspected in September and October of 2016 and consists of five small WTPs: Leisure City, Everglades Labor Camp, Elevated Tank, Newton, and Naranja. Each plant that makes up the South Dade Water System utilizes an in-line disinfection process with bulk sodium hypochlorite and stabilization with the addition of sodium hexametaphosphate. Use of chlorine gas for disinfection was discontinued for safety reasons with the retrofits to disinfect with bulk sodium hypochlorite. The five South Dade Water System plants were inspected in September and October of 2016 to assess the overall condition of the mechanical, electrical and structural components as discussed below.

#### **4.9.3.1 Leisure City**

The Leisure City facility is in overall good asset and process condition. The facility consists of four well pumps, five storage tanks, a sodium hypochlorite storage and feed system, sodium hexametaphosphate storage and feed system, emergency generator, and associated electrical components and panels. The facility appears clean, painted, and well maintained.

#### **4.9.3.2 Everglades Labor Camp**

The Everglades Labor Camp facility is in overall good asset and process condition. The facility consists of three well pumps, two storage tanks, a sodium hypochlorite storage and feed system, sodium hexametaphosphate storage and feed system, emergency generator, and associated electrical components and panels. The facility appears clean, painted, and well maintained.

#### **4.9.3.3 Elevated Tank**

The Elevated Tank facility is in overall good asset and process condition. The facility consists of two well pumps, two storage tanks (20,000 gallons each), a sodium hypochlorite storage and feed system, sodium hexametaphosphate storage and feed system, emergency generator, and associated electrical components and panels. The facility appears clean, painted, and well maintained.

#### **4.9.3.4 Newton**

The Newton facility is in overall good asset and process condition. The facility consists of two well pumps, sodium hypochlorite and sodium hexametaphosphate storage and feed systems, emergency generator, and associated electrical components and panels. The facility appears clean, painted, and well maintained.

#### **4.9.3.5 Naranja**

The Naranja facility is in overall good asset and process condition. The facility consists of one well pump, one storage tank, a sodium hypochlorite storage and feed system, sodium hexametaphosphate storage and feed system, emergency generator, and associated electrical components and panels. Touch-up

paint can be applied to some areas of the process equipment and storage tank, but otherwise, the facility appears clean and well maintained.

#### **4.9.4 Remote Booster Pumping Stations and Storage Facilities**

The remote booster pumping stations and storage facilities were inspected on September 14, 2018. The assets were assessed on the basis of both asset condition and process condition, on a good-fair-poor scale.

Generally, the facilities appear to be in good condition and operating adequately. Identified areas for improvement may be addressed as part of renewal and replacement initiatives to replace obsolete equipment and improve reliability. Where identified, deficiencies are further assessed and prioritized, and remedial measures implemented in an appropriate timeframe by the Department.

##### **4.9.4.1 Carol City Facility**

The Carol City facility consists of a 2 MG ground storage tank, four booster pumps, two control valves, a diesel engine generator, a 500-gallon fuel storage tank, and a building structure housing miscellaneous electrical equipment. Overall, the pumping assemblies appeared to be in good operating condition and in generally fair asset condition.

The pump motors, valves, and piping show evidence of normal wear and tear. Protective paint coating has been maintained on assemblies to prevent weathering and corrosion of the system. The exterior of the ground storage tank is in good condition.

The existing diesel generator is an older model; however, the engine seems to be in good working condition. Electrical equipment is largely as expected for being in a non-air-conditioned environment and is generally in poor to fair condition. Moderate corrosion on the enclosures was observed. The enclosures also have manufactured applied warning labels, but do not have current arc flash labels.

##### **4.9.4.2 NW 67<sup>th</sup> Street Facility**

The NW 67<sup>th</sup> facility consists of a three ground storage tanks with a combined capacity of 8.2 MG, five booster pumps and associated valves, three air compressors, two hydropneumatic tank systems, a pumping building, a generator building, two diesel generators, and miscellaneous electrical equipment. Overall, the booster pumping assemblies appeared to be operational and in good condition. Protective coating on mechanical components has been well maintained. The exteriors of the ground storage tanks are in good condition.

The electrical equipment in the booster pump control room is located in an air-conditioned environment and appears to be in fair condition. A new motor relay was recently installed. The electrical equipment has high voltage warning labels; however, arc flash labels are outdated. The overall site arc flash risk assessment should be updated to account for any changes in the electrical distribution system that could affect listed incident energies and new labels should be affixed as required.

The emergency generators and associated external water-cooling systems appeared to be in good operating condition. The generator building electrical equipment was in a temperature-controlled environment and appeared to be in fair condition.

Any deficiencies are addressed as part of renewal and replacement initiatives established by the Department.

#### 4.9.4.3 NW 36<sup>th</sup> Street Facility

The NW 36<sup>th</sup> facility consists of two 2.5 MG storage tanks and a booster pump station building with two booster pumps and associated electrical controls. Overall, the booster pumping assemblies appeared to be operational and in good condition. Protective coating on mechanical components has been well maintained. The electrical control cabinets in the pump station were not located in a temperature-controlled environment. Electrical equipment was in fair condition.

The exteriors of the steel ground storage tanks are in poor condition. Extensive bubbling and peeling of paint was observed. Severe corrosion around bolts, tank seams, and areas of missing paint was evident. Rehabilitation of the two tanks is recommended to protect the structural integrity of the system.

Any deficiencies are addressed as part of renewal and replacement initiatives established by the Department.

#### 4.9.4.4 NW 30<sup>th</sup> Avenue Facility

The NW 30<sup>th</sup> facility consists of a 2.5 MG concrete storage tank and a booster pump station building with two booster pumps, a hydropneumatic system, and electrical components. Overall, the booster pumping assemblies appeared to be in good condition. Protective coating on mechanical components has been well maintained. The hydropneumatic tanks and system components were in fair condition.

Electrical control cabinets located in the pump station building were not in a temperature-controlled environment but appeared to be in good operating condition. The electrical transformer was located outside of the pump station building on an elevated concrete base and was noted to be in fair condition due to minor to moderate corrosion of the transformer cabinet and conduit casing clamps.

Any deficiencies are addressed as part of renewal and replacement initiatives established by the Department.

#### 4.9.4.5 NW 20<sup>th</sup> Street Facility

The NW 20<sup>th</sup> facility consists of a three ground storage tanks with a combined capacity of 7.5 MG and a small building which houses associated electrical and instrumentation equipment. The exteriors of the ground storage tanks are in fair condition, with prominent areas of peeling paint and minor to moderate corrosion where paint has peeled.

The electrical equipment in the electrical and instrumentation building is not in a temperature-controlled environment and is in fair condition.

No booster pumping system is located at the facility. The booster pump system is located at the Golf Grounds Pumping Station.

Any deficiencies are addressed as part of renewal and replacement initiatives established by the Department.

#### 4.9.4.6 Golf Grounds Pumping Station

The Golf Grounds facility consists of three booster pumping assemblies, a hydropneumatic system, an emergency power system, and electrical equipment. The booster pumping assemblies exhibit minor to moderate corrosion but were in good operating condition. Moderate corrosion was observed on the metal pump bases. The hydropneumatic tanks and system components were in good condition.

The electrical equipment in the motor control room is not located in a temperature-controlled environment. Electrical components are generally in fair condition. The electrical equipment has high voltage warning labels; however, arc flash labels are outdated. The overall site arc flash risk assessment should be updated to account for any changes in the electrical distribution system that could affect listed incident energies and new labels should be affixed as required.

No ground storage tanks are located at the facility. The storage tanks are located at the NW 20<sup>th</sup> Street Facility.

## 5 WASTEWATER SYSTEM

This section presents the findings on the Department's Wastewater System. These are presented in three primary discussions: 1) a description of the Wastewater System, 2) a review of the regulatory issues and compliance for the Wastewater System, and 3) an assessment of the general condition of the Wastewater System's infrastructure.

### 5.1 Introduction

The Department's Wastewater System consists of three Wastewater Treatment Plants (WWTPs) and associated transmission and disposal facilities, as well as an extensive network of sewage collection facilities that include gravity collection sewers, pump stations, and force mains. The Department collects wastewater from its retail customers in the unincorporated areas of the County and several municipalities, and receives the wastewater collected by its wholesale customers. All of these flows are treated at the Department's WWTPs. The System service area covers approximately 375 square miles and includes approximately 6,422 miles of wastewater collection pipe and 1,049 pump stations. The System is subdivided into three interconnected districts (South, Central and North), each served by a wastewater treatment plant (WWTP).

The South District WWTP receives influent from two 72-inch diameter force mains that are divided into two similar treatment processes, Plant 1 and Plant 2. The Central District WWTP receives influent from four different force mains, a 102-inch, 72-inch, 54-inch, and 24-inch diameter force main. The North District WWTP, located in North Miami, receives influent from one 72-inch and two 54-inch diameter force mains. In FY 2016, the annual average daily flows of the SDWWTP, CDWWTP, and NDWWTP were 99 MGD, 119 MGD, and 85 MGD respectively. The three treatment facilities have a combined design capacity of 375.5 MGD and a permitted capacity of 368 MGD, based on average day flow. Figure 5-1 provides the general location of these facilities.

### 5.2 Wastewater Collection

The Wastewater Collection and Transmission Division operates the three primary collection and transmission basins, which are identified as North, Central, and South, and contain over 6,300 miles of transmission pipelines. The cross-section of piping in the system ranges from 4-inch lateral connections serving residential customers to 102-inch force mains linking pump station flows to the headworks of the treatment facilities. The flow of sewage can be diverted across basins through numerous transmission force mains interconnections thus allowing for flows to be diverted among the three wastewater treatment facilities.

### 5.3 Pumping and Transmission

The Department owns and operates 1,030 pump stations. The Department also, operates, but does not own, an additional 19 stations for a grand total of 1,049 pump stations, distributed over the four

operational service areas in the North, Central East, Central West, and South sections of the County. These stations are utilized to convey the large volume of raw sewage throughout the system to the three wastewater treatment facilities via the force main transmission infrastructure.

SCADA capabilities in all pumping stations and the three regional wastewater treatment plants allow command center operators to remotely monitor and control operation of the pumps and other operating systems while making adjustments according to the WWTP influent flows. The SCADA system also allows for identification of alarm conditions and the live monitoring of wet well levels, discharge pressures, and power conditions. At some selected sites, the SCADA system is used to monitor and report on rain gauges and ground water levels. The pump stations range in size and function from regional transfer stations that serve multiple collection basins to small collecting lift stations that serve single collection basins.

The wastewater transmission facilities are also referred to as part of the Department's regional system. The regional system, the costs of which are allocated to all of the Department's water customers, serve the entire system, both retail and wholesale customers. The wastewater collection system serves only retail customers.

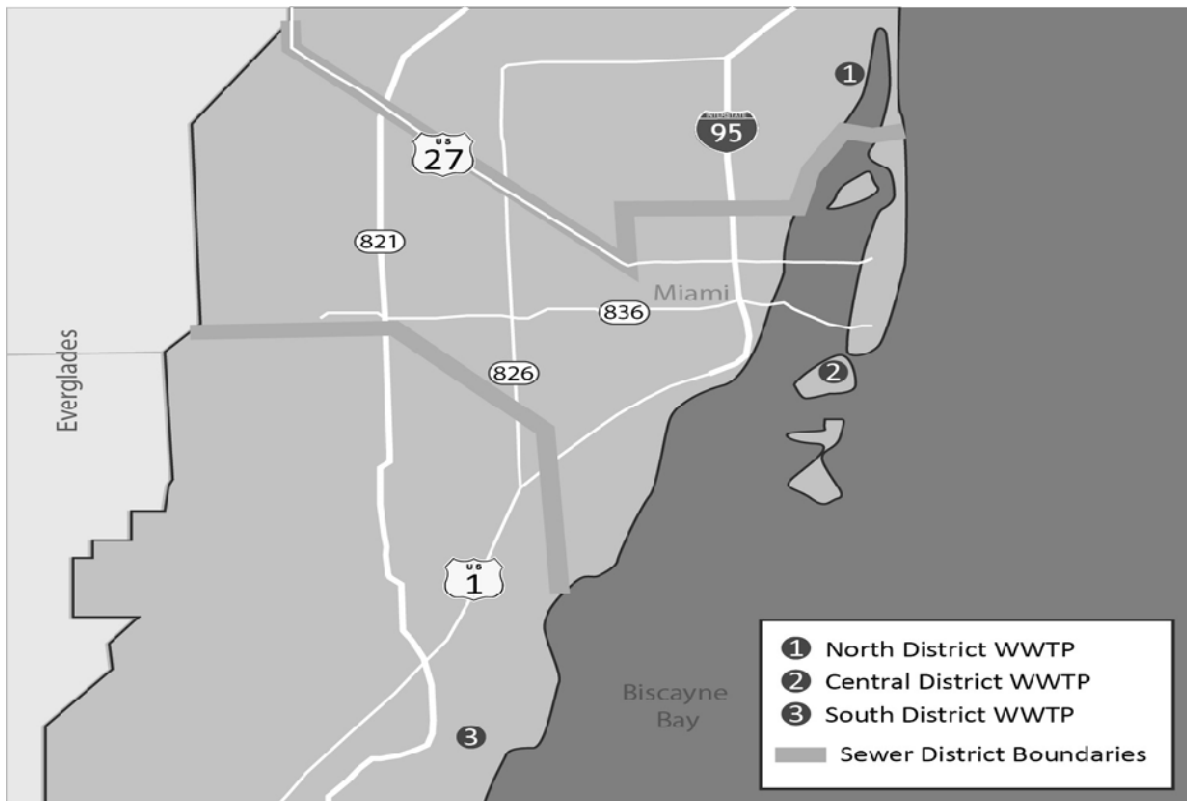


Figure 5-1 General Location of Facilities



## 5.4 Treatment

Table 5-1 summarizes the WWTP capacities and effluent characteristics. Descriptions of each WWTP are provided in the subsections below.

**Table 5-1 WWTP Capacities and Characteristics**

CHARACTERISTIC	FACILITY			
	South District	Central District	North District	Total
<b>PERMIT PARAMETERS</b>				
Average Daily Flow (MGD)	112.5	143.0	120.0	375.5
Effluent CBOD <sub>5</sub> (mg/L) <sup>1</sup>	20	25	25/20 <sup>2</sup>	
Effluent Suspended Solids (mg/L)	5 <sup>4</sup>	30	30/20 <sup>3</sup>	
<b>ACTUAL FLOWS 12-MONTH AVERAGE FOR FY 2018<sup>6</sup></b>				
Effluent Average Daily Flow (MGD) <sup>5</sup>	99.77	105.56	89.82	295.14
Effluent CBOD <sub>5</sub> (mg/L) <sup>5</sup>	2.82	6.89	6.59	
Effluent Suspended Solids (mg/L) <sup>5</sup>	3.35	7.38	13.67	

<sup>1</sup>"CBOD<sub>5</sub>" means 5 Day Chemical Biological Oxygen Demand; "mg/L" means milligrams per liter.

<sup>2</sup>25 mg/L in secondary effluent going to the outfall; 20 mg/L in effluent going to the wells.

<sup>3</sup>30 mg/L in secondary effluent going to the outfall; 20 mg/L in effluent going to the wells.

<sup>4</sup>5 mg/L for the High Level Disinfection (HLD) secondary effluent going to the wells.

<sup>5</sup>These levels are below those allowed by permit.

<sup>6</sup>For the 12 months ending September 30, 2018.

### 5.4.1 South District WWTP

The South District WWTP was placed into operation in 1983 and has since undergone several modifications and expansions that increased the design and permitted capacity to 112.5 MGD as of March 8, 2007. The main process flow of the South District WWTP begins at the Grit Building where bar screens and aerated grit chambers remove debris and inorganic material from the raw sewage. The primary effluent flows through a pure oxygen activated sludge process to achieve Biochemical Oxygen Demand (BOD) removal. From the oxygenation tanks, the effluent flows to the secondary clarifiers and into tertiary deep bed filters and lastly to the chlorine contact basins. A portion of the return activated sludge (RAS) is returned to the oxygenation tanks and the remaining waste activated sludge (WAS) is treated using gravity thickening, anaerobic digestion, dewatering and is then composted. The biosolids are sold for land application as Class A biosolids. Class A biosolids contain minute levels of pathogens. To achieve Class A certification, biosolids must undergo heating, composting, digestion or increased pH that reduces pathogens to below detectable levels. Once these goals are achieved, Class A biosolids can be land applied without any pathogen-related restrictions at the site. Any remaining biosolids are disposed of via landfill.

The effluent from the contact basins flows directly to the effluent pump station for disposal into the boulder zone via injection wells. The South District WWTP has recently implemented chlorination before discharging its effluent into the disposal wells.

Currently, the South District WWTP's effluent meets primary drinking water standards except for pathogens. As part of the FDEP Consent Order (discussed further in Section 6.7.3), the South District WWTP was recently upgraded so that the effluent will meet the High Level Disinfection (HLD) criteria in accordance with Florida Administrative Code 62-600.440(5). The HLD treatment facility is rated for 112.5 MGD annual average daily flow with a peaking factor of 2.53 (285 MGD) peak flow. This additional treatment will make the effluent useable for irrigation or cooling system applications. The HLD facilities were commissioned in November 2012.

### **5.4.2 Central District WWTP**

The Central District WWTP was placed into operation in 1956 and has a current permitted capacity of 143 MGD. The plant has undergone several upgrades and modifications since it was first constructed. The plant is divided into two separate process trains, Plant 1 and Plant 2, rated at 60 MGD and 83 MGD, respectively. The two trains are operated similarly but independently of each other and include aerated grit chambers, oxygenation tanks (fed by pure oxygen), final settling tanks, and chlorination system. Influent screening is not provided at the plant since wastewater is screened at regional pump stations. Sewage is treated using a high purity oxygen activated sludge process. Mixed liquor from the oxygenated tanks is separated into an activated sludge underflow and effluent overflows first into rectangular final settling tanks and then to effluent pump stations. A chlorine solution is fed to effluent to provide basic disinfection. Some of the chlorinated effluent is reused onsite as non-potable water and the remainder flows through an ocean outfall. A portion of the activated sludge is returned to the oxygenated tanks and the remaining waste activated sludge is treated using gravity thickening, anaerobic digestion and is then dewatered. The Class B biosolids produced by this process is either used for agricultural purposes or disposed of at a landfill.

### **5.4.3 North District WWTP**

The most recent expansion of the North District WWTP, completed in 1997, established the current design and permitted capacity to 120.0 MGD. The North District WWTP main process flow begins at the headworks where raw sewage is pumped into the plant through three (3) large diameter force mains that send the influent through a screening and grit removal facility to remove debris. The effluent then flows through the primary clarifiers, into the pure oxygen activated sludge treatment and on to the secondary clarifiers, where the solids collect and settle. A portion of the effluent from the secondary clarifiers undergoes tertiary filtration and disinfection which produces a reuse quality effluent. This effluent is pumped to the adjacent FIU North campus for use in landscape irrigation. WAS at this facility is pumped to the Central District WWTP for processing and disposal. The effluent from the secondary clarifiers flows into the effluent pump station that discharges into the 90-inch ocean outfall located in the Atlantic Ocean approximately three miles offshore. The outfall line provides the contact time needed for the chlorine disinfection. The North District WWTP has the capability of operating the deep injection wells. The financial responsibility demonstration to authorize the use of the four injection wells at the North District WWTP to operate was approved on January 17, 2007. On August 21, 2008, the FDEP issued permits to

operate the four Class I injection wells (IW-1N, IW-2N, IW-3N and IW-4N) with four associated dual zone monitoring wells.

## 5.5 Effluent Reuse and Disposal

Municipal wastewater reuse has been successfully utilized in several applications including agricultural irrigation, landscape irrigation, industrial recycling, and groundwater recharge. Wastewater treatment processes that use potable water were converted for the use of reuse water. Onsite green space irrigation at the South District WWTP and North District WWTP was converted to reuse water. Reuse water at the South District, Central District, and North District WWTPs is utilized for in-plant process purposes. At the North District WWTP, reuse water is additionally used for irrigation at the nearby FIU campus.

The Department continues to plan, and design, reclaimed water facilities. Currently, the Department reuses 13 MGD of treated wastewater, which includes 120,000 gallons per day for irrigation of the Florida International University Bay Vista Campus. Additional capacity and production of reclaimed water currently is available at the South District Plant, with 97.3 MGD of public access reuse quality water produced in FY 2017. As part of the 20-Year Water Use Permit, the Department is committed to distribute about 117.5 MGD of additional reclaimed water for aquifer recharge, irrigation, power plant cooling and potentially coastal wetlands rehydration.

## 5.6 Residuals Handling and Disposal

Historically, residuals handling practices at the Central District WWTP consisted of placing the sludge into onsite drying beds, then hauling the air-dried sludge to landfills or to land application sites. In 1997, following a settlement agreement between the Department and neighboring residents of Fisher Island, bed drying was abandoned, plant 1 was upgraded from open aeration tanks to covered oxygen tanks, and odor control was implemented. Currently, Class B biosolids produced at this facility is either used for agricultural purposes or disposed of at a landfill.

The North District WWTP pumps the sludge to the Central District WWTP for further processing prior to disposal, whereas the South District WWTP handles its sludge onsite. The South District WWTP sends the sludge through gravity thickening, anaerobic digestion, and dewatering by centrifuges to produce a stabilized sludge that is dried in onsite drying beds. Dried residuals are temporarily stored in large piles before being hauled to agricultural users or landfills. Some of the residuals are further treated through composting and sold for agricultural use.

Through the drying processes, the South District WWTP is able to increase the solids content from 25 percent (for dewatered solids) to 65 to 70 percent (for dried cake solids). Reduction of the moisture by dewatering centrifuges and air-drying has several benefits, including the substantially lower costs associated with trucking sludge to disposal sites and the ease of residuals handling.

## 5.7 Regulatory Compliance Review

The Department's wastewater system is operated in accordance with numerous local, state and federal regulations that dictate water quality for treated wastewater. These regulations also cover sewerage collection, pumping and transmission systems, public communications, residuals management and

treatment, and monitoring/reporting. Federal regulations are typically delegated to state level agencies for review and enforcement

The operations encompassed by the North, Central, and South District WWTPs are regulated by the USEPA, Florida Department of Environmental Protection (FDEP), and the Miami-Dade Department of Regulatory and Environmental Resources (DRER). The primary functions of DRER are to restore, enhance, conserve, and manage the air, water, and land resources of Miami-Dade County by requiring industrial users to report operating conditions. Together these agencies ensure the practices are safe to both humans and the environment through rigorous permitting and compliance procedures.

The general operations and functions of the WWTPs, including in-plant reuse, interconnects, disinfection techniques, and treatment processes are regulated by the FDEP. Monitoring data collected in accordance with the permit must be submitted to the area FDEP office in the form of MORs no later than the twenty-eighth day of the succeeding month.

### **5.7.1 Permits**

The National Pollutant Discharge Elimination System (NPDES) permit program controls what a municipal facility can discharge into “waters of the United States” and establishes monitoring and reporting requirements and other stipulations to ensure that the discharge does not harm water quality or an individual’s health. The permit addresses general requirements of the Clean Water Act including detailed conditions for discharging pollutants.

The Central District WWTP, North District WWTP, and South District WWTP, under provisions of Florida Statutes and Florida Administrative Code, must hold a Permit to Operate. The permits outline the conditions that must be met and are outlined as follows:

- Reclaimed water and effluent limitations and monitoring requirements
- Residuals management requirements
- Ground water requirements
- Additional reuse and land application requirements
- Operation and maintenance requirements
- Schedules
- Industrial pretreatment program requirements
- Other specific conditions
- General conditions

The Air Emissions Annual Operating Permit, Domestic Wastewater Annual Operating Permit, and Industrial Waste Annual Operating Permits are all issued by DRER and FDEP. The Department is also required to submit monthly reports for the sewer collection system and pump stations.

On January 13, 2016, the FDEP issued a new operating permit for the Central District WWTP effective until January 12, 2021. The new operating permits for the North District and South District WWTPs were

issued on February 20, 2017 and September 19, 2017, respectively. These two operating permits are effective until 2022.

The North District WWTP and South District WWTP both have operation permits from the FDEP to operate the effluent injection wells. The Department continues to renew the effluent injection well permits every 5 years.

### **5.7.2 Florida Ocean Outfall Legislation**

Florida law was amended in 2008 to prohibit the construction of new ocean outfalls and the use of existing ones for disposal of average flows by 2025. The law was amended in 2013 to provide additional flexibility for the affected utilities to manage peak flows and to fulfill the mandated wastewater reuse requirements. The law requires the Department to (i) submit a plan by July 1, 2013 to meet the requirements of the legislation (see below description of the Department's submitted plan); and (ii) meet the provisions of the advanced wastewater treatment and management requirements by December 31, 2018, either by (a) provision of advanced wastewater treatment to all ocean outfall flows, or (b) reducing the volume of wastewater effluent disposed through ocean outfall flows between December 31, 2008 and December 31, 2025 so that the reduction in nutrients discharged would be the same as with advanced wastewater treatment, or (c) use of a combination of advanced wastewater treatment and diversion of ocean outfall flows to meet the nutrient reduction level required on December 31, 2018. After 2025, the outfalls can only be used for peak flow discharges not to exceed 5% of annual flows. By December 31, 2025, a fully functioning reclaimed water system must be installed using a minimum of 60% of the ocean outfall flows for irrigation, groundwater replenishment, industrial cooling or other acceptable forms of reclaimed water. The statute limits the required reuse to projects that are "technically and economically" feasible.

The Department submitted the Ocean Outfall Legislation (OOL) Compliance Plan (the "Plan") to the Secretary of FDEP on June 28, 2013. The Plan includes upgrades to the three existing wastewater treatment plants with a cost of approximately \$2 billion.

In 2014, the Department retained a firm to serve as owner's representative for professional engineer services related to the State of Florida's Ocean Outfall Legislation and Miami-Dade County's Wastewater System. The firm has validated the County's Compliance Plan and is preparing scopes of work for design solicitations for the various treatment plant upgrades as well as a new wastewater treatment plant in the western part of the County as specified in the Plan. An updated OOL Compliance Plan was submitted to the FDEP in July of 2017.

### **5.7.3 Consent Decree – Case: No. 1:12-cv-24400-FAM**

On May 21, 2013, the negotiated Consent Decree (Case: No. 1:12-cv-24400-FAM) was approved by the Miami-Dade BCC and executed by the Mayor to provide for improvements to the Department's wastewater collection and treatment system. The Consent Decree was then lodged by the Department of Justice with the United States District Court for the Southeastern District of Florida (Court) on June 6,

2013 and became effective on December 6, 2013. On April 9, 2014, the Consent Decree was approved by the Court with the United States of America, FDEP and the State of Florida.

The Consent Decree requires the Department to upgrade its collection, transmission, and treatment facilities by completing over 80 system improvements throughout the Miami-Dade County wastewater system over a 15-year period. The cost of these upgrades is valued at an estimated \$1.6 billion. The Department is currently in Year 4 of the Consent Decree duration. The projects included as part of the Consent Decree are as follows:

1. Continuation of the capacity maintenance program.
2. Enforcement of the 10-hour criterion at pump stations.
3. Expansion of the pump station remote monitoring program (SCADA system).
4. Maintenance and application of the wastewater collection and transmission system model.
5. A spare parts program for inventory management.
6. Flow down of the Consent Decree requirements to wholesale customers through the Volume Sewer Customer Ordinance administered by the Miami-Dade County Department of Regulatory and Economic Resources (DRER).
7. Expansion of the Fats, Oils, and Grease (FOG) control program.
8. Enhancement of the information management system and the sewer system asset management program.
9. Assessment of force mains.
10. Assessment of gravity sewers.
11. Enhancement of the pump station maintenance and operations program.
12. Enhancement of the WWTP operations and maintenance program.
13. A financial analysis program to support the completion of all Consent Decree deliverables on schedule.

Implementation of the Consent Decree is underway, and the County has met the applicable regulatory requirements of the Consent Decree to date.

Section V of the Consent Decree requires the Department to develop a Public Document Repository (PDR) and make available a copy of each Deliverable in the PDR. The Consent Decree establishes the Department's office located at 3071 SW 38th Avenue and the Department's website,

<https://spext.miamidade.gov/wasdddecree2/SitePages/Home.aspx>, as the PDR. Copies of all deliverables and reports required by the Consent Decree and submitted to the USEPA and FDEP are available in the PDR.

The following chart identifies the major reporting requirements of the Consent Decree.

#### Consent Decree Reporting Requirements and Status

LINE	REQUIREMENT	STATUS
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1	Quarterly Reports	<ul style="list-style-type: none"> <li>Includes information on Sanitary Sewer Overflows (SSOs) occurring in the quarter.</li> </ul>	<ul style="list-style-type: none"> <li>2018 Quarterly Report No. 1 was submitted on April 30, 2018</li> <li>2018 Quarterly Report No. 2 was submitted on July 26, 2018</li> <li>2018 Quarterly Report No. 3 was submitted on October 30, 2018</li> <li>2018 Quarterly Report No. 4 will be submitted on or before January 30, 2019</li> </ul>
2	Semi-Annual Reports	<ul style="list-style-type: none"> <li>Includes description of projects and activities completed and milestones achieved and stated compliance with the requirements of the Consent Decree.</li> <li>Also includes a summary of significant projects and activities to be performed the remainder of the calendar year.</li> </ul>	<ul style="list-style-type: none"> <li>2018 Semi-Annual Report No. 1 was submitted on July 30, 2018</li> <li>2018 Semi-Annual Report will be submitted on or before January 30, 2019</li> </ul>
3	Annual Reports	<ul style="list-style-type: none"> <li>Includes a narrative summary of progress made, key accomplishments, activities under the CMOM Programs implemented or modified for the calendar year.</li> <li>Includes a trends analysis of the number, volume, duration and cause of SSOs in the past two calendar years.</li> </ul>	<p>2018 Annual Report will be submitted on or before March 1, 2019</p>
4	Violation Reporting	<ul style="list-style-type: none"> <li>The Department must notify EPA and FDEP regarding: <ol style="list-style-type: none"> <li>any event or violation that may pose an immediate threat to public health or the environment; or</li> <li>Any event that may delay the performance of any obligation under the CD.</li> </ol> </li> </ul>	<p>Available in PDR for 2018</p> <ul style="list-style-type: none"> <li>Failure to Meet Compliance Date for CD CIP 5.17 was submitted on January 10, 2018</li> <li>Delay Notification for CD CIP 4.10 was submitted on February 10, 2018</li> <li>Potential Delay Notification for CD CIP 2.5 submitted on February 13, 2018</li> <li>Potential Delay for CD CIP 5.18 was submitted on February 23, 2018</li> <li>Potential Delay for CD CIP 5.1 was submitted on March 28, 2018</li> <li>Force Majeure Notification for CD CIP 1.6, 1.8, 2.12, 2.13, 2.16 &amp; 2.18 was submitted on June 6, 2018</li> <li>Force Majeure Notification for CD CIP 5.2 was submitted on November 29, 2018</li> </ul>



The Department contracted AECOM to assist with the management and implementation of its Consent Decree program. The AECOM Professional Services Agreement with the County was entered on May 21, 2014 for an initial duration of five (5) years with two optional five (5) year renewals. The notice to proceed was issued on June 2, 2014. The following outlines major activities and programs implemented to date.

### Consent Decree Implementation Progress

LINE	ITEM	PROGRESS
1	Continuing CMOM Programs	The Adequate Pumping, Transmission and Treatment Capacity Program remains in compliance with the requirements of the Consent Decree and Section 24-42.3 of the Code of Miami-Dade County.
		Through the Pump Station Remote Monitoring Program, various pump stations were upgraded with the latest technology, SCADA, RTUs, and operational software as part of Project 5.19, which was completed in November 2015.
		The existing Spare Parts Inventory Management Program will be enhanced as new CMOM Programs are implemented.
		<p>The WCTS Model was used in the development and implementation of CMOM Programs to optimize transmission capacity and to evaluate the impact of I/I rehabilitation projects. Work on the WCTS Model Program is ongoing and the WCTS Model is on track for the calibration of December 2018.</p> <p>The Volume Sewer Customer Ordinance (VSCO) Program was presented before the BCC and adopted on September 1, 2015. VSC's Sewer Atlas and Plan of Compliance were submitted to RER-DERM on or before January 6, 2016 and March 11, 2016, respectively.</p>
2	Consent Decree Reporting	(See <b>Consent Decree Reporting Requirements and Status table above.</b> )
3	New CMOM Programs	RER-DERM received comments on the Fats, Oils and Grease (FOG) Control Ordinance Program from the EPA and FDEP on December 28, 2016. Response to EPA and FDEP comments was submitted on May 1, 2017. The FOG Control Program and FOG Ordinance were approved by the EPA/FDEP on September 7, 2017.
		The Sewer Overflow Response Plan (SORP) deliverable was submitted to EPA/FDEP on July 2, 2015 ahead of the Consent Decree deadline. EPA/FDEP issued comments on the Program on January 24, 2017. Response to EPA/FDEP comments on the SORP was submitted on March 28, 2017. The SORP was approved by the EPA/FDEP on August 15, 2017.
		The Information Management System (IMS) Program deliverable was submitted to EPA/FDEP on December 4, 2015 ahead of the Consent Decree deadline. EPA/FDEP issued comments on the Program on February 28, 2017. Response to EPA/FDEP comments on the IMS was submitted on May 17, 2017. The IMS program was approved by the EPA/FDEP on October 17, 2017.



LINE	ITEM	PROGRESS
		<p>The Sewer System Asset Management Program (SSAMP) was submitted to EPA/FDEP on the Consent Decree compliance date of October 6, 2015. EPA/FDEP issued comments on the Program on January 24, 2017. Response to EPA/FDEP comments on the SSAMP was submitted March 28, 2017. The SSAMP was approved by the EPA/FDEP on October 17, 2017.</p>
		<p>The Gravity Sewer System Operations and Maintenance Program (GSSOMP) was submitted to EPA/FDEP on the Consent Decree compliance date of February 6, 2015. WASD received comments on the Program from the EPA and FDEP on July 1, 2016. WASD corrected all identified deficiencies in the Program and submitted responses to the deficiencies on August 12, 2016. The GSSOMP was approved by the EPA/FDEP on October 17, 2017.</p>
		<p>The Pump Station Operations and Preventative Maintenance Program (PSOPMP) was submitted to EPA/FDEP on April 2, 2015 ahead of the Consent Decree deadline. WASD addressed all comments and answered all questions provided by the EPA and FDEP and submitted responses to the deficiencies on July 29, 2016. The PSOPMP was approved by the EPA/FDEP on October 17, 2017.</p>
		<p>The Force Main Operations, Preventative Maintenance and Assessment/Rehabilitation Program was submitted to EPA/FDEP on the Consent Decree compliance date August 6, 2015. EPA/FDEP issued comments on the Program on February 23, 2017. Response to EPA/FDEP comments was submitted on May 17, 2017. The Program was approved by the EPA/FDEP on October 17, 2017.</p>
		<p>The Force Main Rehabilitation/Replacement Program was submitted to EPA/FDEP on December 4, 2015 ahead of the Consent Decree compliance deadline. EPA/FDEP issued comments on the Program on February 23, 2017. Response to EPA/FDEP comments on the FMRRP was submitted on May 17, 2017. The Program was approved by the EPA/FDEP on September 28, 2017.</p>
		<p>The WWTP Operations and Maintenance Program was submitted to EPA/FDEP on May 5, 2015 ahead of the Consent Decree compliance deadline. WASD received comments on the Program from the EPA and FDEP on August 22, 2016. WASD corrected all identified deficiencies in the Program and submitted responses on November 21, 2016. On November 20, 2017, EPA/FDEP conditionally approved the WWTP OMP and requested additional information. Ongoing correspondence has continued and the Program is currently pending EPA and FDEP approval.</p>
		<p>The Financial Analysis Program (FAP) was completed and submitted to the EPA/FDEP on December 4, 2014. WASD received comments on the Program from the EPA and FDEP on November 25, 2015. WASD corrected all identified deficiencies in the Program and submitted responses to the EPA and FDEP on January 29, 2016. The FAP was approved by the EPA/FDEP on October 17, 2017.</p>
		<p>Multiple Capital Improvement Projects were completed for WWTPs, Sewer Pump Station Systems, and Wastewater Collection and Transmission Lines.<sup>1</sup></p>

LINE	ITEM	PROGRESS
4	Sanitary Sewer Overflow Analysis	The Department must notify EPA and FDEP regarding any event or violation that may pose an immediate threat to public health or the environment. SSO event information can be found in the Consent Decree 2016 Annual Report.
5	Supplemental Environment Project	The Consent Decree Program Management Construction Management (PMCM) team has prepared a draft technical memorandum for internal quality assurance and quality control.

Note: Capital Improvement Projects completed during FY 2017 may be found in the Consent Decree 2017 Annual Report.

## 5.8 Condition of Wastewater System Assets

In evaluating the condition of the Wastewater System assets, the Consultant conducted inspections of selected system facilities. In accordance with the Master Bond Ordinance, the system is inspected independently on a rotating basis with all facilities inspected at least once every three years. The system assets that were inspected for FY 2015 include the SDWWTP and 46 pumping stations. The system assets inspected for FY 2016 include the CDWWTP and 23 pumping stations. The NDWWTP was inspected for FY 2017.

Note that the visual inspections for the assets in each fiscal year were performed the [subsequent](#) fiscal year. However, the evaluation of the system is based on the overall operation of the current fiscal year. The fiscal years referenced in this report are related to the operating year. Table 5-2 shows the relationship between the operating fiscal year and inspection fiscal year. Table 5-3 provides a summary of system assets inspections for FYs 2015, 2016, and 2017.

**Table 5-2 Relationship Between Operating Fiscal Year and Inspection Fiscal Year**

Operating Fiscal Year	Inspection Fiscal Year
FY 2015	FY 2016
FY 2016	FY 2017
FY 2017	FY 2018

**Table 5-3. Wastewater System Assets**

FACILITY	INSPECTION YEAR		
	FY 2015	FY 2016	FY 2017
<b>WASTEWATER TREATMENT PLANTS</b>			
South District	■		
Central District		■	
North District			■

FACILITY	INSPECTION YEAR		
	FY 2015	FY 2016	FY 2017
<b>PUMPING STATIONS</b>			
PS 0001		■	
PS 0002		■	
PS 0037	■		
PS 0107	■		
PS 0151		■	
PS 0157		■	
PS 0300	■		
PS 0301	■		
PS 0306	■		
PS 0307	■		
PS 0310	■		
PS 0334	■		
PS 0345	■		
PS 0346	■		
PS 0347	■		
PS 0348		■	
PS 0374	■		
PS 0403	■		
PS 0414		■	
PS 0415	■		
PS 0416	■		
PS 0417	■		
PS 0418	■		
PS 0421	■		
PS 0422	■		
PS 0423	■		
PS 0424	■		
PS 0425	■		
PS 0426	■		
PS 0466	■		
PS 0488	■		
PS 0491	■		
PS 0492	■		

FACILITY	INSPECTION YEAR		
	FY 2015	FY 2016	FY 2017
PS 0501	■		
PS 0516	■		
PS 0517	■		
PS 0522	■		
PS 0535		■	
PS 0536		■	
PS 0541		■	
PS 0554		■	
PS 0559		■	
PS 0571		■	
PS 0591		■	
PS 0607	■		
PS 0636		■	
PS 0641		■	
PS 0642		■	
PS 0659		■	
PS 0660		■	
PS 0667		■	
PS 0668		■	
PS 0669		■	
PS 0673		■	
PS 0677	■		
PS 0680	■		
PS 0681	■		
PS 0683	■		
PS 0685	■		
PS 0691	■		
PS 0692	■		
PS 0698	■		
PS 0761	■		
PS 0852	■		
PS 1072	■		
PS1073	■		
PS 1076		■	

FACILITY	INSPECTION YEAR		
	FY 2015	FY 2016	FY 2017
PS 1236	■		
PS 1310	■		

Asset conditions were assessed on a good-fair-poor scale, which is outlined as follows:

Good – Midterm service without notable measures of degradation (in the prime of its useful life)

Fair – Long term service without notable measures of degradation (still in its useful part of its life)

Poor – Managing risk; Assets may require replacement (approaching or past expected end of life)

The following sections present a summary of inspection findings. Any deficiencies and needs identified through the inspection process are addressed and corrected in the Department’s operating strategy and O&M and Capital budget.

## 5.8.1 Wastewater Treatment Plant Inspections

### 5.8.1.1 South District Wastewater Treatment Plant

Arcadis inspected the SDWWTP over the course of four days: September 27 and 28, October 10, and December 8, 2016. Key processes visited included pretreatment (i.e. FOG and screen and grit facilities), generation and oxygenation tanks, secondary clarifiers, deep bed sand filtration, chlorine contact basins, transfer and effluent pump stations, and deep injection wells. Solids processing systems visited included return sludge pumping stations, sludge concentrators and digesters, and sludge dewatering. Additional systems visited included air scrubber buildings, polymer, oxygen, and sodium hypochlorite generation, methane storage and cogeneration facilities, emergency generators, and the main electrical switchgears.

The treatment processes ranged in age from original and reconditioned to new construction. The SDWWTP follows a comprehensive preventative, corrective, and predictive maintenance program. The program incorporates mechanical, HVAC, electrical, instrumentation, and structural maintenance. A summary of mechanical, HVAC, electrical, instrumentation, and structural asset conditions are outlined in the following paragraphs.

The majority of the mechanical and HVAC assets at the SDWWTP are in fair condition. The mechanical maintenance staff adheres to the programmed maintenance schedules by regularly performing major overhauls of critical equipment and proceeding with capital improvements to replace assets when they reach the end of their useful lives. The majority of the mechanical assets have spare parts or a standby unit that can be put into service while the other unit is receiving maintenance. The routine and preventative maintenance practices of the mechanical maintenance staff provide adequate coverage to maintain the equipment.

The overall condition of the electrical and instrumentation assets at the SDWWTP ranges from good to fair. A vast majority of electrical distribution equipment, such as MCCs, RTUs, VFDs, switchgears, and

transformers are located in clean, air-conditioned rooms. In the Main Switchgear Building 1, in what is considered the “Old Plant,” the doors and internals of the switchgears have been recently replaced by Siemens. In Main Switchgear Building 2, in what is considered the “New Plant,” the switchgears and electrical distribution equipment are in good condition.

A general comment throughout the facility is that arc flash labels were placed in 2010 and expired in 2015. An arc flash analysis should be performed and new labels affixed to equipment. Specific areas for improvement or focused maintenance attention include electrical distribution equipment in the Air Scrubber Buildings, Digester Clusters, Sludge Dewatering Structure, and small electrical substations located throughout the SDWWTP. In the Air Scrubber Building Nos. 1, 2 and 3, the MCCs are not located in separate air-conditioned rooms. The doors for these buildings are often left open and the MCCs are located in the same space as the process equipment. Furthermore, leaks are present in the roofs at the roof drains of Air Scrubber Building Nos. 1 and 3. Due to the damp condition in these buildings, the MCCs in these buildings are in fair condition, showing corrosion at the seams of the MCC buckets. In Digester Cluster Nos. 1, 2, and 3, the Sludge Dewatering Structure, and the small electrical distribution substations located throughout the facility site (e.g. Sub Station 7 & 8), the MCCs and electrical distribution equipment are functioning as designed. However, the equipment is ranked as fair due to the increased age of the equipment. Additional equipment noted as fair include the FOG Facility Odor Control Panel, in which the LCD screens are faded and difficult to read, and the Effluent Pump Station 1 Control Room, which was in the process of being upgraded during the time of the inspection. Within the Effluent Pump Station 1, the high service pump MCC for the older equipment has an unused cut-out in the enclosure where the motor management relay (MMR) used to be. All unused openings should be closed with listed plugs or covers.

The condition of the structural assets at the SDWWTP ranges from good to poor. Some deficiencies noted in prior Consultant annual assessments have been noted as repaired. At the Oxygen Generation Plant, cracking noted in the roof of the second-floor walkway during the previous assessment was not evident. During the inspection, the flocculation tanks at the Deep Bed Sand Filters and the Unox trains at the Oxygenation Tanks were being drained individually and the interior surfaces were being recoated.

The systems that appeared to be in poor condition are rehabilitated or upgraded through the forthcoming improvements to this facility as part of the overall Consent Decree Master Plan for this facility.

#### 5.8.1.2 Central District Wastewater Treatment Plant

Arcadis inspected the CDWWTP on August 2, 2017 and September 1, 2017. Key processes were visited including, but not limited to, sludge concentrators, sludge digesters, methane gas scrubbers, grit buildings and grit collectors, polymer feed building, return activated sludge pumping stations, flushing water pumps, oxygenation trains, oxygen plant compressors, distillation and cooling towers, settling basins and associated drive motors, chlorine storage areas, chlorinators and chlorine evaporators, effluent pumping stations, emergency power generators, and main electrical switchgears.

The treatment processes ranged from original to reconditioned, with new construction and rehabilitation in progress. The CDWWTP follows a comprehensive preventative, corrective, and predictive maintenance program. The program incorporates mechanical, HVAC, electrical, instrumentation, and structural maintenance. A summary of mechanical, HVAC, electrical, instrumentation, and structural asset conditions are outlined in the following paragraphs.

The majority of the mechanical and HVAC assets at the CDWWTP are in fair condition. The mechanical maintenance staff adheres to the programmed maintenance schedules by regularly performing major overhauls of critical equipment and proceeding with capital improvements to replace assets when they reach the end of their useful lives. Most of the mechanical assets have spare parts or a standby unit that can be put into service while the other unit is receiving maintenance.

For the most part, electrical and instrumentation equipment at the CDWWTP varies from fair to good condition. The electrical and instrumentation equipment appears to be maintained as staff continues to replace aged and obsolete equipment. The following is a general summary of electrical and instrumentation observations seen during the visit to the Central District WWTP:

- Most equipment within environmentally controlled areas are noted to be in fair to good condition due to age, but still perform per function. In these locations, equipment has generally been in service for mid to long term, though without notable measures of degradation.
- In non-environmentally controlled areas, equipment is largely as expected in their respective environments. Mild corrosion was observed, particularly on switchgear and motor control center (MCC) enclosures in the effluent pump station. Elevated levels of corrosion were observed on electrical equipment in the Gas Compression Building, Sludge Concentrators Plant No. 1 Polymer Feed Building and in the Sludge Digester Plant No. 1 Pump and Piping Gallery, Cluster No. 2 areas. Elevated levels of corrosion were also observed in the Grit Building Nos. 1 and 2; however, these are currently in the process of being replaced by equipment, which will be in an environmentally controlled space.
- MCCs and switchgear have warning labels for “High Voltage” and are marked with arc flash labels dated between 2004 and 2005. The overall site arc flash risk assessment should be updated to account for any changes in the electrical distribution system that could affect listed incident energies and new labels should be affixed as required.
- Instrumentation located outside appeared to be generally in good condition. Sunshields, for the most part, were provided for instrument transmitters located in the sun, however, there are some instances where none were provided. LCD screens observed were still visible.

The conditions of the structural assets at the CDWWTP range from good to poor. Some deficiencies noted in prior Consultant annual assessments have been repaired. The condition of the structural interior of the Dewatering Building Sludge Unloading Station had improved since the previous inspection; areas of the ceiling where severe concrete deterioration was observed had been repaired. During the time of inspection, Sludge Concentrator Tank No. 4 at Plant 2 was drained and undergoing rehabilitation. Oxygenation Trains at Plant 2 were also in the process of being individually drained for structural improvements and interior surface coating applications. Many of the CDWWTP structural deficiencies are being addressed by the Consent Decree Capital Improvement Projects.

Typically, a fair condition was assigned when a structural deficiency was identified, but it had no effect on the structural integrity of the building and little to no effect on the process of the equipment within the building. Assets that were defined as being in poor condition should undergo restoration or reconstruction to maintain structural integrity and function.

Many of the systems that appeared to be in poor condition are to be rehabilitated or upgraded through the forthcoming improvements to this facility as part of the OOL and the overall Consent Decree Master Plan.

### 5.8.1.3 North District Wastewater Treatment Plant

Arcadis inspected the NDWWTP on September 12, 2018 and September 13, 2018. Key processes were visited including, but not limited to, the pretreatment & sludge transfer building, aerated grit/screening (AGS) building, air scrubber building, maintenance building, primary clarifiers, primary sludge distribution chambers, oxygen plants, cooling towers, oxygen storage facility, oxygenation trains, secondary clarifiers, return sludge pumping stations, secondary distribution chambers, water reuse filters, main electrical switchgear building, emergency generators, fuel storage tanks, on-site chlorination & non-potable pumping building, screen chambers, injection wells, injection well pumping station, ocean effluent pumping station, and reuse water storage tanks.

OOL has a significant effect on the NDWWTP, as currently the principal method of disposal of the treated effluent from the plant is the ocean outfall. However, the NDWWTP has four deep injection wells through which treated effluent is also disposed, as well as a system that processes effluent for off-site and in-plant reuse applications. Public access irrigation at the Biscayne Campus of the Florida International University was inactive during FY 2017 pending repairs or replacement of the reclaimed water treatment system. Furthermore, there is a need for additional R&R projects at the NDWWTP which are largely driven by a general aging of plant infrastructure. Recommended treatment plant upgrades per the OOL Program Compliance Plan 2017 Update include: the implementation of step feed; 20 MG of equalization volume; 56 MGD of HLD; 4 new municipal injection wells; RAS and general secondary clarifier improvements to existing clarifiers; electrical upgrades; and ancillary systems, as needed.

The treatment processes ranged from original to reconditioned, with new construction and rehabilitation in progress. Many of the systems that appeared to be in poor condition were in the process of undergoing rehabilitation or were expected to be replaced or upgraded during ongoing plant improvements and maintenance of the facility. A summary of mechanical, HVAC, electrical, instrumentation, and structural asset conditions are outlined in the following sections.

A large number of the mechanical and HVAC assets at the NDWWTP are in fair condition. The mechanical maintenance staff adheres to the programmed maintenance schedules by regularly performing major overhauls of critical equipment and proceeding with capital improvements to replace assets when they reach the end of their useful lives. Most of the mechanical assets have spare parts or a standby unit that can be put into service while the other unit is receiving maintenance.

The routine and preventative maintenance practices of the mechanical maintenance staff provide adequate coverage to maintain the existing equipment, and extensive enhancements of core plant processes have also been installed through renewal and replacement of aging system components. The following upgrades and improvements were recently implemented or are currently underway at the NDWWTP:

- The Aerated Grit/Screening (AGS) Building was retrofitted which involved the removal and replacement of most system components with new (2017) equipment including, but not limited to, bar screens, valves, compactors, control panels, MCCs, instrumentation, and other electrical and HVAC improvements.
- A new motor, valves, gauges, and gearboxes were recently installed for Cooling Tower 2. Additional maintenance and painting are expected for piping assemblies for Cooling Towers 1 and 2.



- Generators 1 through 4 are going to be retrofitted with external water cooling systems to replace the existing internal air cooling radiators. Generators 5 and 6 currently have external water cooling radiators that were recently installed. All generators have been upgraded with catalytic converters.
- The main valves for Injection Wells 2, 3, and 4 were recently replaced. New instrumentation was also installed for the three injection well systems.
- The Injection Well Pumping Station was recently retrofitted which involved the removal and replacement of most system components with new (2017) equipment including, but not limited to, injection well pumps and motors, MCCs, VFDs, and other electrical equipment.
- A new flushing water system, including flushing water pumps, strainers, electrical controls, and other associated equipment, was in the process of being installed in the On-Site Chlorination & Non-Potable Pumping Building during the time of inspection.
- New instrumentation was recently installed for Compressors 4 and 5 at Oxygen Plant 3.
- The Pretreatment & Sludge Transfer Building was retrofitted and involved the removal and replacement of most system components with new (2017) equipment including, but not limited to, a new HVAC system, grit screens, grit conveyors, compactors, control panels, instrumentation, and other electrical improvements. Continued upgrades such as structural improvements and new transfer sludge pumping equipment will also be installed in the coming months. A multi-story extension of the building was also recently constructed during the time of inspection to accommodate for new electrical equipment and storage area.

At the time of inspection, the following components were out of service or offline and under complex preventative maintenance or rehabilitation:

- Oxygenation Train 5
- Primary Clarifier 4 and Primary Clarifier 6
- Caustic Soda System in Primary Sludge Distribution Chamber 1
- Sludge Pump Assembly in Return Sludge Pumping Station 4
- Sludge Pump Assembly in Return Sludge Pumping Station 5

The condition of the following components could improve if recommended improvements or rehabilitation is performed:

- Moderate to severe corrosion was observed on distillation towers and associated piping at Oxygen Plants 1 and 2. Some areas on the distillation towers showed extensive peeling of paint, corrosion, staining, and weathering.
- Clarifier mechanisms for Primary Clarifiers 1 through 3 were corroded and in poor condition. Primary Clarifier 4 was undergoing rehabilitation and was inaccessible during time of inspection.
- Instrumentation with visual meters for the caustic soda systems in Primary Sludge Distribution Chambers 1 and 2 were in poor condition and not in operation.
- Severe corrosion was observed on pump base plates, flanges, and some motors at the Reuse Pumping Station.
- Odor control ductwork for Secondary Clarifier 2 had been removed due to the collapse of the concrete cover. Repair and replacement of the ductwork and structure are required.
- The water reuse filters and backwash pumps were out of service during the time of inspection due to the status of the public access reuse irrigation system for the FIU campus and required facility improvements. Department staff are currently considering rehabilitating the system.

For the most part, electrical and instrumentation equipment at the WWTP varies from fair to good condition. The electrical and instrumentation equipment appears to be maintained as staff continue to replace aged and obsolete equipment that lack the availability of spare parts. The following is a general summary of electrical and instrumentation observations seen during the visit to the North District WWTP.

Most equipment within environmentally controlled areas are noted to be in fair to good condition, but still perform per function. In these locations, equipment has generally been in service for mid to long term, though without notable measures of degradation. New electrical equipment was recently installed in the On-Site Chlorination & Non-Potable Pumping Building, Pretreatment & Sludge Transfer Building, Aerated Grit/Screening (AGS) Building, and Injection Well Pumping Station.

In non-environmentally controlled areas, equipment is largely as expected in their respective environments. Mild corrosion was observed, particularly on control panels in Primary Sludge Distribution Chambers 1 and 2, and Return Sludge Pumping Stations 1 through 5. Elevated levels of corrosion were observed on electrical equipment in the Air Scrubber Building.

MCCs and switchgear that have not been recently replaced or upgraded typically have warning labels for "High Voltage" and are marked with arc flash labels dated between 2004 and 2005. The overall site arc flash risk assessment should be updated to account for any changes in the electrical distribution system that could affect listed incident energies and new labels should be affixed as required.

Instrumentation located outside appeared to be generally in fair condition.. Sunshields, for the most part, were provided for instrument transmitters located in the sun, however, there are some instances where none were provided. LCD screens observed were still visible.

The conditions of the structural assets at the NDWWTP range from fair to good. Some deficiencies noted in prior Consultant annual assessments have been repaired. Cracking and spalling of concrete stairs and adjacent supports for primary and secondary clarifiers identified in previous inspections had been repaired. The concrete stairway leading to oxygenation trains which showed signs of concrete deterioration in past inspections had also been improved. During the time of inspection, Primary Clarifier 4 and Primary Clarifier 6 were taken out of service for preventive maintenance and were undergoing rehabilitation.

Typically, a fair condition was assigned when a structural deficiency was identified, but it had no effect on the structural integrity of the building and little to no effect on the process of the equipment within the building. Assets that were defined as being in poor condition should undergo restoration or reconstruction to maintain structural integrity and function. The condition of the following components could improve if recommended rehabilitation is performed:

- Concrete piping assembly bases for Tank Drain Pump 3 and Tank Drain Pump 4 in Return Sludge Pumping Station 2 were severely damaged and deteriorated with exposed rebar.
- Severe deterioration of structural concrete and extensive areas of exposed rebar were observed on the Screen Chambers structure.
- The concrete slab covering for the odor control ductwork for Secondary Clarifier 2 had collapsed and requires replacement.
- Moderate corrosion was observed on and surrounding the manhole and metal seams/supports for concrete top slabs of the Treated Effluent Chamber.

Structures with fair and poor ratings should be considered for inclusion in the CIP, if not previously outlined in the Consent Decree modifications.

Any deficiencies are addressed as part of renewal and replacement initiatives established by the Department.

### 5.8.1.2 Pumping Stations

Arcadis inspected 46 wastewater pumping stations on November 30, 2016 in the Miami-Dade service area. A total of 23 wastewater pumping stations were also inspected over the course of three days: August 15, 2017 to August 16, 2017, and on September 1, 2017. Inspections focused on general housekeeping, the structural components, the apparent operational readiness and condition of the mechanical, electrical, instrumentation & controls (I&C), and ancillary equipment.

Collectively, all of the observed pumping station assets were found to be in good process condition. The asset physical conditions ranged from good to poor. The mechanical equipment (i.e. pumps, motors, valves, piping, etc.), electrical components (i.e. panels, VFDs, instrumentation, etc.), and structures (i.e. building, driveway, hoists) appeared to be well maintained. Except where noted in equipment surfaces, including pumps, motors, piping, valves, and fittings were adequately painted. The Department reported that a painting crew is assigned to a pumping station after maintenance is performed to protect surfaces from corrosion. Department staff also noted that they drain, clean, and apply a protective coating on the interior of the wet wells (where necessary) for each pumping station on an annual basis. Some components within various facilities were beyond useful life; however, appeared to be well maintained and operating as needed. Standby generators generally appeared in good condition with adequate maintenance.

As part of the preventative maintenance program and continuous upgrading strategy, the Department recently implemented the following upgrades and improvements:

- PS 516: The internals of the MCCs have been replaced with new solid-state components.
- PS 522: The pumps, generator, and switchgear were replaced approximately five years ago.
- PS 536: Two pumps and two cone valves are rehabilitated each year. The electrical systems were upgraded approximately three years ago.
- PS 607: The pumping station was rehabilitated approximately nine months ago, replacing the centrifugal pumps with submersible type pumps and elevating the electrical panel to a platform at 14' elevation to mitigate against sea level rise.
- PS 680: The pumping station was upgraded from a dry well with centrifugal pumps to a wet well with submersible pumps. The original dry well was deteriorating with rebar coming through the concrete due to electrolysis. Startup of the pumping station was scheduled for December 1, 2016. Fencing and sod had not yet been installed.
- PS 683: The pumps, valves, check valves, and drive shafts were replaced in 2014. The generator was reconditioned and the switchgear replaced in 2012. A hydroxyl-ozone odor-control system was installed in 2013.
- PS 852: The pumps have been replaced approximately four years ago and electrical components are clean.

- PS 1073: The pumps are undergoing rehabilitation one at a time. At the time of inspection, one pump had been rehabilitated.
- PS 151: New paint observed in the dry well.
- PS 536: New paint observed on pumps, pump bases, valves and piping.
- PS 641: The pumping station was upgraded from a dry well with centrifugal pumps to a wet well with submersible pumps. New electrical equipment was installed.
- PS 660: On-going HVAC improvement project was observed at the pump station.
- PS 659: A new check valve was recently installed.
- PS 668: The electrical equipment appears to have been recently upgraded.
- PS 669: The electrical equipment appears to have been recently upgraded.

The Department is planning the following upgrades and improvements for some of the collection system pumping stations as described in the Consent Decree and the 2016 OOL Update report:

- PS 517: The pumping station is scheduled to be upgraded to pump to the new West District WWTP in approximately 2019.
- PS 571: The pumping station is in good condition and is scheduled to be upgraded with the Consent Decree limiting ocean outfall discharge.
- PS 559: The electrical system is scheduled to be refurbished in approximately 2019, which will enclose the electrical equipment in an area separate from the pump room.
- PS 571: The regional pumping station is scheduled to be upgraded in approximately 2021. The wet well was in good condition and had been coated with a red sealant approximately five years ago.
- PS 691: The regional pumping station is scheduled to be reworked to pump to the new West District WWTP in approximately 2019. The MCC is in fair condition due to age.
- PS 692: The regional and booster pumping stations are scheduled to be reworked to pump to the new West District WWTP in approximately 2019.
- PS 698: The pumping station is in fair condition and is scheduled to be demolished and converted to a submersible pumping station in FY 2017.
- PS 414: The pumping station is scheduled to undergo mechanical, structural, and electrical upgrades by June 2018.
- PS 536: The work at this pumping station includes the installation of a new 48-in force main from Kendall Drive to the suction side of PS 536.
- PS 559: The pumping station will be upgraded to increase capacity due to the OOL projects.
- PS 669: Mechanical, structural, and electrical upgrades will be implemented at the pumping station by June 2019.

The following pumping stations were found to have deficiencies that categorized them to be in poor asset condition:

- PS 501: The mechanical equipment is in good condition. However, the original bitumastic coating in the wet well is in poor condition, only covering approximately 50% of the wall surface. The pumping station is categorized as fair condition overall.
- PS 761: The interior of the dry well is wet, indicating leaking. Based on the condition assessment of this pumping station, it would be a good candidate to upgrade to the new submersible pumping station design.
- PS 1072: The mechanical equipment is in good condition, although Pump No. 3 is noisy while running. However, the wet well concrete is severely degraded and in poor condition, and the locking mechanism on the wet well door is broken.
- PS 001: Various leaks between pipe fittings and valves were observed. Ventilation inside the pump station needs improvement. Bar screens were in fair condition.
- PS 002: The existing HVAC system was in poor condition. Improvements to the HVAC were observed at the time of the inspection. Various leaks between pipe fittings and valves were observed. Ventilation inside the pump station could be improved. Bar screens were in poor condition.
- PS 591: The protective coating of the wet well had expired.
- PS 642: The pumping station had no protective coating inside the wet well. The wet well appears to have high levels of infiltration.
- PS 673: The pump seals at this pump station appeared to be leaking. The protective coating at the wet well had expired.
- PS 1076: The protective coating of the wet well had expired.

Any deficiencies are addressed as part of renewal and replacement initiatives established by the Department.

## 6 MULTI-YEAR CAPITAL PLAN

The Miami Dade Water and Sewer Department has a formal capital planning and budgeting process led by the Engineering Division. The plan includes projects for the renewal and replacement of existing infrastructure, expansion projects to accommodate growth in the System, projects resulting from changes in regulatory requirements, and construction of new infrastructure as part of the long-term master plan. The utility develops a multi-year capital plan, or MYCIP, that is reviewed and updated annually. Cost estimates are prepared along with a review of anticipated funding sources and uses for the near-term projects.

### 6.1 Summary of Department Multi-Year Capital Plan

The full multi-year capital plan, shown in Tables 6-1 and 6-2, totals \$859 million for water projects and \$2.9 billion for wastewater projects from FY 2019 through FY 2024. Funding sources for these projects are anticipated to include bond proceeds in addition to revenue sources such as rate revenue and impact fees. These projects represent strategic long-term planning efforts to sustain the existing infrastructure and system expansion to accommodate growth.

As part of the overall budgeting process, the utility updates the multi-year capital plan annually. Staff reviews progress of ongoing projects and refines budgets as needed. Additional projects arising from identified short-term needs as well long-term plans are compiled and project budgets are reviewed with the relevant departments and project managers. A review of regulatory requirements and any projects required as a result of the regulations is also completed and budgeted. These efforts enable the creation of the full multi-year capital plan, which staff reviews to determine the funding source, which may include available balances, rate revenue or impact fees, or future debt issuance. The Department then estimates the schedule of debt financing for near- and long-term purposes. Tables 6-1 and 6-2 present the FY 2019 through FY 2024 multi-year capital plan by project and funding source, respectively.

**Table 6-1 Summary of Multi-Year Capital Plan by Project**

PROJECT NUMBER	PROJECT DESCRIPTION	FISCAL YEAR						Total
		2019	2020	2021	2022	2023	2024	
Water System Projects								
1050	Hialeah Preston WT Plant Improvements	\$18.2	\$12.9	\$2.2	\$0.5	\$1.0	\$0.0	\$34.9
1051	Alex Orr WTP Upgrade	\$20.7	\$16.8	\$8.1	\$6.5	\$8.0	\$4.8	\$64.9
1053	North Water Transmission Main Improvements	\$11.1	\$15.5	\$23.6	\$27.2	\$12.5	\$2.5	\$92.4
1054	Central Water Transmission Main Improvements	\$0.0	\$0.0	\$0.0	\$0.3	\$0.7	\$1.0	\$2.0
1055	South Water Transmission Main Improvements	\$0.4	\$0.7	\$1.2	\$3.8	\$2.6	\$5.5	\$14.3
1056	Water Improvements	\$1.4	\$1.0	\$1.0	\$1.0	\$2.0	\$2.0	\$8.4
1059	Water General Maintenance & Office Facilities	\$2.0	\$4.5	\$3.4	\$7.9	\$7.7	\$22.0	\$47.6

1060	Water Distribution System Extensions	\$26.5	\$21.2	\$15.2	\$20.0	\$14.1	\$14.0	\$111.1
1063	Hydrants & Improvements	\$3.5	\$3.5	\$3.5	\$3.5	\$3.5	\$3.5	\$21.0
1064	Heavy Equipment	\$5.5	\$5.7	\$5.7	\$5.7	\$5.7	\$5.7	\$34.0
1065	General Obligation Bonds (GOB)	\$3.0	\$2.7	\$1.6	\$0.4	\$0.0	\$0.0	\$7.8
1066	Water Plant Replacements & Renovations	\$12.3	\$2.5	\$2.5	\$2.7	\$3.5	\$3.5	\$27.1
1067	Water System Maintenance & Upgrades	\$21.7	\$23.0	\$23.0	\$23.0	\$23.0	\$23.0	\$136.7
1070	Treatment & Wellfields SCADA	\$1.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$1.0
1072	Water Treatment Plant Upgrades	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
1075	Safe Drinking Water Act Modifications	\$4.2	\$4.6	\$5.5	\$5.0	\$1.0	\$1.0	\$21.3
1077	South Miami Heights WTP & Wellfield	\$2.7	\$1.2	\$1.1	\$1.1	\$1.0	\$1.0	\$8.1
1078	Water Telemetry System Enhancements	\$0.3	\$0.3	\$0.3	\$0.3	\$0.3	\$0.3	\$1.8
1080	Hialeah Aquifer R.O. WTP	\$0.7	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.7
1081	Miami Springs Water Construction Fund	\$3.0	\$2.0	\$0.3	\$0.0	\$0.0	\$0.0	\$5.3
1082	Water - Pipes and Infrastructure Projects	\$16.8	\$15.4	\$13.2	\$9.0	\$8.0	\$8.0	\$70.4
1084	Water - Commercial Corridors Economic Development and MP	\$21.5	\$23.3	\$26.6	\$24.4	\$24.8	\$27.6	\$148.3
<b>Total Water System Projects</b>								
		<b>\$176.7</b>	<b>\$157.1</b>	<b>\$138.1</b>	<b>\$142.2</b>	<b>\$119.4</b>	<b>\$125.5</b>	<b>\$858.9</b>
<b>Wastewater System Projects</b>								
1002	North District WWTP Upgrades	\$10.9	\$13.8	\$15.1	\$13.8	\$10.0	\$15.4	\$79.0
1003	Central District WWTP Upgrades	\$3.5	\$7.0	\$8.0	\$8.0	\$11.0	\$15.0	\$52.5
1006	South District WWTP Plant Expansion	\$2.0	\$6.2	\$11.9	\$16.8	\$4.0	\$0.2	\$41.1
1007	South District WWTP Upgrades	\$5.0	\$10.8	\$5.5	\$2.0	\$1.0	\$2.0	\$26.3
1008	North District WWTP Transmission Mains	\$1.4	\$1.8	\$4.8	\$5.7	\$13.2	\$22.1	\$49.1
1009	Central District WWTP Transmission Mains	\$4.3	\$5.5	\$4.0	\$2.0	\$2.0	\$2.0	\$19.7
1010	South District WWTP Transmission Mains	\$7.9	\$8.5	\$7.0	\$4.0	\$0.0	\$0.0	\$27.5
1011	Gravity Sewer Renovations	\$7.1	\$6.8	\$7.4	\$6.7	\$7.6	\$4.0	\$39.6
1012	Sanitary Wastewater System Improvements	\$4.0	\$2.6	\$2.5	\$2.5	\$2.5	\$7.6	\$21.7
1013	Wastewater General Maintenance & Office Facilities	\$5.3	\$8.9	\$12.5	\$17.6	\$17.6	\$16.5	\$78.4
1015	Pump Station Improvement Program	\$25.2	\$20.7	\$17.0	\$15.0	\$0.0	\$0.0	\$77.9

1018	Peak Flow Management Studies	\$4.4	\$6.6	\$4.5	\$1.1	\$0.0	\$0.0	\$16.6
1019	Sanitary Sewer System Extension	\$5.1	\$2.4	\$3.5	\$3.0	\$2.3	\$0.0	\$16.3
1021	Pump Station Generators and Upgrades	\$1.8	\$1.4	\$2.2	\$3.9	\$0.5	\$2.0	\$11.7
1023	Wastewater Telemetry System	\$0.5	\$0.5	\$0.5	\$0.5	\$0.5	\$0.5	\$3.0
1024	Wastewater System Upgrades	\$25.5	\$20.0	\$20.0	\$20.0	\$20.0	\$20.0	\$125.5
1025	Lift Station Upgrades & Structural Improvements	\$3.5	\$3.5	\$3.5	\$3.5	\$3.5	\$3.5	\$21.0
1027	Tools, Equipment, & Vehicles	\$12.2	\$13.5	\$13.5	\$13.5	\$13.5	\$13.5	\$79.7
1029	WWTP Replacement & Renovation	\$16.4	\$10.8	\$10.8	\$10.8	\$10.8	\$10.8	\$70.4
1032	WWTP Miscellaneous Upgrades	\$0.5	\$1.8	\$1.2	\$1.0	\$0.0	\$0.0	\$4.4
1039	Miami Springs Pump Station Upgrade	\$0.2	\$0.3	\$0.0	\$0.0	\$0.0	\$0.0	\$0.5
1040	Outfall Legislation	\$31.6	\$46.5	\$54.4	\$87.0	\$115.3	\$168.3	\$503.2
1041	General Obligation Bonds (GOB)	\$2.0	\$2.0	\$1.4	\$0.2	\$0.0	\$0.0	\$5.6
1042	Wastewater – Pipes and Infrastructure Projects	\$3.0	\$3.0	\$3.0	\$3.0	\$3.0	\$3.0	\$18.0
1044	Wastewater Treatment Plants Consent Decree	\$98.7	\$112.8	\$147.1	\$157.4	\$154.9	\$116.5	\$787.3
1045	Wastewater Collection and Transmission Lines Consent Decree	\$23.0	\$15.9	\$15.4	\$12.4	\$10.8	\$9.5	\$87.1
1046	Sewer Pump Station Systems Consent Decree	\$28.0	\$8.1	\$3.2	\$1.2	\$0.1	\$0.0	\$40.5
1047	Wastewater Commercial Corridor Economic Development	\$5.4	\$15.6	\$16.2	\$26.4	\$48.9	\$78.1	\$190.4
1048	Ocean Outfall Capacity	\$16.8	\$23.6	\$35.8	\$63.2	\$66.1	\$83.6	\$289.1
1049	Sewer Pump Stations	\$13.6	\$18.6	\$24.7	\$25.4	\$27.0	\$41.2	\$150.5
<b>Total Wastewater System Projects</b>		<b>\$368.5</b>	<b>\$399.5</b>	<b>\$456.8</b>	<b>\$527.5</b>	<b>\$546.0</b>	<b>\$635.3</b>	<b>\$2,933.5</b>
<b>Total Water &amp; Wastewater</b>		<b>\$545.2</b>	<b>\$556.6</b>	<b>\$594.8</b>	<b>\$669.7</b>	<b>\$665.4</b>	<b>\$760.7</b>	<b>\$3,792.4</b>

1. CIP data provided by M-D WASD per 10/26/2018 MyCIP.



**Table 6-2 Summary of Multi-Year Capital Plan by Funding Source**

Fund Number	Fund Description	FISCAL YEAR						Total
		2019	2020	2021	2022	2023	2024	
Water System Projects								
2019W	2019 Bond Sale	\$79.3	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$79.3
2020W	2020 Bond Sale	\$0.0	\$97.8	\$0.0	\$0.0	\$0.0	\$0.0	\$97.8
2021W	2021 Bond Sale	\$0.0	\$0.0	\$83.2	\$0.0	\$0.0	\$0.0	\$83.2
2022W	2022 Bond Sale	\$0.0	\$0.0	\$0.0	\$92.1	\$0.0	\$0.0	\$92.1
2023W	2023 Bond Sale	\$0.0	\$0.0	\$0.0	\$0.0	\$64.4	\$0.0	\$64.4
2024W	2024 Bond Sale	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$77.7	\$77.7
EW205	Miami Springs Water Construction Fund	\$3.0	\$2.0	\$0.3	\$0.0	\$0.0	\$0.0	\$5.3
EW221	Water Renewal & Replacement	\$58.5	\$39.5	\$39.5	\$39.5	\$39.5	\$39.5	\$256.0
EW223	Plant Expansion	\$8.0	\$10.5	\$9.1	\$5.7	\$10.0	\$2.8	\$46.1
EW224	Special Construction Fund	\$5.9	\$1.0	\$1.0	\$1.0	\$2.0	\$2.0	\$12.9
EW226	Fire Hydrant Fund	\$3.5	\$3.5	\$3.5	\$3.5	\$3.5	\$3.5	\$21.0
EW247	G.O. Bonds	\$3.0	\$2.7	\$1.6	\$0.4	\$0.0	\$0.0	\$7.8
EW263	Commercial Paper Funds - Water	\$15.5	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$15.5
Total Water System Projects		\$176.7	\$157.1	\$138.1	\$142.2	\$119.4	\$125.5	\$858.9
Wastewater System Projects								
2019S	2019 Bond Sale	\$134.4	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$134.4
2020S	2020 Bond Sale	\$0.0	\$275.9	\$0.0	\$0.0	\$0.0	\$0.0	\$275.9
2021S	2021 Bond Sale	\$0.0	\$0.0	\$345.0	\$0.0	\$0.0	\$0.0	\$345.0
2022S	2022 Bond Sale	\$0.0	\$0.0	\$0.0	\$399.4	\$0.0	\$0.0	\$399.4
2023S	2023 Bond Sale	\$0.0	\$0.0	\$0.0	\$0.0	\$394.7	\$0.0	\$394.7
2024S	2024 Bond Sale	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$551.5	\$551.5
EW605	Miami Springs Sewer Construction Fund	\$0.2	\$0.3	\$0.0	\$0.0	\$0.0	\$0.0	\$0.5
EW621	Wastewater Renewal & Replacement	\$65.6	\$52.4	\$50.5	\$50.5	\$50.5	\$50.5	\$320.1
EW623	Plant Expansion (Connection Charges)	\$33.4	\$50.9	\$41.1	\$48.5	\$49.5	\$25.7	\$249.1
EW624	Special Construction Fund	\$3.0	\$2.5	\$2.5	\$2.5	\$2.5	\$7.6	\$20.6
EW647	G.O. Bonds	\$7.0	\$17.6	\$17.6	\$26.6	\$48.9	\$0.0	\$117.6
EW663	Commercial Paper Funds - Sewer	\$124.9	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$124.9
Total Wastewater System Projects		\$368.5	\$399.5	\$456.8	\$527.5	\$546.0	\$635.3	\$2,933.5
	Total Water & Wastewater	\$545.2	\$556.6	\$594.8	\$669.7	\$665.4	\$760.7	\$3,792.4

## 6.2 Summary of Multi-Year Capital Plan Funded with Series 2019 Bonds

The proposed multi-year capital plan funded in part by commercial paper, planning to be refunded by the Series 2019 Bond proceeds, includes 11 water projects and 20 wastewater projects for a total of 31 projects, at a total cost of \$214 million. Each project may include subprojects or phases to be executed over multiple years. Table 6-3 and Table 6-4 summarize the water and wastewater projects, provide a brief description, and show the applicable funding requirements. Completion of some projects will require additional future funds, which are anticipated to be provided through a combination of future debt issuance and other available sources.

## 6.3 Water Projects – Series 2019 Bond Issue

The water capital projects that were funded in part by commercial paper, and will be refunded by the Series 2019 Bonds, consist of 11 projects involving WTP and wellfield improvements, transmission system improvements and extensions, general plant and system improvements, and improvements due to regulatory requirements. The total funds required for these projects from FY 2019 through FY 2024 are \$606.2 million, of which \$79.3 million is anticipated to be funded by the Series 2019 Bonds. Figure 6-1 provides a graphical summary of the planned water projects by function. The majority of the planned water projects, funded by commercial paper and to be refunded by the Series 2019 Bonds, are related to wellfield, WTP, and distribution system improvements.

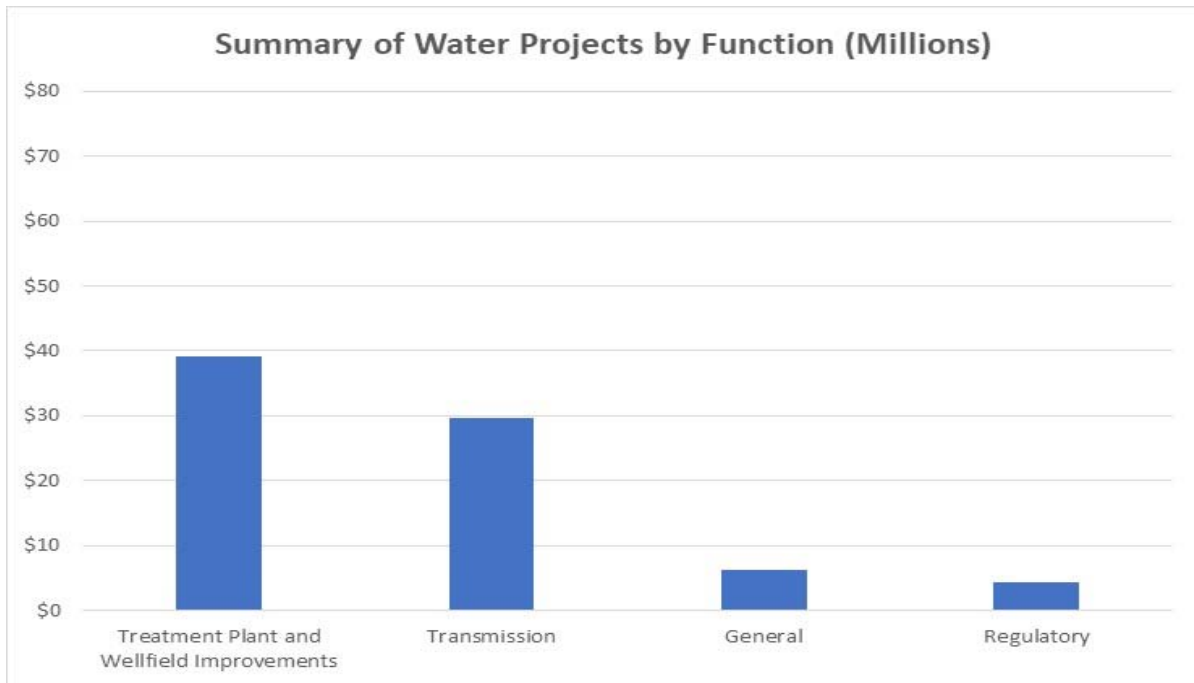


Figure 6-1 Summary of Water Projects by Function (Millions)

**Table 6-3 Summary of Multi-Year Capital Plan Water Projects Funded with Series 2019 Bonds (\$ in millions)**

PROJECT NUMBER	PROJECT NAME	PROJECT DESCRIPTION	TOTAL COST	FUNCTION
<b>WATER Projects - \$ (millions)</b>				
1050	Hialeah / Preston Water Treatment Plant Improvements	Emergency generators, transmission main, pump station, 5 MG elevated remote storage, chlorine conversion, plant upgrades, chemical house and filter backwash, and plant accelerators	\$18.2	Treatment Plant & Wellfield Improvements
1051	Alexander Orr, Jr Water Treatment Plant Expansion	Finished water pipeline, Gen. #5 and #6 high service pumps, chlorine conversion, switchgear building and transformer, plant upgrades for remote storage, diesel fuel storage tanks, lime slakers, lime plant rehabilitation, high service pump and motor improvements, hydrotreater drives assemblies and motors, and plant wash and tank repair	\$19.9	Treatment Plant & Wellfield Improvements
1053	North Miami-Dade Water Transmission Mains Improvements	Water mains, ground storage tank and pump stations	\$0.7	Transmission
1055	South Miami-Dade Water Transmission Mains Improvements	Construct various water transmission mains to serve south Miami-Dade County after the new South Miami Heights water	\$0.4	Transmission
1059	Water General Maintenance and Office Facilities	Construct regional general maintenance centers, office facilities, and storage warehouses	\$2.0	General
1060	Water Distribution System Extension Enhancements	2.7 miles of 36" water main NW 7 Ave. to NE 14 Ave., 3.34 miles of 36" water main NW 106 St. and NW 87 Ave. to NW 87 Ave. and NW 122St., 30" water main for 79th St. Causeway, various distribution system extensions (including for FDOT JPAs), North Dade 16" transmission main, small diameter water main enhancements, distribution upgrades, transmission improvements, and various other improvements	\$7.5	Transmission
1070	Automation Of Water Treatment Plants	Plant and wellfield SCADA	\$1.0	Treatment Plant & Wellfield Improvements
1072	Water Treatment Plants Miscellaneous Upgrades	WTP corrosion control, electrical upgrades, electrical generator upgrades, and UPS systems,	\$0.0	Treatment Plant & Wellfield Improvements
1075	Safe Drinking Water Act Modifications - Swt Rule And D-Dbp	Preston improvement to filters, plant modifications, South Dade chlorine conversion, and NWWF high service pump stations	\$4.2	Regulatory
1082	Water - Pipes And Infrastructure Projects	Pipes And Infrastructure Projects	\$4.3	General
1084	Small Diameter Water Mains Replacement Program	Design, construct, and replace undersized water mains to improve fire flows, pressure to homes and quality of water	\$21.0	Transmission

## 6.4 Wastewater Projects – Series 2019 Bond Issue

The wastewater capital projects were funded in part by commercial paper and will be refunded by the Series 2019 Bonds consist of 20 wastewater projects. These projects include treatment plant improvements, piping and collection system improvements, general system improvements, and improvements due to regulatory requirements which don't include those projects driven by Consent Decree and Ocean Outfall Legislation. The total cost for these projects from FY 2019 through FY 2024 is \$2.6 billion, of which \$134.4 million is anticipated to be funded by commercial paper and refunded by the Series 2019 Bonds. Figure 6-2 provides a graphical summary of the wastewater projects, planned for funding by commercial paper and refunded from the Series 2019 Bonds, by function, and Table 6-4 provides a brief project description, and shows the applicable funding requirements for each project. The majority of the planned wastewater projects funded by commercial paper and refunded by the Series 2019 Bonds are related to piping and collection projects, of which a large number of these are required by Consent Decree and Ocean Outfall Legislation.

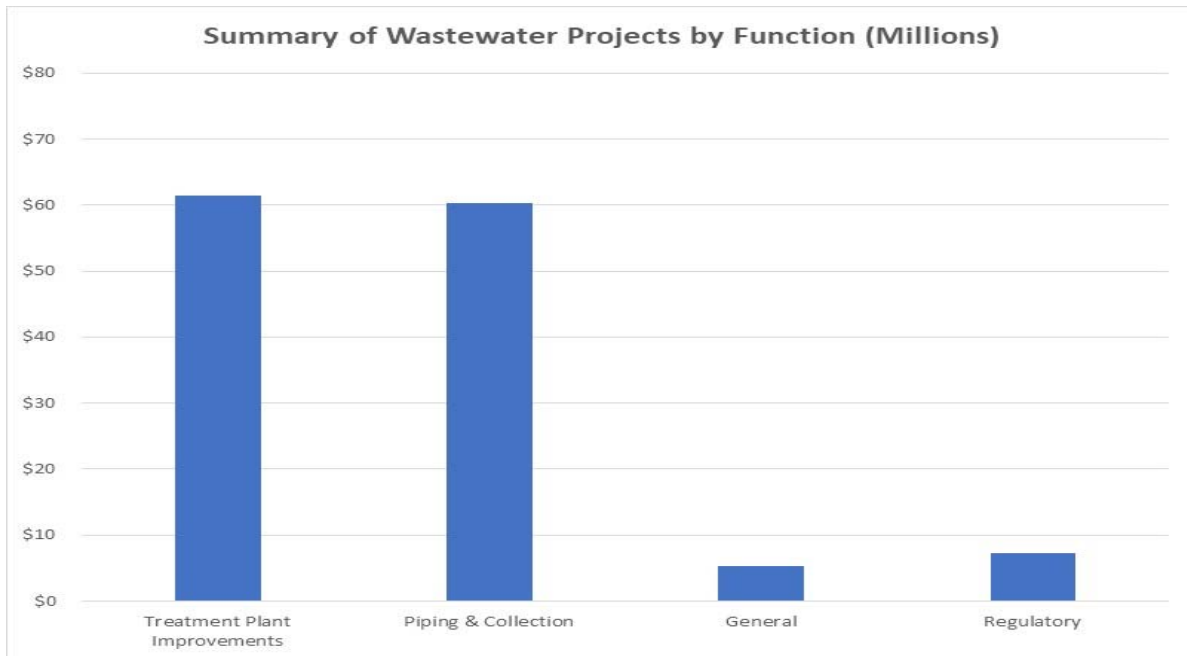


Figure 6-2 Summary of Wastewater Projects by Function (Millions)

**Table 6-4 Summary of Multi-Year Capital Plan Wastewater Projects Funded with Series 2019 Bonds (\$ in millions)**

PROJECT NUMBER	PROJECT NAME	PROJECT DESCRIPTION	TOTAL COST	FUNCTION
<b>WASTEWATER Projects - \$ (millions)</b>				
1002	North District Upgrades - Wastewater Treatment Plant	Chlorine improvement process, injection wells upgrades, upgrades and rehabilitation of WWTP, replace switchgear, pretreatment building upgrades, oxygen plant electrical upgrades, effluent pump station wet well rehabilitation, generator and electrical building flood mitigation, fire protection, primary clarifier rehabilitation, yard piping rehabilitation, odor control rehabilitation, effluent pump station pumps replacement, injection well pumps, plant process electric consumption metering, high efficiency mixer system, high efficiency transformers and motors and electrical equipment, and monitoring wells	\$3.9	Treatment Plant Improvements
1003	Central District Upgrades - Wastewater Treatment Plant	Digester improvements, outfall rehabilitation, sludge handling facility, dewatering building improvements, dewatering switchgear, pump stations at plant, administration building, headworks/grit building improvements, cogeneration system improvements, emergency generators, plant process controls, fire alarm system, centrifuge controls, pump station replacement, plant process controls, electrical consumption metering, high efficiency mixer system, high efficiency transformers and motors, replace digesters, pump station electrical upgrade, hypochlorite facility, biosolid processing facilities, centrate treatment process, carbon dioxide sequestering, struvite control process implementation, membrane biological reactor	\$2.5	Treatment Plant Improvements
1006	South District Wastewater Treatment Plant Expansion - Phase 3	Engineering Service, upgrades and rehabilitation of the plant and its appurtenant facilities	\$0.9	Treatment Plant Improvements
1007	South District Upgrades - Wastewater Treatment Plant	Sludge treatment facility, dewatering centrifuge, compressor for oxygen plant, cogeneration units #'s 1 through 5, effluent pumps, odor control, digester gas recirculation, electrical consumption metering, fire alarm system, centrifuge controls, oxygen compressor #4, high efficiency mixer system, high efficiency transformers and motors, replace power transfer control system, advanced digestion thermal, plant expansion, centrate treatment process, struvite	\$3.5	Treatment Plant Improvements

		control process, and carbon dioxide sequestering with effluent reuse		
1008	North Miami-Dade Wastewater Transmission Mains And Pump Station Improvements	New force mains, pipeline interconnections, and force main upgrades	\$1.4	Piping & Collection
1010	South District Wastewater Transmission Mains and Pumps Stations Improvements	Construct piping improvements to pump station number 536 and force main upgrade in SW 117 Ave	\$3.6	Piping & Collection
1011	Gravity Sewer Renovations	Rehabilitation of sewer mains due to inflow and infiltration	\$7.1	Piping & Collection
1012	Sanitary Wastewater System Improvements	Design build replacement of gravity main Shenandoah area - Phase B	\$1.0	Piping & Collection
1013	Water Treatment Plants Replacement And Renovations	Security projects, and tank cleaning and other plant rehabilitation projects	\$5.3	General
1018	Peak Flow Management Facilities	Peak flow management facilities, force mains and extensions, upgrade sewer pump stations, pump station 8, biosolids interim facility, flow meter, and pump station piping improvements	\$4.4	Piping & Collection
1021	Pump Station Generators And Miscellaneous Upgrades	Emergency generators, odor controls, security, relocation of pump stations, motor control and switchgear replacement at pump stations, replacement of mechanical equipment, submersible pumping equipment, and variable frequency drives	\$1.8	Piping & Collection
1029	Wastewater Treatment Plants Replacement And Renovation	WWTP rehabilitation, security projects, and upgrade wholesale flow meters	\$0.8	Treatment Plant Improvements
1032	Wastewater Treatment Plants Miscellaneous Upgrades	Electrical, generator housing replacement, oxygen plant controls, video surveillance system, electrical instrumentation equipment, and miscellaneous upgrades	\$0.5	Treatment Plant Improvements
1040	Outfall Legislation Summary Description	Pipeline interconnections, CDWWTP filters phases 1 & 2, CDWWTP pump station phases 1 & 2, pump	\$6.9	Regulatory

		stations, disposal wells, deep well injection, and various		
1044	Wastewater Treatment Plants- Consent Decree Projects	Design, construct, and rehabilitate infrastructure at wastewater treatment plants to comply with EPA Consent Decree	\$49.4	Treatment Plant Improvements
1045	Wastewater Collection and Transmission Lines- Consent Decree Projects	Design, construct, and rehabilitate collection and transmission infrastructure lines to comply with EPA Consent Decree	\$1.5	Piping & Collection
1046	Sewer Pump Station Systems- Consent Decree Projects	Design, construct, and rehabilitate pump stations infrastructure systems to comply with EPA Consent Decree	\$22.9	Piping & Collection
1047	Wastewater Commercial Corridors Economic Development	Install new sewer service to commercial properties utilizing septic tanks	\$0.4	Regulatory
1048	Ocean Outfall Capacity	Redirect flows to regional plants and account for peak flows through 2035	\$3.1	Piping & Collection
1049	Sewer Pump Stations	Design for installation, install of new pump, upgrades	\$13.6	Piping & Collection

## 6.5 Renewal and Replacement Projects (R&R)

Certain projects contained in the Multi-Year Capital Plan involve the ongoing R&R of existing assets in the system. For FY 2019 – FY 2024, the total water and wastewater budget for R&R projects is \$576 million. These projects are funded through a combination of funds on hand, revenue from operations, and fees collected. Table 6-5 provides a summary of planned R&R projects. Projects shown in Table 6-5 are a subset of the total MYCIP illustrated in Table 6-1.

**Table 6-5 Summary of Renewal and Replacement Projects**

PROJECT NUMBER	PROJECT DESCRIPTION	SUB-PROJECT NAME	FISCAL YEAR						Total
			2019	2020	2021	2022	2023	2024	
Water System R&R Projects									
1051	Alex Orr WTP Upgrade	ORR WTP - Pumping Unit No. 6 High Service Pump; ORR WTP - Switchgear Building and Transfer	\$0.8	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.8
1060	Water Distribution System Extensions	Water Distribution Systems Extensions – System Betterments	\$8.7	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$8.7
1064	Water Equipment & Vehicles	Misc. Tools and Equipment Heavy	\$5.5	\$5.7	\$5.7	\$5.7	\$5.7	\$5.7	\$34.0

		Construction Equipment							
1066	Water Plant Replacements & Renovations	Water Plants Rehab – Structures and Equipment, Security Projects	\$12.3	\$2.5	\$2.5	\$2.5	\$2.5	\$2.5	\$24.8
1067	Water System Maintenance & Upgrades	Water System Upgrades Blankets	\$21.7	\$23.0	\$23.0	\$23.0	\$23.0	\$23.0	\$136.7
1072	Water Treatment Plant Upgrades	Water Treatment Plants Miscellaneous Upgrades	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
1075	Safe Drinking Water Act Modifications	Miami Springs Wellfield Rehabilitation	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
1078	Telemetry System – Water	Water Telemetry System Enhancements	\$0.3	\$0.3	\$0.3	\$0.3	\$0.3	\$0.3	\$1.8
1080	Hialeah Aquifer R.O. WTP	Installation of 36 Inch DI Water Main	\$0.7	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.7
1082	Water – Pipes and Infrastructure Projects	Water – Pipes and Infrastructure Projects	\$8.0	\$8.0	\$8.0	\$8.0	\$8.0	\$8.0	\$48.0
1084	Water - Commercial Corridors Economic Development and MP	Water - Replacement of Undersized Water Mains	\$0.6	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.6
<b>Total Water System R&amp;R Projects</b>			<b>\$58.5</b>	<b>\$39.5</b>	<b>\$39.5</b>	<b>\$39.5</b>	<b>\$39.5</b>	<b>\$39.5</b>	<b>\$256.0</b>
<b>Wastewater System R&amp;R Projects</b>									
1015	Pump Station Improvement Program	Pump Station Improvement Program	\$0.2	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.2
1019	Sanitary Sewer System Extension	Sanitary Sewer System Extension	\$5.1	\$1.9	\$0.0	\$0.0	\$0.0	\$0.0	\$7.0
1023	Wastewater Telemetry System	Telemetry System - Wastewater	\$0.5	\$0.5	\$0.5	\$0.5	\$0.5	\$0.5	\$3.0
1024	Wastewater System Maintenance & Upgrades	Wastewater System Upgrades – Blankets	\$25.5	\$20.0	\$20.0	\$20.0	\$20.0	\$20.0	\$125.5
1025	Lift Station Upgrades & Structural	Lift Stations Structural Maintenance & Upgrades	\$3.5	\$3.5	\$3.5	\$3.5	\$3.5	\$3.5	\$21.0
1027	WW Tools & Equipment	Misc. Tools and Equipment, Vehicles/Transportation Equipment, Heavy Construction Equipment	\$12.2	\$13.5	\$13.5	\$13.5	\$13.5	\$13.5	\$79.7
1029	WWTP Replacement and Renovations	WWTP Rehab – Structures &	\$15.6	\$10.0	\$10.0	\$10.0	\$10.0	\$10.0	\$65.6



		Equipment, Security Projects							
1042	Wastewater – Pipes and Infrastructure Projects	Wastewater – Pipes and Infrastructure Projects	\$3.0	\$3.0	\$3.0	\$3.0	\$3.0	\$3.0	\$18.0
<b>Total Wastewater System R&amp;R Projects</b>			<b>\$65.6</b>	<b>\$52.4</b>	<b>\$50.5</b>	<b>\$50.5</b>	<b>\$50.5</b>	<b>\$50.5</b>	<b>\$320.1</b>
<b>Total Water &amp; Wastewater R&amp;R Projects</b>			<b>\$124.1</b>	<b>\$91.9</b>	<b>\$90.0</b>	<b>\$90.0</b>	<b>\$90.0</b>	<b>\$90.0</b>	<b>\$576.1</b>

## 7 CUSTOMERS AND RATES

### 7.1 Customers

The Department sells water and provides wastewater services to both retail and wholesale customers. The Department has 15 water and 13 wastewater wholesale customers. As of the end of Fiscal Year 2017, the Department had approximately 447,209 retail water customers and approximately 363,444 retail wastewater customers. Table 7-1 shows the water and wastewater flows and sales to each of the wholesale customers and retail customers.

Table 7-1 shows that, for FY 2017, 25.6 percent of the water produced, and 30.6 percent of the wastewater flows were unbilled. Virtually all of the unbilled wastewater is associated with retail customers because wholesale customer flows are metered and include any infiltration and inflow that occurs in the wholesale customers' service areas. For billing purposes, the amount of wastewater from retail customers is calculated based on water sales to each customer (individual customer wastewater flows cannot reasonably be metered), and a portion of water sales to retail customers is used for irrigation and other functions that divert the flow from the wastewater system. For over 20 years the Department has implemented an infiltration/exfiltration/inflow reduction program to reduce the amount of groundwater infiltration, and to minimize potential leakage of raw sewage from defective sewers. While this has reduced the amount of unbilled wastewater, the program has not yet fully achieved the desired results.

With two exceptions, the Department's wholesale customers are also its largest water and wastewater customers. Table 7-2 shows that FP&L Company, a retail customer, is by revenue the Department's fifth largest water customer, and that the Miami-Dade Aviation Department, also a retail customer, is the Department's fourth largest wastewater customer. FP&L operates the Turkey Point nuclear power plant in South Miami-Dade County. The Miami-Dade Aviation Department operates Miami International Airport in addition to five general aviation airports.

The Department's retail customers reside within the Department's service area and, by County ordinance, are required to obtain water and wastewater service from the Department. The Department has entered into agreements with all the wholesale customers. Tables 7-3 and 7-4 show contract expiration dates for water and sewer customers. The Department's wholesale water and wastewater agreements vary in duration, ranging up to 2037 and some agreements have expired and are in negotiations or pending Board of County Commission approval.

Three of the Department's wholesale water customers, North Miami, North Miami Beach, and Homestead operate their own water treatment plants. The City of Florida City also operate its own WTP. The Department is currently the only source of water and wastewater service in Miami-Dade County other than these four municipalities.

There are no known plans for any future water or wastewater treatment facilities in Miami-Dade County other than those to be developed by the Department. Permitting of any water and wastewater treatment facilities, including water supply permits, other than by the Department is not considered feasible at this time. Therefore, no significant change in the Department's water and wastewater customer base is anticipated.

**Table 7-1 Miami-Dade Water and Sewer Department Water and Wastewater Treated and Sales Fiscal Year 2017, Units thousand gallons**

Water System		Wastewater System	
Plant/customer	Water treated/sales	Plant/customer	Wastewater treated/sales
Water pumped by water treatment plant		Wastewater plant flows by plant	
Alexander Orr, Jr.	66,190,000	North District Plant	34,251,000
John E. Preston	27,891,000	Central District Plant	40,000,000
Hialeah	20,093,000	South District Plant	38,207,000
Interim Plants	3,752,000		
Purchased from other	116,000		
<b>Total water pumped</b>	<b>118,042,000</b>	<b>Total wastewater plant flows</b>	<b>112,458,000</b>
Water sold by customer		Wastewater treated by customer	
Wholesale customers		Wholesale customers	
Hialeah	7,040,000	City of Hialeah	9,203,000
Miami Beach	8,566,000	City of Miami Beach	8,054,000
North Miami Beach	83,000	City of North Miami	3,654,000
North Miami	2,313,000	City of Coral Gables	1,477,000
Opa-Locka	894,000	City of North Miami Beach	580,000
Hialeah Gardens	742,000	City of Opa-Locka	702,000
Bal Harbour	487,000	City of Medley	456,000
Medley	378,000	Florida City	425,000
North Bay Village	435,000	Homestead Air Force Base	86,000
Bay Harbor Islands	319,000	West Miami	169,000
Surfside	389,000	Hialeah Gardens	704,000
West Miami	344,000	North Bay Village	409,000
Indian Creek Village	143,000	City of Homestead	1,743,000
City of Homestead	668,000		
Virginia Gardens	80,000		
<b>Total Wholesale</b>	<b>22,881,000</b>	<b>Total Wholesale</b>	<b>27,682,000</b>
Retail	64,968,000	Retail	50,334,000
<b>Total water sold</b>	<b>87,849,000</b>	<b>Total wastewater sales</b>	<b>78,016,000</b>
Unbilled water	30,193,000	Unbilled wastewater flow	34,442,000
Unbilled water as percentage of total water treated	25.58%	Percent unbilled wastewater flow as percentage of total wastewater treated	30.63%

Source:

Miami-Dade Water and Sewer Department financial results for Fiscal Year 2017.

Notes:

North Miami Beach constructed their own water plant and beginning in FY 2009 has purchased water on an as-needed bases.

Homestead usage of water is limited to on as needed basis. Their usage is not consistent to that of a wholesale customer.

**Table 7-2 Miami-Dade Water and Sewer Department 10 Largest Customers by Invoiced Amount – Fiscal Year ended September 30, 2018 Units \$1000**

Water System			Wastewater System		
Customer	Invoiced Amount <sup>1</sup>	Percent of system revenues	Customer	Invoiced Amount <sup>1</sup>	Percent of system revenues
City of Miami Beach *	\$14,855	4.7%	City of Hialeah*	\$27,341	7.0%
City of Hialeah*	\$12,209	3.9%	City of Miami Beach*	23,826	6.1%
City of North Miami *	\$4,011	1.2%	City of North Miami*	10,755	2.7%
Dade County Aviation	\$3,653	1.3%	City of Homestead*	5,265	1.3%
Florida Power & Light Company*	\$1,994	0.6%	City of Coral Gables*	4,511	1.2%
Florida Dept. of Corrections *	\$1,736	0.5%	Miami Int'l Airport*	3,379	0.9%
City of Opa Locka *	\$1,550	0.5%	City of Opa Locka*	2,083	0.5%
Hialeah Gardens*	\$1,287	0.4%	City of Hialeah Gardens*	2,080	0.5%
City of Homestead *	\$1,159	0.4%	FI Dep't of Corrections*	1,774	0.4%
Jackson Memorial Hospital *	\$1,008	0.3%			
<b>Total system revenues</b>	<b>\$316,045</b>	<b>100%</b>	<b>Total system revenues</b>	<b>\$391,287</b>	<b>100%</b>

<sup>1</sup> Invoiced amount is prior to adjustment for true-up.

\* indicates wholesale customer

**Source:**

Miami-Dade Water and Sewer Department Financial results for Fiscal Year 2017.

**Table 7-3 Miami-Dade Water and Sewer Department Volume Water Customers and Contract Expiration Dates**

Volume Water Customer	Contract Expiration Date
Bal Harbour	July 26, 2027
Bay Harbor Islands	July 26, 2027
City of Hialeah	July 27, 2028
City of Hialeah Gardens	May 4, 2027
Town of Medley	May 4, 2027
City of Miami Beach	July 29, 2028
City of North Bay Village	June 14, 2027
City of North Miami	July 26, 2027
City of North Miami Beach	March 19, 2031
City of Opa-Locka	May 4, 2027
Town of Surfside	July 26, 2027
Village of Virginia Gardens	June 14, 2027
City of West Miami	June 14, 2027
City of Homestead	July 10, 2030

**Table 7-4 Miami-Dade Water and Sewer Department Volume Sewer Customers and Contract Expiration Dates**

Volume Sewer Customer	Contract Expiration Date
City of Coral Gables	December 22, 2030
Florida City <sup>1</sup>	November 18, 2016
City of Hialeah	September 19, 2031
City of Hialeah Gardens	November 3, 2029
City of Homestead	February 23, 2037
Town of Medley	February 23, 2037
City of North Bay Village	October 13, 2030
City of Miami Beach	December 17, 2034
City of North Miami	March 11, 2030
City of North Miami Beach	October 13, 2033
City of Opa-Locka	August 4, 2037

Volume Sewer Customer	Contract Expiration Date
City of West Miami <sup>2</sup>	February 18, 2016
Homestead Reserve Air Force Base	No contract expiration date - can be terminated by customer with 30 days notice

1 Contract is being negotiated

2 City of West Miami agreement is pending BCC approval.

Note: These municipalities are continuing to receive service under the terms of the expired agreements.

## 7.2 Rates and Charges

The Department's water and wastewater rates are set annually as a part of the County's budgeting process. Each year, the Department prepares a budget that includes estimated water and wastewater flows, expenses, revenues, and rates necessary for the Department to meet its cash flow and debt service requirements under the Master Bond Ordinance. The BCC then acts on the proposed budget and rates. Once the BCC's action is taken, the rates become final and the Department modifies its billing system to accommodate the approved rates. The rates are published on the County's web site.

### 7.2.1 Wholesale Customers

Wholesale customers are charged a fixed amount per 1,000 gallons based on the Department's budgeted costs and estimated water and wastewater flows for the coming year and an adjustment to take into account any difference between the budgeted amount and the Department's actual expenses two fiscal years earlier. That is, after the Department's audited financial results are available for the second prior year, the charges due from wholesale customers for the upcoming budget year are adjusted to reflect any over or under payment from the second prior year. This process, commonly referred to as a true-up, ensures that any difference between budgeted expenses and estimated flows compared to actual is reflected in the charges paid by wholesale customers.

### 7.2.2 Retail Customers

Retail customers are classified as residential, multi-family, or non-residential. Each retail customer's rate has two parts, a meter (water) or base facility (wastewater) charge and a volume charge. The meter charge is based on the size of the meter and is intended to reflect the Department's costs for providing capacity needed to serve each customer. The volume charge is designed to reflect the cost of producing water or treating wastewater as well as to encourage conservation. The water conservation objective is accomplished through an increasing block rate with four blocks for water rates and two blocks for wastewater rates. Each customer is charged more per gallon of water or wastewater treated where the flow exceeds the amount allowable for each block.

In addition to the basic retail customer water and wastewater charges, during any period in which the South Florida Water Management District imposes water restrictions in Miami-Dade County or as a result of permanent water restrictions, the Department increases the water rate in the fourth block--the highest rate charged per individual meter based on a given level of consumption. In April 2009 the BCC approved the Permanent Landscape Irrigation Restrictions Ordinance establishing permanent irrigation restrictions and the mandatory year-round- two days a week landscape irrigation conservation measure.

For non-residential customers, the amount of water allowable and charged in each block is adjusted according to the size of each customer's water meter. Customers with larger meters are afforded more flow per rate block than customers with smaller meters, which takes into account the basic water and wastewater requirements of each particular customer and its respective ability to conserve water. However, as noted above, customers with larger meters pay a higher water meter and base facilities charge.

For FY 2016, the Department recommended, and the Board of County Commissioners approved, a 6.0 percent retail customer rate increase. For FY 2017, the Board of County Commissioners approved an 8.0 percent retail customer rate increase to meet the operational needs as well as requirements contained in Section 208 of the Master Bond Ordinance. In addition, the County Budget Ordinance for FY 2017 authorized an average (dry and wet season) increase to the wastewater wholesale rate of \$0.1598 per thousand gallons to \$2.9477 from \$2.7879 and kept the wholesale water rate of \$1.7341 per thousand gallons remaining where it was with no change.

The FY 2018 Budget includes recommendations relating to the characteristics and revenue impacts of retail customers. The recommendations include changing the tier 1 threshold for both water and wastewater from 0 to 5 ccf to 0 to 4 ccf. Essentially moving one unit of usage from tier 1 to tier 2 and adjusting the multi-family base rate from 80 percent to 95 percent to better reflect water use and the actual cost of servicing this customer class. These changes to the rate structure increase revenues for the Department and better align cost recovery between tiers. For FY 2018 the Approved Budget also includes a wholesale wastewater rate increase from \$2.9477 to \$3.0937, and a wholesale water rate increase to \$1.8341 from \$1.7341. Wholesale water and wastewater rates per thousand gallons are based on cost recovery.

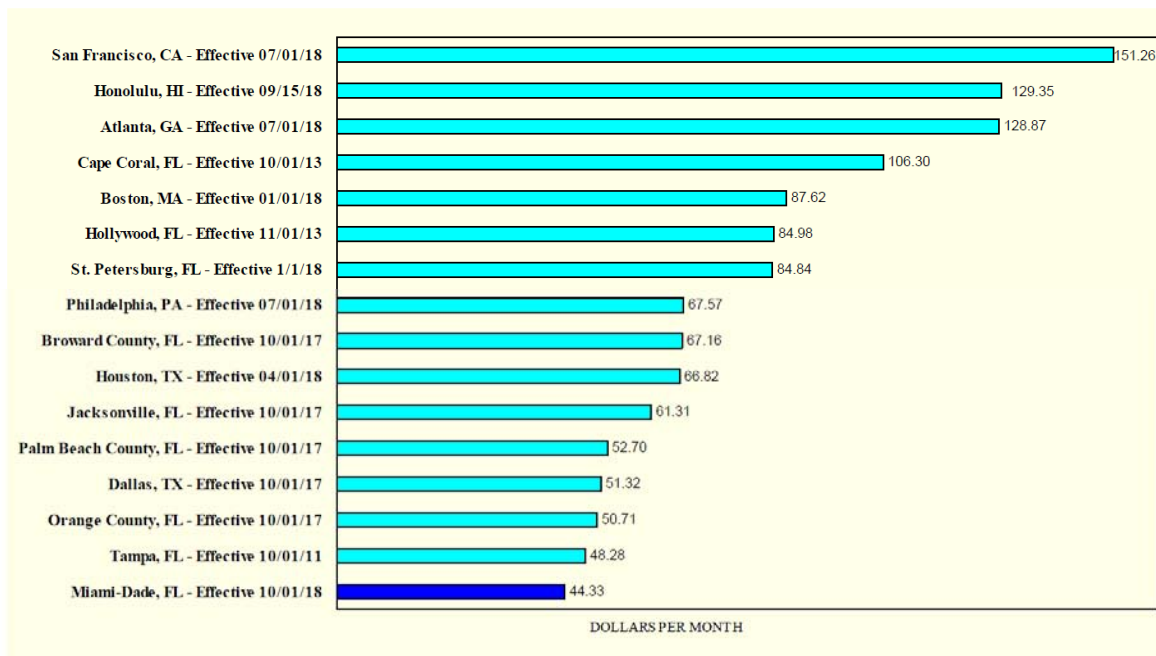
Effective October 1, 2018, the BCC approved, for FY 2019, a \$1.80 increase in the wastewater base facility charge for 5/8-inch meters.

### **7.2.3 Comparison of Miami-Dade Water and Sewer Department Residential Charges to Charges of other Large Utilities**

The Department's monthly water and wastewater charges for a typical residential customer using 5,236 gallons, based on the rates effective October 1, 2018 total \$44.33. Both residential and commercial customers with larger meters or that use substantially more water service are charged more per gallon, sometimes substantially, due to the Department's increase block rate structure. Figure 7-1 shows a comparison between the Department's combined water and wastewater charges for a median customer and the charges by other Florida and large out-of-state utilities. The figure illustrates that the Department's charges for median residential customers are well below the charges incurred by many other residential water and wastewater customers, although, as noted above, larger customers generally incur substantially higher per gallon charges. Nonetheless, the fact that the Department's rates are currently lower than other utilities utilized in the comparison suggests that the future rate increases that will be needed to fund major improvements will bring the Department's rates closer to parity with other large water and wastewater utilities in the United States. The projected rate increases are further addressed in Section 8 – Financial Conditions.

It is important to note that the amounts shown in Figure 7-1 do not include a number of charges that are collected by the County on each customer's water and wastewater bill, including a Utility Service Fee and a stormwater charge. These charges are collected by the Department on behalf of other County departments to support groundwater protection and stormwater management projects. The charges may add more than 10 percent to the average residential water and wastewater charge. Also, as noted above, customers whose water use extends into the higher charge blocks experience increasingly higher charges due to the Department's conservation rates. However, most other utilities also have conservation rates that similarly affect charges to higher water-using customers.

### COMBINED WATER AND SEWER BILL FLORIDA MUNICIPALITIES AND MAJOR U.S. CITIES FOR THE MEDIAN RESIDENTIAL CUSTOMER\*



\* MEDIAN RESIDENTIAL CUSTOMER USING 5,236 GALLONS PER MONTH  
Note: Miami-Dade County, FL Adopted Rate October 1, 2018

Figure 7-1 Combined Water & Sewer Bills Florida Municipalities/Counties and US Cities for the Median Residential Customer



## 8 FINANCIAL CONDITIONS

This section presents the procedures followed in, and results from, the financial analysis. These include the Department's policies and procedures to manage assets and historical and projected operating revenues and expenses and debt service coverage. This section also includes projections of the revenue increases that will be necessary to meet expenses and financial obligations of the Department's bond covenants relating to debt service coverage. It also explains the assumptions used in the development of the financial projections.

The financial projections developed for this analysis cover the County's Fiscal Years 2019 through 2024. For Additional Bonds, the County's Master Bond Ordinance requires, in Section 208 (d) (ii) that the Department's bond Consultant develop "... estimates of Net Operating Revenue for each of the three Fiscal Years following the Fiscal Year in which the Improvements will be placed in operation..." The Master Bond Ordinance requires that the estimates of Net Operating Revenue take into account any "revised rates and charges that shall become effective prior to or during such Fiscal Year" in which any additional bonds are issued, that the revised rates be sufficient to allow the Department to generate revenue sufficient to meet specified debt service coverage requirements in each of the three years following completion of the projects funded by the additional bonds.

Section 208 (d) (iii) requires the Consultant to state that after allowable adjustments in the Net Operating Revenue, the Adjusted Net Operating Revenues will be sufficient to meet the requirements of the Master Bond Ordinance for senior debt service coverage as well as for Subordinate Obligations. Terms that are capitalized in this section are those that are defined in the Master Bond Ordinance. The Department's specific debt service coverage requirements are defined in the following subsection.

Financial results for Fiscal Year 2017 are taken from the Department's Comprehensive Annual Financial Reports to provide historical perspective. Information for Fiscal Year 2018 is taken from the Department's unaudited financial results. Information for Fiscal Year 2019 is based on the Department's budget for this fiscal year. The financial projections are based on information provided by the Department and analyses conducted by the Consultant.

The section is divided into the following subsections:

- The Department's financial policies and operations, including bond covenants stated in the Department's Master Bond Ordinance
- Operating revenues and expenses, including operating revenue increases needed to meet the Additional Bonds Test and future debt service coverage requirements
- Senior (revenue bond) debt service
- Subordinate (State Revolving Fund Loan Program) debt service
- Debt service coverage
- Principal assumptions applied in the development of the financial projections

## 8.1 The Department's Financial Policies and Operations

The Department operates as an enterprise fund of Miami-Dade County. As such, funding is solely through user fees in the form of rates and charges, and no funding is received from Ad Valorem taxes levied by the County. The Department prepares an annual budget to ensure that budgeted revenues are sufficient for budgeted expenses associated with operating, maintaining, and improving the system, debt service obligations, and renewing and replacing water and wastewater facilities.

As specified in the Master Bond Ordinance, the Department's financial accounting is based on Generally Accepted Accounting Principles (GAAP) that are applied by businesses and utilities throughout the United States. Internal accounting controls are an integral part of the Department's management systems and are designed to provide reasonable assurance that assets are safeguarded from unauthorized use or disposition, and that records used for preparing financial statements and maintaining asset accountability are reliable.

The Board of County Commissioners of Miami-Dade County (BCC) annually approves the Department's budget, including rates and charges, expenses, and capital outlays. The Department controls most expenses at the division level. Division chiefs are accountable for budgetary items that are controllable at their level. The Department's operations and budgets are divided into two groups, water and wastewater. Financial reporting and calculation of debt service coverage are based on the consolidation of actual fiscal year results.

The Department pools all cash and investments, with the exception of those that are required to be held in trust and escrow accounts under the terms of the Master Bond Ordinance, loan agreements, and other County policies. The County manages the investment of pooled funds pursuant to Florida Statutes and resolutions of the BCC. Investments include U.S. government securities, commercial paper, and other appropriate securities, and are competitively bid among banks and investment brokers, ensuring that the Department obtains the best interest rates available in the market.

Under the Master Bond Ordinance, the Department is required to annually meet two debt service coverage requirements. The primary requirement is debt service coverage for revenue bonds, also referred to as senior debt. The second requirement addresses subordinate debt, which for the Department consists of loans from the State of Florida's Revolving Fund (SRF) Loan program, administered by the Florida Department of Environmental Protection, and other loans and notes that the Department may have from time to time. In addition, independent of the Master Bond Ordinance, the Department must meet certain debt service coverage requirements stipulated in the SRF Loan agreements.

The principal financial requirements of the Master Bond Ordinance that relate to debt service coverage are the following:

- Under Section 602 of the Master Bond Ordinance, annual Net Operating Revenues must annually be at least 125 percent of debt service on all outstanding bonds, plus 100% of reserve requirements. This requirement was changed from 110 percent in 2013. For Subordinate Obligations, annual Net Operating Revenues, after deduction of the maximum debt service requirement on all outstanding bonds, must be at least 100 percent of all debt service and reserve requirements on Subordinate Obligations.

Section 208 of the Master Bond Ordinance includes additional requirements for the issuance of Additional Bonds. Adjusted Net Operating Revenues must be at least 110 percent of the future Maximum Principal and Interest on senior debt for the three fiscal years following the fiscal year when the project will be placed in operation. For purposes of this project, the three fiscal year period is Fiscal Year 2022 through 2024. Also, for Additional Bonds, Adjusted Net Operating Revenues during four of the six quarters preceding issuance of new Senior Debt, adjusted to take into account additional revenues that would be generated from any rate adjustment in effect prior to debt issuance, must be at least 110% of the Maximum Future Principal and Interest on existing bonds and the new bond issue, plus 100% of the required deposit to the Reserve Account. For Subordinate Debt, the Adjusted Net Operating Revenues, less Maximum Future Principal and Interest, must be at least 100 percent of Subordinate Debt and any required reserve account deposits.

The SRF Loan program requires that the Department's Net Operating Revenue after payment of debt service on revenue bonds be at least 115 percent of the debt service for the SRF Loan amount.

There are a number of specific and effective financial policies that have been established and are complied with by the Department, most of which are mandated by the Master Bond Ordinance. The following paragraphs highlight the principal financial policies.

#### **8.1.1 Rate Covenant**

Section 602 of the Master Bond Ordinance requires that the Department maintain sufficient rates and charges to meet the stipulated debt service coverage requirements and adhere to several policies relating to the application of those rates and charges. This requirement is separately addressed in an annual report prepared by the Department's bond engineering consultant that evaluates the adequacy of rates and charges included in the Department's budget. Issued prior to September 1 of each year, the report provides a conclusion concerning the adequacy of the Department's budgeted rates and charges to meet debt service coverage requirements in the following fiscal year. The rates are annually approved by the BCC and are published in Implementing Order 4-110.

#### **8.1.2 Deposit to the Renewal and Replacement Fund**

Section 607 of the Master Bond Ordinance requires that the Department employ a Consultant to provide recommendations regarding the amount that should be deposited during the next Fiscal Year to the credit of the Renewal and Replacement (R&R) Fund for the purpose of paying the cost of unusual or extraordinary maintenance or repairs, the cost of R&R, the cost of acquiring, installing or replacing equipment and acquiring and constructing additions, extensions and improvements and engineering, legal and administrative expenses relating to those projects, and the cost of providing a local share of moneys required to entitle the Department to receive federal or state grants or participate in federal or state assistance programs related to the Utility. The Consultant's recommendations on the adequacy of budgeted deposits to the Renewal and Replacement Fund are annually presented in a report to the Department.

### **8.1.3 Rate Stabilization Fund**

The Department has established a Rate Stabilization Fund and makes deposits into or withdrawals from the fund at its discretion. This Fund is designed to shield the Department from financial effects of extraordinary circumstances that would require sharp increases in rates and charges. The Master Bond Ordinance also allows withdrawals from the Rate Stabilization Fund to be used for meeting debt service requirements.

### **8.1.4 Mandatory Connections**

Section 611 of the Master Bond Ordinance requires that whenever the Department makes water or wastewater service available to a property, the property owner must connect to its system within 90 days. The Department enforces this provision by officially notifying landowners of any service extension and requiring their connection within the prescribed period. Provisions for such connections are described in the Department's Rules and Regulations for Water and Wastewater Service.

This section of the Master Bond Ordinance also allows for another utility, such as a municipality, to provide water or wastewater service within the Department's service area if the Department finds that it is economically preferable or where service can be provided in a more timely fashion by another utility. Whenever a developer requests that service to a new development be provided by another utility, the Department performs an evaluation to confirm that it would be appropriate to transfer the service area. The Department also engages an outside consultant to determine whether it is feasible for the Department to serve the development, whether or not the development would be better served by another utility, and whether or not allowing another utility to serve the development would have an adverse effect on the Department's water or wastewater rates to its customers. Only in those cases where all three conditions favor having another utility provide service to a development will the Department grant the other utility a franchise to provide the requested service.

### **8.1.5 No Free Service**

Section 613 of the Master Bond Ordinance requires that the Department may not provide service to any entity, including other County departments, without collecting the water and sewer fees charged to all customers, and that preferential rates are prohibited. The Department enforces this provision by metering all retail water customers and all wholesale water and wastewater customers, imposing uniform rates and charges, and terminating service for failure to pay bills on time in accordance with the Department's Rules and Regulations for Water and Wastewater Service.

### **8.1.6 Failure to Pay for Services**

Section 614 of the Master Bond Ordinance requires that the Department cease providing water or wastewater service to any property where the customer has failed to pay for services for a period in excess of 90 days. The Department enforces this policy through its service termination rule. However, under this rule, the Department may "grant payment arrangements to customers who have exhibited good faith in the payment of their bills, and have provided evidence of need, or unusual circumstances." In such cases, the payment arrangement is a signed, written agreement between the customer and the Department.

### **8.1.7 Enforcement of Collections**

Section 615 of the Master Bond Ordinance requires that the Department diligently enforce and collect rates, and that the monies collected be applied as operating revenues of the Department. It implements this provision through a late payment reminder notice program and the severance of service after any account becomes delinquent for 90 days.

### **8.1.8 Insurance**

Section 609 of the Master Bond Ordinance requires that the Department maintain insurance against the loss of facilities and liability for bodily injury and property damage. This section also requires that the insurance policies be provided by a responsible insurance company satisfactory to the County Manager, now the County Mayor, and authorized to conduct business by the State of Florida, with the provision that the County may self-insure as long as the premiums are developed on an actuarially sound basis and the premiums are paid annually. The Department is insured against loss to facilities under its own property insurance program, subject to policy terms and conditions. The program covers real and personal property damage, including coverage for boiler and machinery, flood, and terrorism, as well as engineering property loss prevention inspections at the primary facilities. The properties include treatment facilities, maintenance facilities, pump stations, water storage facilities, ocean outfalls, buildings and leased properties. The current schedule of values for all the Department's assets is approximately \$1.8 billion.

The Department has purchased an all risk insurance policy on real and personal property that covers most of its properties. The current program has a limit of \$200 million for any one occurrence, for most incidents, with a deductible of \$1 million per occurrence, including terrorism. Terrorism coverage is provided for both certified and non-certified acts. For damage from named windstorms, the policy has a \$35 million deductible per occurrence and a boiler & machinery deductible of \$500,000 per accident. The Department also purchases 75+ individual NFIP (National Flood Insurance Program) policies for buildings located in the Special Flood Hazard Areas. The property program includes an additional \$10 million in coverage excess over what is available through NFIP and 5% of Total Insured Values for each item involved in a loss, for values not eligible for NFIP, all subject to a \$1,000,000 any one occurrence minimum.

The Department continues to carry commercial insurance for all other risks of loss. Settled claims resulting from these risks have not exceeded commercial insurance coverage in any of the past three fiscal years.

The Department is covered under the County's self-insurance program administered by the Risk Management Division of the General Services Department in accordance with Section 768.28, Florida Statutes as amended. F.S. §768.28 provides that tort claims against municipal governments are limited to \$200,000 per claim and \$300,000 in aggregate for any event or occurrence without a specific act of the Florida Legislature. This limitation applies to most of the liability claims that arise against the County or any local government in Florida, although certain liability claims such as claims under civil rights statutes, are not subject to these limitations.

### **8.1.9 Covenant as to Maintenance, Repair and Operation**

Section 606 states that the Department will establish and enforce reasonable rules and regulations governing the use of the water and wastewater utility and its operations, that it will operate the system in an efficient and economical manner, and that it will maintain the utility in good repair and in sound operating condition and will make all necessary repairs, renewals and replacements, and comply with all regulations and orders applicable to the water and wastewater utility.

## **8.2 Operating Revenues and Expenses**

The Department's primary source of revenue is from operations, the sale of water and wastewater services to its retail and wholesale customers. In addition to operating revenue, the Department's main sources of non-operating revenue are connection charges received from new customers and interest income. Revenue from connection charges may not be considered in the analysis of revenues applicable to meeting financial bond covenants because these revenues are deposited into a fund dedicated to expansion of the water and wastewater system. Interest income from sources other than bond proceeds, which are deposited into the Department's Construction Fund, may be used in the calculation of Adjusted Net Operating Revenue and subsequently used in the calculation of debt service coverage. Interest earnings on bond proceeds are deposited into the Department's Construction Fund and are not included in Net Adjusted Operating Revenue.

Table 8-1 shows the Department's historic and projected operating revenues and expenses and net operating revenues. It is important to note that the analysis does not contemplate any future debt, except the Series 2019 Bonds. Operating revenues and expenses are aggregated separately for the water and wastewater systems. Because of the rate setting process, the Department is required to identify water and wastewater system revenues and expenses since some customers, both retail and wholesale, receive only water or wastewater service from the Department. Also, each of the Department's wholesale customer agreements stipulates that wholesale customer charges must be based on the cost of providing each specific service, water or wastewater, requiring that the Department account for each operating, as well as non-operating, expense separately for each system.

### **8.2.1 Operating Revenues**

Table 8-1 shows operating revenues in two parts:

- Water and wastewater revenues based on no change in rates
- Additional revenue from rate increases required to meet financial obligations for existing and the Series 2019 Bonds.

#### **8.2.1.1 Water and Wastewater Revenues**

The Department is projecting both water and wastewater volumetric sales to rise very little after Fiscal Year 2019 throughout the projection period. This projection is based on no significant growth in the customer base. While there has been some increase in utility sales in Fiscal Year 2018, the amount of water sold during the last four years has remained level. As such, the projections do not include any significant change in water and wastewater volumetric sales.

**Table 8-1 Historical and Projected Combined Water and Wastewater System Operating Revenues, Expenses, and Net Revenues**

Fiscal Years 2019 through 2024 (\$ in thousands)

	FISCAL YEAR							
	ACTUALS	UN-AUDITED	PROJECTED					
	2017	2018	2019	2020	2022	2022	2023	2024
<b>Operating Revenue</b>								
<b>Water</b>								
Retail Customers	\$265,636	\$268,275	\$275,354	\$288,737	\$303,173	\$324,396	\$340,615	\$357,646
Wholesale Customers	\$34,916	\$39,310	\$35,229	\$35,511	\$36,709	\$37,943	\$39,215	\$40,524
Other	\$15,493	\$16,159	\$16,760	\$16,843	\$16,928	\$17,012	\$17,097	\$17,183
<b>Subtotal Water Operating Revenues</b>	<b>\$316,045</b>	<b>\$323,744</b>	<b>\$327,343</b>	<b>\$341,091</b>	<b>\$356,810</b>	<b>\$379,351</b>	<b>\$396,927</b>	<b>\$415,353</b>
<b>Wastewater</b>								
Retail Customers	\$288,910	\$295,564	\$313,591	\$328,832	\$345,273	\$369,442	\$387,914	\$407,310
Wholesale Customers	\$88,938	\$78,425	\$82,168	\$86,344	\$90,730	\$95,334	\$100,169	\$105,245
Other	\$13,439	\$14,116	\$13,644	\$13,713	\$13,781	\$13,850	\$13,919	\$13,989
<b>Subtotal Wastewater Operating Revenues</b>	<b>\$391,287</b>	<b>\$388,105</b>	<b>\$409,403</b>	<b>\$428,889</b>	<b>\$449,784</b>	<b>\$478,626</b>	<b>\$502,002</b>	<b>\$526,544</b>
<b>Subtotal Water and Wastewater Operating Revenue</b>	<b>\$707,332</b>	<b>\$711,849</b>	<b>\$736,746</b>	<b>\$769,979</b>	<b>\$806,594</b>	<b>\$857,978</b>	<b>\$898,930</b>	<b>\$941,898</b>
Percent Revenue Increase	0.00%	0.64%	3.50%	4.51%	4.76%	6.37%	4.77%	4.78%
Cumulative Percent Revenue Increase	6.04%	6.71%	10.45%	15.43%	20.92%	28.62%	34.76%	41.20%
<b>Total Operating Revenues</b>	<b>\$707,332</b>	<b>\$711,849</b>	<b>\$736,746</b>	<b>\$769,979</b>	<b>\$806,594</b>	<b>\$857,978</b>	<b>\$898,930</b>	<b>\$941,898</b>



	FISCAL YEAR							
	ACTUALS	UN-AUDITED	PROJECTED					
	2017	2018	2019	2020	2022	2022	2023	2024
<b>Operating Expenses</b>								
<b>Water</b>								
Subtotal Water Operating Expenses	\$166,533	\$170,112	\$179,894	\$206,735	\$214,089	\$221,869	\$230,617	\$238,841
<b>Wastewater</b>								
Subtotal Wastewater Operation Expenses	\$231,996	\$243,059	\$256,740	\$267,581	\$277,092	\$287,142	\$298,391	\$309,021
Total Operating Expenses	\$398,530	\$413,171	\$436,634	\$474,316	\$491,181	\$509,011	\$529,008	\$547,862
Net Operating Revenues	\$308,802	\$298,679	\$300,112	\$295,663	\$315,413	\$348,967	\$369,922	\$394,036

**Sources:**

Data for Fiscal Year 2017 from Water and Sewer Department Comprehensive Annual Financial Report; data for Fiscal Year 2018 represent unaudited year-end results, and 2019 from Department's Approved Budget; revenue projections; expense projections based on Water and Sewer Department five-year financial projections dated November 14, 2018; projected additional revenues from rate increases are revenues needed to meet expenses and planning level debt service coverage ratios.

**Notes:** Entries are rounded, and totals and subtotals use formulas that may yield insignificant differences.

Actual results may vary from those values budgeted and projected because of events and circumstances different from those assumed. Such differences could materially affect the debt service coverage estimated.

Water sales, by volume, have remained fairly level for the following reasons:

- The Department's customer base has been flat
- The Department has actively promoted water conservation
- The effect from the past general economic downturn has continued to cause a decline in sales of virtually all commodities
- The Department has raised rates and imposed a surcharge for retail customers using a large amount of water based on meter size

Wastewater system operating revenue from retail customers is tied to metered water use. Therefore, retail customer wastewater revenues closely track retail customer water revenue, recognizing that wastewater rates are significantly higher than water rates and are projected to rise faster due to the need for major improvements in the wastewater system. Wholesale customer revenues, both water and wastewater, are based on metered flows and the applicable charge per 1000 gallons.



### 8.2.1.2 Additional Revenue from Rate Increases

For Fiscal Years 2020 through 2024, Table 8-1 shows additional revenue from rate increases. This calculated value is based on the following factors:

- The Department must satisfy the Additional Bonds test stipulated in the Master Bond Ordinance, which requires water and wastewater rates, approved prior to the issuance of additional bonds and in effect during the fiscal year in which the bonds are issued, allow the Department to meet specific debt service coverage tests in each of the three fiscal years following completion of the projects funded through the bond issue (per Section 208 of the Master Bond Ordinance). The additional bonds test was applied only for the Series 2019 Bonds.
- The Department must meet its debt service coverage requirements for existing and anticipated future senior debt as well as subordinate debt.
- The rate covenant required senior debt service coverage ratio is 1.25, and for subordinate debt, the rate covenant required debt service coverage ratio is 1.00 (per Section 602 of the Master Bond Ordinance). For purposes of this analysis, additional revenue from rate increases was set to achieve the required debt service coverage for senior and subordinate debt.
- The Department will generate sufficient revenue in each projection year to fund its non-operating expenses, including an annual deposit to the Renewal and Replacement Fund to maintain existing assets, a contribution to the County's Fire Hydrant Fund, and increases in the Department's required 60-day operating reserve. These non-operating expenses will be partially offset by certain non-operating revenues.
- With projected revenues exceeding total expenses in the next few years, the Department may increase its General Reserve balance over the projection period and/or increase its Rate Stabilization Reserve balance. These assumptions were applied recognizing that the Department often adjusts these reserve balances during its budgeting process. Alternatively, the Department may spend the additional revenue on asset renewal and replacement or fund new capital projects.

The additional revenue from rate increases shown in Table 8-1 will be derived from two sources:

- Revenues from wholesale customers that are based on the actual expenses incurred by the Department to provide water and wastewater service
- Revenue from retail customers that are based on retail customer rates and set by the BCC.

Because wholesale customer rates are based solely on the cost of service, with certain adjustments to account for historical over or under payment, wholesale customer charges increase as the Department's expenses increase, subject to approval by the BCC.

Retail customer rates are established by the BCC. Historically, the BCC has approved rate increases to increase rates to meet the Department's cash flow and debt service coverage requirements.

For purposes of this analysis, the additional revenue from future rate increases is shown in Table 8-1 as one annual value for both retail and wholesale customers. The Department must annually develop separate revenue requirements and rates for the water and wastewater systems and set retail and

wholesale customer rates that will allow the Department to continue to meet its cash flow and debt service coverage requirements.

#### **8.2.1.3 Fiscal Year 2019 Retail Customer Rates and the Additional Bonds Test**

The additional revenue from rate increases shown in Table 8-1 is the estimated additional revenue needed in each year during the projection period above the amount that would be derived from the Department's current rates, to meet the target debt service coverage ratios indicated above, fund non-operating expenses, maintain adequate reserves, and meet the Additional Bonds test. As noted above, the Board of County Commissioners approved no water or wastewater rate increase for the Department's Fiscal Year 2018 budget. However, the FY 2018 Budget includes a 6.0 percent increase in retail revenues through a modification of the Department's current tier-based fee structure. Effective October 1, 2018, the BCC approved for FY 2019 a \$1.80 increase for the wastewater base facility charge for the 5/8 inch meters. The 6.0 percent revenue increase in FY 2018 and the projected additional revenues from the increased water and wastewater meter charge in FY 2019 can reasonably be expected to generate the Department's revenue requirements. This conclusion is supported by the fact that the Department's water and wastewater rates are overall quite low compared to other water and wastewater utilities, which further limits customer response to rate increases. It should be noted that increasing rates in the lower tiers, especially the first tier, is warranted because customers in the first tier are charged well below their cost of service.

Under the contracts between the Department and the wholesale customers, any revenues raised for purposes other than meeting expenses, such as meeting a debt service coverage requirement, may be raised only from retail customers. However, the rate increase will apply to wholesale customers if the additional funds are budgeted and invested in asset renewal and replacement, most of which benefits retail and wholesale customers alike.

### **8.2.2 Operating Expenses**

Table 8-1 shows the operating expenses incurred for both the water and wastewater systems. These projected expenses recognize rising cost of labor and materials, as well as any costs associated with new facilities coming on line.

The expenses shown on Table 8-1 do not include deposits to the Department's Renewal and Replacement Fund because deposits into this Fund are classified as non-operating.

### **8.2.3 Net Operating Revenues**

The Net Operating Revenues shown in Table 8-1 are the difference between Operating Revenues and Operating Expenses. As noted above, the values shown for the projection years include additional revenues from rate increases needed for the Department to meet its cash flow and debt service coverage requirements.

### 8.3 Senior Debt Service

The estimated additional revenues described above enable the Department to meet its planning level senior debt service coverage. The calculations are based on the debt service figures shown in Table 8-2. The table shows the debt service schedule for the Department's outstanding bond issues through Fiscal Year 2024, the estimated debt service for the Series 2019 Bonds, and an estimate of the planned debt to fund the MYCIP through the study period.

While there is some uncertainty in the amount of future bond issues as well as the associated debt service, the debt service figures shown in Table 8-2 are based on currently available information on the Department's capital plan, schedule, and cost estimates and do not reflect future Additional Bonds shown in Table 6-2, beyond those for the current 2019 Revenue Bond issue. Therefore, projections for debt service coverage and the Additional Bonds test do not take into account any future debt service issues beyond the 2019 Revenue Bond issue.

**Table 8-2 Historical and Projected Senior (Revenue Bond) Debt Service**

Fiscal Years 2019 through 2024 (\$ in thousands)

BONDS	FISCAL YEAR							
	Actuals	Un-audited	Projected					
	2017	2018	2019	2020	2022	2022	2023	2024
Existing bond issues <sup>1</sup>								
Series 2007	\$14,652	\$14,638						
Series 2008A and 2008B	\$58,338	\$58,359	\$58,436	\$58,460	\$58,471	\$58,480	\$58,471	
Series 2008C	\$8,260	\$8,261	\$8,273					
Series 2010	\$31,529	\$23,565	\$3,433	\$3,426	\$3,417			
Series 2013	\$24,411	\$24,411	\$24,411	\$24,411	\$24,411	\$24,411	\$24,411	\$24,411
Series 2015	\$24,004	\$24,004	\$37,171	\$45,447	\$45,474	\$45,479	\$45,472	\$102,324
Series 2017 A		\$4,450	\$15,706	\$15,706	\$15,706	\$15,706	\$15,706	\$15,706
Series 2017 B		\$6,762	\$23,866	\$23,866	\$23,866	\$26,885	\$26,874	\$26,886

Total existing bond issues	\$161,194	\$164,445	\$171,296	\$171,315	\$171,345	\$170,961	\$170,934	\$169,326
Projected future bond issues <sup>2</sup>								
Series 2019				\$8,175	\$12,212	\$12,212	\$12,212	\$12,212
Total projected future bond issues				\$8,175	\$12,212	\$12,212	\$12,212	\$12,212
Total (existing & projected future bond issues)	\$161,194	\$164,445	\$171,296	\$179,490	\$183,557	\$183,172	\$183,145	\$181,538
Maximum future senior debt service			\$183,557	\$183,557	\$183,557	\$183,172	\$183,145	\$181,538

1. The debt service amounts for existing bond issues is from Schedule of Semiannual Debt Service Cash and Funding Requirements for Revenue Bonds, cash basis, as of October 9, 2018
2. The debt service on the Series 2019 Bonds is based on preliminary estimates prepared by Miami-Dade County's Financial Advisor, recognizing that actual debt service will be determined through market pricing, principal and interest scheduling, and other factors.

Note: Entries are rounded, and totals and subtotals use formulas that may yield insignificant differences.

## 8.4 Subordinate Debt

Table 8-3 shows the Department's current subordinate debt service schedule, all of which is associated with the Florida State Revolving Loan Fund program.

**Table 8-3 Historical and Projected State Revolving Fund Debt Service**

Fiscal Years 2019 through 2024<sup>1</sup> (\$ in thousands)

SYSTEM/LOAN NUMBER	FISCAL YEAR							
	ACTUALS	UN-AUDITED	PROJECTED					
	2017	2018	2019	2020	2021	2022	2023	2024
Water								
DW1300010	\$2,816	\$2,816	\$2,816	\$2,816	\$2,816	\$2,816		
DW1300080	\$330	\$330	\$330	\$330	\$330			
DW130230		\$685	\$1,371	\$1,371	\$1,371	\$1,371	\$1,371	\$1,371

SYSTEM/LOAN NUMBER	FISCAL YEAR							
	ACTUALS	UN- AUDITED	PROJECTED					
	2017	2018	2019	2020	2021	2022	2023	2024
DW130200	\$13	\$13	\$13	\$13	\$13	\$13	\$13	\$13
DW130201	\$7	\$7	\$7	\$7	\$7	\$7	\$7	\$7
DW130260				\$2,157	\$2,157	\$2,157	\$2,157	\$2,157
Subtotal	\$3,165	\$3,850	\$4,536	\$6,693	\$6,693	\$6,363	\$3,547	\$3,547
Wastewater								
CS120377450	\$929	\$-	\$-	\$-	\$-	\$-	\$-	
CS120377470	\$395	\$-	\$-	\$-	\$-	\$-	\$-	
CS120377490	\$100	\$-	\$-	\$-	\$-	\$-	\$-	
CS120377500	\$1,624	\$1,624	\$812	\$-	\$-	\$-	\$-	
CS120377650	\$49	\$49	\$49	\$49	\$24	\$-	\$-	
CS120377670	\$189	\$189	\$189	\$189	\$189	\$-	\$-	
CS120377860	\$249	\$249	\$249	\$249	\$249	\$249	\$125	
CS120377870	\$322	\$322	\$322	\$322	\$322	\$322	\$161	
CS12037788P	\$240	\$240	\$240	\$240	\$240	\$240	\$240	\$240
WW37789A	\$57	\$57	\$57	\$57	\$57	\$57	\$57	\$57
WW37789L	\$111	\$111	\$111	\$111	\$111	\$111	\$111	\$111
WW0240	\$587	\$1,175	\$1,175	\$1,175	\$1,175	\$1,175	\$1,175	\$1,175
WW377900	\$7,956	\$7,956	\$7,956	\$7,956	\$7,956	\$7,956	\$7,956	\$7,956
Subtotal	\$12,808	\$11,971	\$11,159	\$10,348	\$10,323	\$10,110	\$9,824	\$9,539
Total water and wastewater	\$15,973	\$15,822	\$15,695	\$17,040	\$17,016	\$16,473	\$13,371	\$13,086

SYSTEM/LOAN NUMBER	FISCAL YEAR							
	ACTUALS	UN-AUDITED	PROJECTED					
	2017	2018	2019	2020	2021	2022	2023	2024
Reserve for State Revolving Loan	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-
Totals water and wastewater with Reserve	\$15,973	\$15,822	\$15,695	\$17,040	\$17,016	\$16,473	\$13,371	\$13,086

<sup>1</sup>Debt service amounts for State Revolving Fund Loan Program from Miami-Dade Water and Sewer Department Debt Service Funding Requirements report - cash basis, dated 10/06/2018.

Note: Entries are rounded, and totals and subtotals use formulas that may yield insignificant differences.

## 8.5 Debt Service Coverage

Table 8-4 shows historical and projected debt service coverage for senior and subordinate debt, calculated in accordance with provisions of the Master Bond Ordinance. The table also shows debt service coverage based on provisions of the Department's agreement with the State of Florida for its State Revolving Loan program debt, which is not addressed in the Master Bond Ordinance. Please note that any additional bonds planned to be issued during the study period, beyond the 2019 Revenue Bond issue, are not included in these calculations.

**Table 8-4 Historical and Projected Revenues, Expenses and Debt Service Coverage**

Fiscal Years 2019 through 2024 (\$ in thousands)

REVENUE/EXPENSE/ COVERAGE ITEM <sup>1</sup>	FISCAL YEAR							
	ACTUALS	UN-AUDITED	PROJECTED					
	2017	2018	2019	2020	2021	2022	2023	2024
Operating Revenues and Expenses								
Operating Revenues								
Retail water	\$265,636	\$268,275	\$275,354	\$288,737	\$303,173	\$324,396	\$340,615	\$357,646
Wholesale water	\$34,916	\$39,310	\$35,228	\$35,510	\$36,709	\$37,943	\$39,215	\$40,524
Other water	\$15,493	\$16,159	\$16,760	\$16,844	\$16,928	\$17,012	\$17,097	\$17,183
Retail wastewater	\$288,910	\$295,564	\$313,591	\$328,832	\$345,273	\$369,442	\$387,914	\$407,310

REVENUE/EXPENSE/ COVERAGE ITEM <sup>1</sup>	FISCAL YEAR							
	ACTUALS	UN-AUDITED	PROJECTED					
	2017	2018	2019	2020	2021	2022	2023	2024
Wholesale wastewater	\$88,938	\$78,425	\$82,168	\$86,344	\$90,730	\$95,334	\$100,169	\$105,246
Other wastewater	\$13,439	\$14,116	\$13,644	\$13,713	\$13,781	\$13,850	\$13,919	\$13,989
<b>Subtotal Operating Revenue</b>	<b>\$707,332</b>	<b>\$711,849</b>	<b>\$736,746</b>	<b>\$769,979</b>	<b>\$806,594</b>	<b>\$857,978</b>	<b>\$898,930</b>	<b>\$941,898</b>
Annual resultant percent revenue increase	0.00%	0.64%	3.50%	4.51%	4.76%	6.37%	4.77%	4.78%
<b>Subtotal Operating Revenue - with resultant revenue increases</b>	<b>\$707,332</b>	<b>\$711,849</b>	<b>\$736,746</b>	<b>\$769,979</b>	<b>\$806,594</b>	<b>\$857,978</b>	<b>\$898,930</b>	<b>\$941,898</b>
<b>Operating Expenses</b>								
Water system	\$166,533	\$170,112	\$179,894	\$206,735	\$214,089	\$221,869	\$230,617	\$238,841
Sewer system	\$231,996	\$243,059	\$256,740	\$267,581	\$277,091	\$287,142	\$298,391	\$309,021
<b>Subtotal Operating Expenses</b>	<b>\$398,530</b>	<b>\$413,171</b>	<b>\$436,634</b>	<b>\$474,316</b>	<b>\$491,181</b>	<b>\$509,011</b>	<b>\$529,008</b>	<b>\$547,862</b>
<b>Net Operating Revenues</b>	<b>\$308,802</b>	<b>\$298,679</b>	<b>\$300,112</b>	<b>\$295,663</b>	<b>\$315,413</b>	<b>\$348,967</b>	<b>\$369,922</b>	<b>\$394,036</b>
<b>Adjusted Net Operating Revenues</b>								
<i>Plus interest income other than from Construction Fund</i>	\$3,144	\$9,566	\$13,312	\$8,996	\$9,863	\$10,686	\$12,118	\$14,831
<i>Less transfers to (from) Rate Stabilization Fund</i>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Adjusted Net Operating Revenue</b>	<b>\$311,946</b>	<b>\$308,245</b>	<b>\$313,424</b>	<b>\$304,659</b>	<b>\$325,276</b>	<b>\$359,653</b>	<b>\$382,040</b>	<b>\$408,867</b>
<b>Senior Debt Service Coverage - Required Ratio 1.25<sup>1</sup></b>								
Revenue Bond debt service - existing debt	\$161,194	\$164,449	\$171,296	\$171,315	\$171,345	\$170,961	\$170,934	\$169,327
Projected future revenue bonds debt service	\$0	\$0	\$0	\$8,175	\$12,212	\$12,212	\$12,212	\$12,212

REVENUE/EXPENSE/ COVERAGE ITEM <sup>1</sup>	FISCAL YEAR							
	ACTUALS	UN-AUDITED	PROJECTED					
	2017	2018	2019	2020	2021	2022	2023	2024
<b>Total existing and future bonds debt service<sup>4</sup></b>	<b>\$161,194</b>	<b>\$164,449</b>	<b>\$171,296</b>	<b>\$179,490</b>	<b>\$183,557</b>	<b>\$183,172</b>	<b>\$183,145</b>	<b>\$181,538</b>
Senior debt service coverage ratio	1.94	1.87	1.83	1.70	1.77	1.96	2.09	2.25
<b>Subordinate debt service coverage - Required Ratio 1.00<sup>2</sup></b>								
Adjusted Net Operating Revenue	\$311,946	\$308,245	\$313,424	\$304,659	\$325,276	\$359,653	\$382,040	\$408,867
Maximum Principal and Interest (P&I) - existing	\$161,195	\$171,345	\$171,345	\$171,345	\$171,345	\$170,961	\$170,934	\$169,326
Maximum Principal and Interest (P&I) - future bonds <sup>4</sup>	\$161,195	\$171,345	\$183,557	\$183,557	\$183,557	\$183,172	\$183,145	\$181,538
Adjusted Net Operating Revenue less Maximum P&I	\$150,751	\$136,899	\$129,867	\$121,103	\$141,720	\$176,481	\$198,895	\$227,329
Subordinate debt service - State Revolving Fund loans	\$15,973	\$15,8212	\$15,695	\$17,040	\$17,016	\$16,473	\$13,371	\$13,086
Subordinate debt service coverage ratio	9.44	8.65	8.27	7.11	8.33	10.71	14.87	17.37
<b>State Revolving Fund Loan Debt Service Coverage - Required Ratio 1.15<sup>3</sup></b>								
Adjusted Net Operating Revenue	\$311,946	\$308,245	\$313,424	\$304,659	\$325,276	\$359,653	\$382,040	\$408,867
Less 125% of Revenue Bond debt service	\$(201,492)	\$(205,561)	\$(214,120)	\$(224,362)	\$(229,446)	\$(228,965)	\$(228,931)	\$(199,692)
Net Operating Revenue less 115% Revenue Bond debt service	\$110,454	\$102,684	\$99,304	\$80,297	\$95,830	\$130,688	\$153,109	\$209,175
Debt service on current State Revolving Fund loan	\$15,973	\$15,822	\$15,695	\$17,040	\$17,016	\$16,473	\$13,371	\$13,086
State of Florida Revolving Fund loan debt service coverage ratio	6.91	6.49	6.33	4.71	5.63	7.93	11.45	15.98



<sup>1</sup>Debt Service Coverage Requirements for Senior Debt is calculated by year as Adjusted Net Operating Revenue divided by Senior Debt Service on cash basis and must be at least 1.25. Prior to Fiscal Year 2013, the required coverage ratio was 1.10.

<sup>2</sup>Debt Service Coverage Requirements for Subordinate debt is calculated as Adjusted Net Operating Revenues, less Maximum Principal and Interest requirement on all bonds, and must be at least 100 percent of debt service and reserve requirements.

<sup>3</sup>Debt Service Coverage requirements on the State Revolving Fund debt service is calculated as Adjusted Net Operating Revenue less 125 percent of senior debt service and must be at least 115 percent of State Revolving Fund debt service.

<sup>4</sup>Total Existing and Future Bonds debt service and Maximum Principal and Interest (P&I) – Future Bonds includes existing debt service and projected 2019 Revenue Bond debt service, but no other debt service from potential revenue bond issues beyond the 2019 Revenue Bond issue are included.

#### Sources

Data for Fiscal Year 2017 from Water and Sewer Department Comprehensive Annual Financial Report; data for Fiscal Year 2018 represent unaudited year end results, and 2019 from Department's Adopted Budget. Data for used in calculating projections for fiscal year 2020 through 2024 are based on operating expenses in the Department's 5-year financial projections dated November 14, 2018. Debt service schedules for issues beginning in FY 2019 are from the County's financial advisor. Additional operating revenue requirements are based on meeting all expenses and achieving planning level debt service coverage ratios.

#### Notes

Entries are rounded, and totals and subtotals use formulas that may yield insignificant differences.

Actual results may vary from those values budgeted and projected because of events and circumstances different from those assumed. Such differences could materially affect the debt service coverage estimates.

Table 8-5 shows the Additional Bonds Test calculated in accordance with provisions of the Master Bond Ordinance. Based on projected revenues and expenses and debt service schedule for the Series 2019 Bonds the Department meets target debt service coverage ratios outlined for the Additional Bonds Test in Section 208 of the Master Bond Ordinance.

**Table 8-5 Additional Bonds Test**

REVENUE/EXPENSE/ COVERAGE ITEM <sup>1</sup>	FISCAL YEAR							
	ACTUALS	UN-AUDITED	PROJECTED					
	2017	2018	2019	2020	2021	2022	2023	2024
<b>Additional Bonds Test</b>								
<b>Revenue Bonds - Required Ratio 1.10<sup>4</sup></b>								
Operating Revenues		\$711,849				\$711,849	\$711,849	\$711,849
Additional Operating Revenue from rate increase						\$24,897	\$24,897	\$24,897
Operating Revenues Calendar						\$736,746	\$736,746	\$736,746
Interest income available for debt service						\$13,312	\$13,312	\$13,312
Less deposits to Reserve Account						\$0	\$0	\$0
Adjusted Net Operating Revenue						\$750,058	\$750,058	\$750,058

REVENUE/EXPENSE/ COVERAGE ITEM <sup>1</sup>	FISCAL YEAR							
	ACTUALS	UN-AUDITED	PROJECTED					
	2017	2018	2019	2020	2021	2022	2023	2024
Operating Expenses						\$509,011	\$529,008	\$547,862
Adjusted Net Operating Revenues -						\$241,047	\$221,050	\$202,196
Maximum Principal and Interest - <i>for existing bonds and the Series 2019 Bonds</i>						\$183,557	\$183,557	\$183,557
Additional Bonds coverage ratio						1.31	1.20	1.10
<b>Subordinate Debt - Required Ratio 1.00<sup>4</sup></b>								
Net Operating Revenues - less Maximum Principal and Interest on Senior Debt						\$57,490	\$37,493	\$18,639
Subordinate Debt						\$16,473	\$13,371	\$13,086
Additional Bonds coverage ratio						3.49	2.80	1.42

<sup>4</sup>For Additional Bonds, Adjusted Net Operating Revenues during four of the six quarters preceding issuance of new Senior Debt, adjusted to take into account additional revenues that would be generated from any rate adjustment in effect prior to debt issuance must be at least 110% of the Maximum Future Principal and Interest on existing bonds and the new bond issue, plus 100% of the required deposit to the Reserve Account. For Subordinate Debt, the Adjusted Net Operating Revenues, less Maximum Future Principal and Interest, must be at least 100 percent of Subordinate Debt and any required reserve account deposits. The Maximum Future Principal and Interest does not include debt service on bonds issued subsequently to the Series 2019 Bonds.

#### Sources

Data for Fiscal Year 2017 from Water and Sewer Department Comprehensive Annual Financial Report; data for Fiscal Year 2018 represent unaudited year end results, and 2019 from Department's Adopted Budget. Data for used in calculating projections for fiscal year 2020 through 2024 are based on operating expenses in the Department's 5-year financial projections dated November 14, 2018. Debt service schedules for issues beginning in FY 2019 are from the County's financial advisor. Additional operating revenue requirements are based on meeting all expenses and achieving planning level debt service coverage ratios.

#### Notes

Entries are rounded, and totals and subtotals use formulas that may yield insignificant differences.

Actual results may vary from those values budgeted and projected because of events and circumstances different from those assumed. Such differences could materially affect the debt service coverage estimates.

Table 8-6 shows Historical and Projected Cash Flow and Fund balances for the Rate Stabilization Fund and General Reserve. It is important to note that the table also shows information on planned deposits to the Renewal and Replacement Fund, changes in the 60-day requirement, and Fire Hydrant Fund Contributions, among other items.

**Table 8-6 Historical and Projected Cash Flow and Fund Balances**

REVENUE/EXPENSE/ COVERAGE ITEM <sup>1</sup>	FISCAL YEAR							
	ACTUALS	UN-AUDITED	PROJECTED					
	2017	2018	2019	2020	2021	2022	2023	2024
<b>Cash Flow and Fund Balances</b>								
Net Operating Revenues less Debt Service	\$131,635	\$118,386	\$113,121	\$107,308	\$127,052	\$161,534	\$185,617	\$211,623
<b>Non-Operating Expenses (Revenues) excluding debt service<sup>5</sup></b>								
Renewal and Replacement Fund Deposit	\$90,776	\$100,000	\$90,000	\$90,000	\$90,000	\$90,000	\$90,000	\$90,000
Special Construction Fund		\$10,000	\$10,000					
Fire Hydrant Fund Contribution	\$2,326	\$2,393	\$2,373	\$2,396	\$2,420	\$2,445	\$2,469	\$2,494
Swap receipts	\$(6,944)	\$(6,405)	\$(6,405)	\$(6,733)	\$(6,733)	\$(6,733)	\$(6,733)	\$(6,733)
Interest income - net of interest from other the Construction Fund	\$(3,144)	\$(9,566)	\$(13,312)	\$(8,996)	\$(9,863)	\$(10,686)	\$(12,118)	\$(14,831)
Repayment of loan to General Fund			\$(10,000)					
Change in 60-Day Reserve Requirement	\$3,087	\$2,561	\$3,900	\$954	\$2,811	\$2,972	\$3,333	\$3,142
Transfer to (from) General Reserve Fund	\$18,498	\$9,843	\$15,684	\$16,904	\$19,875	\$33,053	\$33,666	\$34,873
Transfer to (from) Rate Stabilization Fund	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total Non-Operating Expenses excluding debt service</b>	<b>\$104,599</b>	<b>\$108,826</b>	<b>\$92,240</b>	<b>\$94,525</b>	<b>\$98,510</b>	<b>\$111,051</b>	<b>\$110,617</b>	<b>\$108,945</b>
<b>Total operating and non-operating expenses</b>	<b>\$680,296</b>	<b>\$702,267</b>	<b>\$715,865</b>	<b>\$765,371</b>	<b>\$790,264</b>	<b>\$819,706</b>	<b>\$836,142</b>	<b>\$851,431</b>
Remaining Cash After Operating and Non-Operating Expenses	\$27,036	\$9,582	\$20,881	\$4,608	\$16,330	\$38,272	\$62,789	\$90,467
<b>Reserve Fund Balances</b>								

REVENUE/EXPENSE/ COVERAGE ITEM <sup>1</sup>	FISCAL YEAR							
	ACTUALS	UN-AUDITED	PROJECTED					
	2017	2018	2019	2020	2021	2022	2023	2024
Rate Stabilization Fund	\$30,534	\$30,534	\$30,534	\$30,534	\$30,534	\$30,534	\$30,534	\$30,534
General Reserve	\$57,563	\$67,406	\$83,090	\$99,994	\$119,869	\$152,922	\$186,588	\$221,461
60-Day Operating Reserve	\$71,638	\$74,199	\$78,099	\$79,053	\$81,863	\$84,835	\$88,168	\$91,310

#### Sources

Data for Fiscal Year 2017 from Water and Sewer Department Comprehensive Annual Financial Report; data for Fiscal Year 2018 represent unaudited year end results, and 2019 from Department's Adopted Budget. Data for used in calculating projections for fiscal year 2020 through 2024 are based on operating expenses in the Department's 5-year financial projections dated November 14, 2018. Debt service schedules for issues beginning in FY 2019 are from the County's financial advisor. Additional operating revenue requirements are based on meeting all expenses and achieving planning level debt service coverage ratios.

#### Notes

Entries are rounded, and totals and subtotals use formulas that may yield insignificant differences.

Actual results may vary from those values budgeted and projected because of events and circumstances different from those assumed. Such differences could materially affect the debt service coverage estimates.

Section 208 of the Master Bond Ordinance requires that for issuance of Additional Bonds, among other requirements, the Department's Adjusted Net Operating Revenues must be at least 110 percent of future Maximum Principal and Interest on senior debt during the Computation Period, Fiscal Year 2022 through Fiscal Year 2024. Table 8-4 shows that, with a 6.0 percent revenue increase in effect for Fiscal Year 2018, the projected revenues will enable the Department to meet this provision of the Master Bond Ordinance.

The Master Bond Ordinance requires the Department to maintain and budget to achieve a debt service coverage ratio on senior debt of 1.25, calculated by dividing Net Operating Revenues by senior debt service. Net Operating Revenues include interest income from sources other than the Construction Fund (the repository of Revenue Bond proceeds) and any transfers from the Rate Stabilization Reserve. Eligible interest income has been estimated by the Department including projected growth in the required 60-day operating expense reserve and other funds. The analysis is based on transfers into the General Reserve in any year where revenues exceed expenses, which is expected to be the case in Fiscal Year 2019. However, as noted above, the Department may elect to invest greater amounts in asset renewal and replacement than currently projected, which would reduce growth in reserves.

Table 8-4 shows that based on the projected revenues and expenses, including necessary rate increases, the Department may reasonably be expected to achieve the planning debt service coverage ratio of 1.25 throughout the projection period.

The debt service coverage ratio required for subordinate debt is 1.00, calculated by dividing the difference between Adjusted Net Operating Revenue and the maximum annual future debt service on outstanding revenue bonds by the subordinate debt service. Table 8-4 shows that the projected revenues, including the additional revenues from necessary revenue increases, can reasonably be expected to achieve a subordinate debt service coverage ratio well above the required level of 1.00.

The revenue increases shown in Table 8-1 are projected to also be sufficient to enable the Department to fund its non-operating as well as operating expenses each year during the projection period. The table shows that Operating Revenues are projected to be sufficient to cover Operating and Non-Operating Expenses throughout the projection period. Revenues in excess of expenses are assumed to be available to augment the Department's general reserve. The last three rows on Table 8-4 show the projected year-end balances for each of the Department's three reserves, Rate Stabilization Reserve, General Reserve, and 60-Day Operating Reserve. The table shows that the General Reserve is projected to grow, although this growth could be offset if the Department instead invests the additional revenue in asset renewal and replacement. As noted above, investing the funds in renewal and replacement would extend the effective rate increase to wholesale customers, rather than just retail customers. The 60-Day Operating Reserve is projected to increase in proportion to projected operating expenses.

It is important to note that actual results may vary from the values budgeted and projected because of events and circumstances different from those assumed. Such differences could materially affect the debt service coverage estimates and conclusions. Again, the results are very dependent on the County's approving the retail and wholesale customer rate increases that are reflected in Table 8-1.

## **8.6 Principal Assumptions Applied in the Development of the Financial Projections**

In conducting the analyses and in forming an opinion of the projection of future operations summarized in this report, several important assumptions were made with respect to conditions, events, and circumstances that may occur in the future. The methodology utilized in performing the analysis follows generally accepted practices for such projections. While the assumptions are considered reasonable and appropriate, and the projection methodology valid, actual results may differ materially from those projected, as influenced by the conditions, events, and circumstances that actually occur that are unknown at this time.

The following are the principal assumptions applied in developing the projections of operating revenues and expenses, senior debt service, subordinate debt service, Adjusted Net Operating Revenue, senior debt service coverage, and subordinate debt service coverage:

- The Department has no contingent liabilities, including pending litigation, other than those reported in the Fiscal Year 2017 Comprehensive Annual Financial Report.
- The Department's budgeted operating revenues for Fiscal Year 2019 are reasonably accurate and serve as an acceptable starting point for the revenue projections.
- Projected operating revenues after Fiscal Year 2019 include revenue increases needed to meet required operation and financial requirements.
- To ensure that the Department will meet future financial and debt service coverage requirements under the Master Bond Ordinance, the Department must budget to attain debt service coverage ratios somewhat higher than the required levels for senior debt. The target debt service coverage level for senior debt should be 1.25.

- For subordinate debt, the target debt service coverage level should be at least 1.00 to ensure meeting financial obligations associated with subordinate debt. These target debt service levels served as the basis for calculating the additional revenues from rate increases needed for the Department to meet its debt service coverage requirements. The rate increases shown do not include any potential additional rate increases needed to meet future Additional Bonds Tests, due to the numerous uncertainties relating to future financing requirements and timing, interest rates, financing procedures and cost, capital improvement program, revenues, and expenses.
- The projections of water and wastewater customers and the associated water and wastewater flows, which are assumed to remain flat through Fiscal Year 2024, are reasonable and consistent with recent trends and the County's policy of encouraging water conservation and reducing wastewater inflow and infiltration.
- The Department's budgeted operating expenses for Fiscal Year 2019 are considered sufficiently accurate to serve as an acceptable starting point for expense projections.
- The Department will not be required by County government to contribute to the County's general fund, either through direct transfer or through any type of loan agreement during the study period, and the County will repay the loan that the Department made to the County's General Fund based on the current schedule.
- The Department will not be required by County government to contribute to the County's Emergency Contingency Fund during the study period.
- The only payment to the County during the study period will be the Administrative Reimbursement, intended to reimburse County government for services provided by other County departments to the Water and Sewer Department.
- The projected Adjusted Net Operating Revenue figures are based on projected operating revenues and expenses and interest income other than from the Construction Fund. For purposes of this analysis, interest income other than from the Construction Fund was estimated by the Department based on projected growth in various funds.
- Projected senior debt service is based on the debt service schedules for outstanding debt and the estimated debt service for the Series 2019 Bonds. The estimated debt service for the future bond issues, including the Series 2019 bonds, was based on securing funding for capital projects expected to be required by the Department to meet statutory and regulatory requirements as well as to allow the Department to continue meeting the required levels of service for the water and wastewater systems. Debt service on future bonds, including Series 2019 Bonds was provided by the County's Financial Advisor. In this analysis, the debt service was based on cash basis, not accrual.
- The projected senior and subordinate debt service coverage ratios are based on the projected Adjusted Net Operating Revenue values, including revenue increases required to generate the additional revenue needed to achieve the target debt service coverage ratios. The projected additional revenue from rate increases is based on the assumption that the BCC will approve the necessary rate increases for both retail and wholesale customers.
- Projected funding for renewal and replacement includes additional funding for new projects funded by the Series 2019 Bonds.

Subject to the limitations set forth herein, this report was prepared for the Miami-Dade Water and Sewer Department and is based on certain information that the Consultant cannot verify. The Consultant was not requested to make an independent analysis, to verify the information provided to it, or to render an independent judgment of the validity of the information provided by others. As such, the Consultant cannot, and does not, guarantee the accuracy of the information presented herein.

**Arcadis U.S., Inc.**

201 South Biscayne Boulevard

28th Floor

Suite 2845

Miami, Florida 33131

Tel 305 913 1316

**[www.arcadis.com](http://www.arcadis.com)**



**APPENDIX B**

**GENERAL INFORMATION RELATIVE TO  
MIAMI-DADE COUNTY, FLORIDA**

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## **GENERAL INFORMATION RELATIVE TO MIAMI-DADE COUNTY, FLORIDA**

Set forth below is certain general information concerning County government and certain governmental services provided by the County.

### **History**

Miami-Dade County, Florida (the “County”), is the largest county in the southeastern United States in terms of population. The County is located in the southeastern corner of the State of Florida (the “State”), covers 2,209 square miles, and includes, among other municipalities, the cities of Miami, Miami Beach, Coral Gables and Hialeah. In 2017, the U.S. Census estimated the County’s population at over 2.7 million.

The County was created on January 18, 1836, under the Territorial Act of the United States. It included the land area now forming Palm Beach and Broward Counties, together with the land area of the present County. In 1909, Palm Beach County was established from the northern portion of what was then Dade County. In 1915, Palm Beach County and the County contributed nearly equal portions of land to create what is now Broward County. There have been no significant boundary changes to the County since 1915.

### **County Government**

The State Legislature in 1955 approved and submitted to a general election a constitutional amendment designed to give a new form of government to the County. The amendment was approved in a statewide general election in November 1956. A Dade County Charter Board was constituted and, in April 1957, completed a draft charter for the County. The proposed charter (the “Charter”) was adopted in a countywide election in May 1957 and became effective on July 20, 1957. The electors of the County were granted power to revise and amend the Charter from time to time by countywide vote.

Since 2007, the electors have amended the County Charter to materially change how the County is governed. Previously, the County was governed by a Board of County Commissioners (“Board”) with all administrative matters handled by a County Manager who reported to the Board. Under this form of government, the elected Mayor had limited powers. As a result of three Charter amendments, the electors have established a “strong mayor” form of government. All administrative matters were transferred from the County Manager to the Mayor on November 4, 2008, and the office of County Manager was eliminated as a charter office on November 14, 2012. The Mayor has authority over all departments including the appointment of each director.

The County has home rule powers, subject only to the limitations of the Constitution and general laws of the State. The County, in effect, is both (1) a county government with certain powers effective throughout the entire County, including 34 municipalities, and (2) a municipal government for the unincorporated area of the County. The County does not displace or replace the cities, but supplements them. The County can take over particular activities of a city’s operations if the services fall below minimum standards set by the Board or with the consent of the governing body of a particular city.

The County has assumed responsibility on a countywide basis for an increasing number of functions and services, including the following:

(a) Countywide police services, complementing the municipal police services within the cities and providing full-service police protection for the unincorporated areas of the County, with direct access to the National Crime Information Center in Washington, D.C. and the Florida Crime Information Center.

(b) Uniform system of fire protection, complementing the municipal fire protection services within five municipalities and providing full-service fire protection for the Miami-Dade Fire and Rescue Service District, which includes the unincorporated area of the County and the 30 municipalities that have consolidated their fire departments within the Miami-Dade Fire and Rescue Department. The Miami-Dade Fire and Rescue Department

also provides emergency medical services by responding to and providing on-site treatment to the seriously sick and injured.

(c) Certain expenses of the State's consolidated two-tier court system (pursuant to Florida Statutes §29.008). The two-tier court system consists of the higher Circuit Court and the lower County Court. The Circuit Court handles domestic relations, felonies, probate, civil cases where the amount in dispute is \$15,000 or more, juvenile cases, and appeals from the County Court. The County Court handles violations of municipal ordinances, misdemeanors and civil cases where the amount in dispute is less than \$15,000.

(d) Countywide water and sewer system operated by the Water and Sewer Department.

(e) Jackson Memorial Hospital ("JMH"), which is operated, maintained and governed by an independent governing body called the Public Health Trust (the "Trust"). Based on the number of admissions to a single facility, JMH is one of the nation's busiest medical centers. The Board appoints members of the Board of Trustees for the Trust and also approves the budget of the Trust. The County continues to subsidize treatment of indigent patients on a contractual basis with the Trust.

(f) Unified transit system, consisting of various surface public transportation systems, a 24.8 mile long rapid transit system, the Metromover component of the rapid rail transit system with 4.4 miles of an elevated double-loop system, and Metrobus operating approximately 27.4 million revenue miles annually.

(g) Miami-Dade Public Library System ("MDPLS"), consisting of a Main Library, 49 branches, two mobile libraries, and one Technobus offering educational, informational and recreational materials and programs. MDPLS is the seventh largest (based on population served) public library system in the United States. The MDPLS customer base includes 2.5 million residents, including the reciprocal borrowers from the cities of Hialeah, North Miami, and North Miami Beach, as well as visitors to the County. MDPLS provides books and other materials and services to patrons of all ages and ethnic backgrounds.

(h) Property appraisal services, performed by the County's Property Appraiser's office, and tax collection services, performed by the County's Tax Collector. All collected taxes are distributed directly to each governmental entity, according to its respective tax levy. The municipalities, the Board of Public Instruction and several State agencies use data furnished to them by the County Tax Collector for the purpose of budget preparations and for their governmental operations.

(i) Enforcing minimum standards throughout the County in areas such as environmental resources management, building and zoning, consumer protection, health, housing and welfare.

(j) Collecting and disposing of solid waste from households within the unincorporated area and certain municipalities of the County. In Fiscal Year 2018, the Solid Waste Management Department collected and disposed of garbage and trash from approximately 337,750 average household units.

(k) Owning and operating the Dante B. Fascell Port of Miami (the "Port") through the County's Seaport Department. The Port is the world's largest multi-day cruise port in terms of cruise passengers, with more than 5.6 million multi-day cruise passengers in Fiscal Year 2018. As of September 2018, the Port is ranked among the fastest growing container cargo ports in the U.S.

(l) The following airport facilities: (i) the Miami International Airport, the principal commercial airport serving South Florida; (ii) the Opa-locka Executive Airport, a 1,810 acre facility; (iii) the Opa-locka West Airport, a 420 acre facility that has been decommissioned; (iv) the Miami Executive Airport, a 1,380-acre facility; (v) the Homestead General Aviation Airport, a 960-acre facility; and (vi) the Training and Transition Airport, a facility of approximately 24,300 acres located in Collier and Miami-Dade Counties. All of these facilities are County-owned and operated by the Miami-Dade Aviation Department.

(m) Several miscellaneous services, including mosquito and animal control.

## **Economy**

The County's economy has transitioned from mixed service and industrial in the 1970s to a knowledge-based economy. The shift to knowledge-based sectors, such as life sciences, aviation, financial services and IT/Telecom has diversified the local economy. Other important sectors include international trade, health services and the tourism industry, which remains one of the largest sectors in the local economy. Wholesale and retail trades are strong economic forces in the local economy and are projected to continue as such, which is reflective of the County's position as a wholesale center in Southeast Florida, serving a large international market. The diversification of the economy creates a more stable economic base.

The Miami-Dade Beacon Council (the "Beacon Council"), a public-private partnership, is the official economic development organization for the County. The organization was founded in 1985 as an outgrowth of the Greater Miami Chamber of Commerce to focus on business recruitment, expansion and retention, and facilitates business growth and expansion locally, nationally and internationally. The Beacon Council is the steward for the county-wide economic development plan, One Community One Goal, to strengthen and diversify the economy with high paying jobs.

## **International Commerce**

Approximately 1,100 multinational corporations are established in South Florida. Its proximity to the Caribbean, Mexico, Central and South America makes it a natural center for trade to and from North America. In addition, the international background of many of its residents is an important labor force characteristic for multinational companies that operate across language and cultural differences.

Trade with Latin America, Europe and Caribbean countries has generated substantial growth in the number of financial institutions conducting business in the County. The large Spanish-speaking labor force and the County's proximity to Latin America have also contributed to the growth of the banking industry in the County. According to the Federal Reserve Bank of Atlanta, as of September 30, 2018, there were 12 Edge Act Banks throughout the United States; three of which were located in the County with over \$7.1 billion on deposit. Edge Act Banks are federally chartered organizations offering a wide range of banking services, but limited to international transactions only. The Edge Act Banks located in the County are Banco Itau International, Banco Santander International and HSBC Private Bank International.

## **Corporate Expansion**

The favorable geographic location of the County, a well-trained labor force and the favorable transportation infrastructure have allowed the economic base of the County to expand by attracting and retaining many national and international firms doing business with Latin America, the Caribbean, the United States and the rest of the world. Among these corporations with world and/or national headquarters in the County are: Carnival Cruise Lines, Royal Caribbean Cruises, and Lennar. Those corporations with Latin American regional headquarters include: Exxon, AIG, Microsoft, Visa International and Wal-Mart.

## **Industrial Development**

The role of the Miami-Dade County Industrial Development Authority (the "IDA") is the development and management of the tax-exempt industrial development revenue bond program which serves as a financial incentive to support private sector business and industry expansion and location. Programs developed are consistent with the IDA's legal status and compatible with the economic development goals established by the Board and other economic development organizations operating in the County. Between 1979 and the creation of the Beacon Council in 1985, the IDA provided expansion and location assistance to 195 private sector businesses, accounting for a capital investment of \$695 million and the creation of over 11,286 new jobs.

The IDA's principal program, the Tax-Exempt Industrial Development Revenue Bond Program, has generated 477 applications through September 30, 2018. From 1986 to September 2018, bonds for 253 company projects have been issued in an aggregate principal amount in excess of \$2.5 billion. Approximately 13,862 new

jobs have been generated by these projects. The IDA continues to manage approximately 45 outstanding Industrial Development Revenue Bond Issues, approximating \$1 billion in capital investment.

### **Other Developmental Activities**

In October 1979, the Miami-Dade County Health Facilities Authority (the “Health Authority”) was formed to assist local not-for-profit health care corporations to acquire, construct, improve or refinance health care projects located in the County through the issuance of tax-exempt bonds or notes. As of September 2017, the total amount of revenue bonds issued by the Health Authority was over \$2.1 billion.

In October 1969, the Board created the Miami-Dade County Educational Facilities Authority (the “EFA”) to give institutions of higher learning within the County an additional means to finance facilities and structures needed to maintain and expand learning opportunities and intellectual development. As of September 2017, the EFA had issued 54 series of bonds totaling over \$2.51 billion.

In December 1978, the Housing Finance Authority of Miami-Dade County (the “HFA”) was formed to issue bonds to provide the HFA with moneys to purchase mortgage loans secured by mortgages on single family residential real property owned by low and moderate income persons residing in the County. Since its inception the HFA has generated \$1.213 billion in mortgage funds through the issuance of revenue bonds under the Single Family Mortgage Revenue Bond Program. As of September 2018, under the HFA’s Multi-Family Mortgage Revenue Bond Program, revenue bonds aggregating approximately \$1.61 billion had been issued for new construction or rehabilitation of 23,315 multi-family units.

The bonds issued by the foregoing authorities and the IDA are not debts or obligations of the County or the State or any political subdivision thereof, but are payable solely from the revenues provided by the respective private activity borrower as security therefor.

### **Film Industry**

The Film and Entertainment Industry is an economically important industry to Miami-Dade County. The Greater Miami Convention and Visitors Bureau recognizes its importance in attracting visitors to the County by partnering with the County’s Film and Entertainment Office to help market the County as a destination for entertainment production projects. In 2017, the County continued to see television series and feature films contribute to the local economy. Bloodline’s third season, American Crime Story: The Assassination of Gianni Versace and The Beach Bum together spent \$12 million in the County in 2017. Spanish-language television, in particular, telenovelas, continues to film in the county, including Mi Familia Perfecta, Milagros de Navidad, Al Otro Lado Del Muro and De Pura Cepa. These telenovelas contributed approximately \$48 million to the County’s economy.

The County also attracts reality television shows, including Jersey Shore Family Vacation, WAGS Miami Season 2, Happily Ever After Season 2, Love & Hip Hop Miami, What the Florida, Reconnected, Adventure Capitalists, So You Think You Can Dance, Baller Wives, Rock the Park, Dog Tales Rescue, Master Chef Latino, Military Makeover, Tim Kennedy Project, Swamp People, Warriors of Liberty City and more. In 2017, the direct spend into the County’s economy from permitted film, television, still photo and digital production was approximately \$160,000,000. Television commercials and print advertising continue to shoot projects in the County as well. These television commercials and print campaigns advertised brands such as Toyota, Harley Davidson, HGTV, Victoria’s Secret, Abercrombie & Fitch, Ralph Lauren Polo, FPL, Honda, Dodge, McDonald’s McCafé, Ford, Louis Vuitton, Hotels.com, Jag Swimwear, Bon Prix, Venus Fashion, Vogue, Full Beauty Cosmetics, BMW, Porsche, Famous Footwear, ELLE, H&M, W Magazine, Monroe & Main, Zara, H&M Women, Otto Fashion, Kohl’s, Belks, H&M Summer Kids, Corona, Parents Magazine, Macy’s, Yankee Candle, Dillard’s, Chico’s, Steve Madden, U.S. Polo Association, American Eagle, Top Shop, Italian Glamour, Adidas, Nordstrom and more.

2018 has already brought two prominent projects to the County: Paper Empire and Huracán. The pilot for the television series Paper Empire was filmed in early 2018 and has already been awarded a limited series order from Netflix. Paper Empire will be filmed entirely in the County. Huracán, an independent feature film, was also

produced in the County in January. In 2017, the Board of County Commissioners approved a performance-based local incentive program that was created to bring more entertainment production to the County. The first approved grant agreement from the new program was approved in late December 2017 for Viacom's television series, I Am Frankie, Season 2, which will contribute approximately \$5,000,000 to the local economy. The film and television incentive programs are expected to attract more projects in 2018.

## Surface Transportation

The County owns and operates through its Transit Department a unified multi-modal public transportation system. Operating in a fully integrated configuration, the County's Transit Department provides public transportation services through: (i) Metrorail - a 24.8-mile, 23-station elevated electric rail line connecting South Miami-Dade and the City of Hialeah with the Downtown and Civic Center areas as well as Miami International Airport providing 19.2 million passenger trips annually; (ii) Metromover - a fully automated, driverless, 4.4-mile elevated electric double-loop people-mover system interfaced with Metrorail and completing approximately 9.5 million passenger trips annually throughout 21 stations in the central business district and south to the Brickell international banking area and north to the Omni area; and (iii) Metrobus, including both directly operated and contracted conventional urban bus service, operating approximately 27.4 million revenue miles per year, interconnecting with all Metrorail stations and key Metromover stations, and providing over 51.8 million passenger trips annually.

The County also provides para-transit service to qualified elderly and handicapped riders through its Special Transportation Service, which supplies over 1.74 million passenger trips per year in a demand-response environment.

Additionally, the County's Transit Department is operating the Bus Rapid Transit (BRT) on the South Miami-Dade Busway, a dedicated-use BRT corridor that runs parallel to US1/South Dixie Highway. The South Miami-Dade Busway, which began operating in 1997 and was extended in December 2007, traverses over twenty miles, connecting Florida City (SW 344<sup>th</sup> Street) with the Metrorail system, with connection to downtown Miami.

## Airport

The County owns and operates the Miami International Airport (the "Airport"), the principal commercial airport serving Southeast Florida. The Airport has the second highest international passenger traffic in the U.S. During Fiscal Year 2018, the Airport handled 44,938,486 passengers and 2,368,617 tons of air freight. The Airport is classified by the Federal Aviation Administration as a large hub airport, the highest classification given by that organization. The Airport is also one of the principal maintenance and overhaul bases, as well as a principal training center, for the airline industry in the United States, Central and South America, and the Caribbean.

### Passengers and Cargo Handled by Airport 2014-2018

<b>Fiscal Year</b>	<b>Passengers (in thousands)</b>	<b>Cargo Tonnage (in millions)</b>	<b>Total Landed Weight (million lbs.)</b>
2014	40,845	2.18	35,298
2015	43,347	2.21	36,722
2016	44,902	2.21	37,927
2017	43,758	2.25	36,990
2018	44,938	2.37	37,457

SOURCE: Miami-Dade County Aviation Department.

## Seaport

The Port is an island port, which covers 640 acres of land, operated by the Seaport Department. It is the world's largest multi-day cruise port. Embarkations and debarkations totaled over 5.6 million passengers for Fiscal Year 2018. With the increase in activity from the Far-East markets and South and Central America, containerized cargo movements at the Port amounted to approximately 1,083,587 TEUs (twenty-foot equivalent units) for Fiscal Year 2018. The following table sets forth a five-year summary of both cruise passengers served and cargo handled:

### Passengers and Cargo Handled by Port 2014-2018

Fiscal Year	Cruise Passengers (Including Ferry Service) (in thousands)	Cargo TEUs (Twenty-Foot Equivalent Units) (in thousands)
2014	4,939	877
2015	4,916	1,008
2016	4,980	1,028
2017	5,341	1,024
2018	5,597	1,084

SOURCE: Miami-Dade County Seaport Department.

## Tourism

The state of Florida played host to more than 115 million overnight visitors for the first time in Fiscal Year 2017. Miami-Dade accounted for just over 13 percent of all visitors to the state. The County is a leading center for tourism in the State of Florida and the State's principal port of entry for international air travelers. The Airport has the second highest international passenger traffic behind New York's John F. Kennedy International Airport.

Visitors to the Miami area fell by a fraction of a percent in Fiscal Year 2017. A part of the explanation for the drop in total visitors can be traced back to Hurricane Irma. Hurricane Irma caused a 206,900 drop in visitors during the month of September 2017 when compared to September 2016. There were 15.7 million total overnight visitors to the Miami Area in Fiscal Year 2017, leading to a net gain of 0.9% in overnight visitation. This gain was driven by an increase in international visitors of 2.3%, which cancelled out the slight dip in domestic visitation. Of the overnight visitors, 58.5% of the visitors that used lodging stayed in Miami Beach.

Latin America continued to be a leading source of international visitors to the County, accounting for over 4.4 million visitors in Fiscal Year 2017. Visitors from Europe remained relatively flat in Fiscal Year 2017 compared to Fiscal Year 2016, accounting for over 1.5 million visitors. Among the domestic visitors, the majority visiting Greater Miami and the Beaches traveled from the Northeast, accounting for 48.2% of domestic travelers.

The following is a five-year schedule of domestic and international visitors, including a further breakdown of international visitors by region of origin, and the estimated economic impact produced by those visitors:

### Visitors and Their Estimated Economic Impact 2013-2017

	Visitors (in thousands)			Estimated Economic Impact (in millions)		
	Domestic	Int'l	Total	Domestic	Int'l	Total
2013	7,087	7,132	14,219	\$7,840	\$15,954	\$23,794
2014	7,303	7,260	14,563	8,206	16,528	24,734
2015	7,990	7,506	15,496	8,739	14,937	23,676
2016	8,100	7,624	15,724	9,690	15,810	25,500
2017	7,935	7,755	15,690	9,782	15,724	25,506

SOURCE: Greater Miami Convention and Visitors Bureau Annual Report.



**International Visitors by Region  
2013 – 2017  
(in thousands)**

<b>Year</b>	<b>Europe</b>	<b>Caribbean</b>	<b>Central and South America</b>	<b>Canada/Other</b>	<b>Total</b>
2013	1,332	719	4,299	781	7,131
2014	1,430	755	4,254	820	7,259
2015	1,515	799	4,355	836	7,505
2016	1,555	854	4,334	882	7,625
2017	1,551	854	4,408	942	7,755

SOURCE: Greater Miami Convention and Visitors Bureau Annual Report.

**Employment**

The following table illustrates the economic diversity of the County's employment base. No single industry dominates the County's employment market, and there have not been any significant decreases within the industry classifications displayed for the latest years for which information is available:

**Estimated Employment  
in Non-Agricultural Establishments  
2015-2017**

	<b>Sept. 2015</b>	<b>Percent</b>	<b>Sept. 2016</b>	<b>Percent</b>	<b>Sept. 2017</b>	<b>Percent</b>
<b>Goods Producing Sector</b>						
Construction	41,500	3.7%	45,500	3.9%	44,000	3.8%
Manufacturing	40,000	3.6	41,400	3.6	40,800	3.6
Mining & Natural Resources	400	0.0	500	0.0	500	0.0
<b>Total Goods-Producing Sector</b>	<b>81,900</b>	<b>7.3%</b>	<b>87,400</b>	<b>7.5%</b>	<b>85,300</b>	<b>7.4%</b>
<b>Service Producing Section</b>						
Transportation, Warehousing, and Utilities	67,900	6.0%	70,100	6.0%	71,300	6.2 %
Wholesale Trade	73,000	6.5	73,100	6.3	72,900	6.4
Retail Trade	146,400	13.0	147,000	12.7	143,100	12.5
Information	18,600	1.7	18,900	1.6	18,600	1.6
Finance Activities	78,300	7.0	78,800	6.8	80,000	7.0
Professional and Business Services	160,900	14.3	168,600	14.5	165,800	14.5
Education and Health Services	173,300	15.4	180,800	15.6	180,900	15.8
Leisure and Hospitality	133,800	11.9	139,800	12.0	133,300	11.6
Other Services	52,100	4.6	52,600	4.5	49,800	4.3
Government	139,500	12.4	144,000	12.4	144,600	12.6
<b>Total Service Producing Sector</b>	<b>1,043,800</b>	<b>92.7%</b>	<b>1,073,700</b>	<b>92.5%</b>	<b>1,060,300</b>	<b>92.6%</b>
<b>Total Non-Agricultural Employment</b>	<b>1,125,700</b>	<b>100%</b>	<b>1,161,100</b>	<b>100%</b>	<b>1,145,600</b>	<b>100%</b>

SOURCE: Miami-Dade County Department of Regulatory and Economic Resources, Planning Research and Economic Analysis Section, April, 2018.

The following tables set forth the leading public and private County employers for <sup>2016(1)</sup>:

#### Ten Largest Public Employers

Employer's Name	Number of Employees
Miami-Dade County Public Schools	31,000
Miami-Dade County	24,692
Federal Government	19,300
Florida State Government	19,200
Jackson Health System	8,163
Florida International University	4,951
City of Miami	3,820
Homestead AFB	2,810
Miami Dade College	2,572
Miami VA Healthcare System	2,500

#### Ten Largest Private Employers

Employer's Name	Number of Employees
University of Miami	12,864
Baptist Health South Florida	13,369
American Airlines	11,773
Carnival Cruise Lines	3,500
Miami Children's Hospital	3,500
Mount Sinai Medical Center	3,321
Florida Power & Light Company	3,011
Royal Caribbean International/Celebrity Cruises	2,989
Wells Fargo	2,050
Bank of America Merrill Lynch	2,000

SOURCE: The Beacon Council/Miami-Dade County, Florida.

<sup>(1)</sup> Information is based on data from year 2016. The data for year 2017 is not available as of the date of this report.

The following table sets forth the unemployment rates for the last five years and comparative rates for the United States, the State of Florida and the County:

Unemployment Rates 2013- 2017					
Area	2013	2014	2015	2016	2017
USA	7.4%	6.2%	5.3%	4.9%	4.4%
Florida	7.2	6.3	5.4	4.8	4.2
Miami-Dade County	7.5	6.7	5.9	5.3	4.8

SOURCES: Labor Market Statistics LAUS Program. Miami-Dade County, Regulatory and Environmental Resources Department, Planning Research Division, 2018. Miami-Dade County Department of Regulatory and Economic Resources, Planning Research and Economic Analysis Section, April, 2018.

\* Preliminary 12 month average through December 2017.

The following table sets forth the Per Capita Personal Income for the last five years for the United States, the Southeastern region, the State of Florida and the County.

**Per Capita Personal Income  
2013 - 2017**

<b>Year</b>	<b>United States</b>	<b>Southeastern</b>	<b>Florida</b>	<b>Miami-Dade</b>
2013	\$46,808	\$41,107	\$42,917	\$41,153
2014	48,130	42,290	44,567	43,210
2015	50,081	44,097	46,936	46,069
2016	50,248	44,229	46,828	46,404
2017	50,392	44,355	46,858	46,536

SOURCE: U.S. Department of Commerce Economic and Statistic Administration Bureau of Economic Analysis/Regional Economic Information System; April 2018.

**County Demographics**

**Estimates of County Population by Age  
2000 to 2030**

<b>Age Group</b>	<b>2000</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>
Under 16	495,375	479,211	497,047	519,423	558,766	599,472
16-64	1,457,435	1,659,816	1,722,173	1,844,380	1,900,107	1,948,084
65 & Over	300,552	352,013	410,658	428,796	482,004	538,987
<b>Total</b>	<b>2,253,362</b>	<b>2,491,040</b>	<b>2,629,878</b>	<b>2,792,599</b>	<b>2,940,877</b>	<b>3,086,543</b>

SOURCE: U.S. Census Bureau, Decennial Census Report for 2000 and 2010. Projections (2015-2030) provided by Miami-Dade County Department of Regulatory and Economic Resources, Planning Research and Economic Analysis Section, 2018.

**Trends and Forecasts, Population in  
Incorporated and Unincorporated Area  
1960-2020**

<b>Year</b>	<b>Population in Incorporated Areas</b>	<b>Population in Unincorporated Areas</b>	<b>Total</b>	<b>Percentage Growth in Population</b>
<b>Trends</b>				
1960	582,713	352,334	935,047	N/A
1970	730,425	537,367	1,267,792	35.6
1980	829,881	795,900	1,625,781	28.2
1990	909,371	1,027,723	1,937,094	19.1
1995	973,912	1,110,293	2,084,205	7.6
2000	1,049,074	1,204,288	2,253,362	8.1
2005	1,298,454	1,105,018	2,403,472	6.7
2010	1,386,864	1,109,571	2,496,435	3.9
2015	1,479,940	1,149,938	2,629,878	5.3
2016	1,509,101	1,165,178	2,674,279	1.7
2017	1,528,656	1,174,039	2,702,695	1.1
<b>Forecasts</b>				
2020	1,584,739	1,207,860	2,792,599	3.3

SOURCE: U.S. Census Bureau, Decennial Census Reports for 1960-2010. Projections (2015 - 2020) provided by Miami-Dade County Department of Regulatory and Economic Resources, Planning Research and Economic Analysis Section, 2018.

**Population By Race and Ethnic Group<sup>(1)</sup>**  
**1980 - 2016**  
**(in thousands)**

<b>Year</b>	<b>Total<sup>(2)</sup></b>	<b>Hispanic<sup>(1)</sup></b>	<b>Black<sup>(1)</sup></b>	<b>Non-Hispanic Whites and Others</b>
1980	1,626	581	284	773
1985	1,771	768	367	656
1990	1,967	968	409	618
1995	2,084	1,155	446	519
2000	2,253	1,292	457	534
2005	2,403	1,455	461	497
2010	2,496	1,624	496	449
2015	2,693	1,800	515	430
2016	2,713	1,835	476	440

**(In Percentages)**

<b>Year</b>	<b>Total<sup>(2)</sup></b>	<b>Hispanic<sup>(1)</sup></b>	<b>Black<sup>(1)</sup></b>	<b>Non-Hispanic Whites and Others</b>
1980 <sup>(2)</sup>	100%	36%	17%	48%
1985 <sup>(2)</sup>	100	43	21	37
1990 <sup>(2)</sup>	100	49	21	31
1995 <sup>(2)</sup>	100	55	21	25
2000 <sup>(2)</sup>	100	57	20	24
2005 <sup>(2)</sup>	100	61	21	20
2010 <sup>(2)</sup>	100	65	20	18
2015 <sup>(2)</sup>	100	67	19	16
2016 <sup>(2)</sup>	100	68	18	16

SOURCE: U.S. Census Bureau, Census of Population Reports for 1970-2010. Projections provided by Miami-Dade County Department of Regulatory and Economic Resources, Planning Research and Economic Analysis Section, April, 2018.

<sup>(1)</sup> Persons of Hispanic origin may be of any race. Hispanic Blacks are counted as both Hispanic and Black. Other Non-Hispanics are grouped with Non-Hispanic White category. Sum of components exceeds total.

<sup>(2)</sup> Numbers may not add due to rounding

**APPENDIX C**

**AUDITED FINANCIAL REPORT OF THE MIAMI-DADE  
WATER AND SEWER DEPARTMENT FOR  
FISCAL YEAR ENDED SEPTEMBER 30, 2017**

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# Miami-Dade Water and Sewer Department

A DEPARTMENT OF MIAMI-DADE COUNTY, FL

## Comprehensive Annual Financial Report

FOR THE FISCAL YEAR ENDED SEPTEMBER 30, 2017

PREPARED BY: CONTROLLER DIVISION AND PUBLIC AFFAIRS SECTION







# Miami-Dade Water and Sewer Department

**A DEPARTMENT OF MIAMI-DADE COUNTY, FL**

## Comprehensive Annual Financial Report

**FOR THE FISCAL YEAR ENDED SEPTEMBER 30, 2017**

**PREPARED BY: CONTROLLER DIVISION AND PUBLIC AFFAIRS SECTION**

### **VISION STATEMENT**

The continuous delivery of excellent, cost-effective water supply and wastewater services in compliance with all regulatory requirements.

### **MISSION STATEMENT**

The Miami-Dade Water and Sewer Department is committed to serving the needs of Miami-Dade County residents, businesses, and visitors by providing high-quality drinking water and wastewater disposal services while providing for future economic growth via progressive planning; implementing water conservation measures; safeguarding public health and the environment; and providing for continuous process improvements and cost efficiencies.





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# Miami-Dade Water and Sewer Department

A DEPARTMENT OF MIAMI-DADE COUNTY, FL

## Comprehensive Annual Financial Report

FOR THE FISCAL YEAR ENDED SEPTEMBER 30, 2017

PREPARED BY: CONTROLLER DIVISION AND PUBLIC AFFAIRS SECTION

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## MIAMI-DADE COUNTY

Carlos A. Gimenez  
Mayor



## BOARD OF COUNTY COMMISSIONERS

Esteban L. Bovo, Jr.  
Chairman

Audrey M. Edmonson  
Vice Chairwoman

Barbara J. Jordan  
District 1

Jean Monestime  
District 2

Audrey M. Edmonson  
District 3

Sally A. Heyman  
District 4

Bruno A. Barreiro  
District 5

Rebeca Sosa  
District 6

Xavier L. Suarez  
District 7

Daniella Levine Cava  
District 8

Dennis C. Moss  
District 9

Senator Javier D. Souto  
District 10

Joe A. Martinez  
District 11

José “Pepe” Díaz  
District 12

Esteban Bovo, Jr.  
District 13

Harvey Ruvin  
Clerk of the Circuit and County Courts

Pedro J. Garcia  
Property Appraiser

Abigail Price-Williams  
County Attorney

Miami-Dade County provides equal access and equal opportunity in employment and services and does not discriminate on the basis of disability.

It is the policy of Miami-Dade County to comply with all of the requirements of the Americans with Disabilities Act.



**Water and Sewer**  
P.O. Box 330316  
3071 SW 38th Avenue  
Miami, Florida 33233-0316  
T 305-665-7471

**miamidade.gov**

March XX, 2018

Honorable Carlos A. Gimenez, Mayor  
Honorable Esteban L. Bovo, Chairman and Members of the Board of County Commissioners  
Honorable Harvey Ruvin, Clerk of the Circuit and County Courts  
Pedro J. Garcia, Property Appraiser  
Abigail Price-Williams, County Attorney  
Miami-Dade County, Florida

Ladies and Gentlemen:

We are pleased to present the Comprehensive Annual Financial Report (CAFR) of the Miami-Dade Water and Sewer Department (Department, a.k.a. WASD) for the fiscal year ended September 30, 2017 (FY2017). This report presents a full set of financial statements prepared in conformity with U.S. Generally Accepted Accounting Principles (GAAP) as promulgated by the Governmental Accounting Standards Board (GASB) and audited by a firm of independent certified public accountants retained by the Department.

Management has established a comprehensive framework of internal controls to provide a reasonable basis for asserting the financial statements are fairly presented. While the independent auditor has expressed an opinion on the financial statements contained in this report, management is responsible, in all material respects, for both the completeness and reliability of the information contained in this report. For the fiscal year ended September 30, 2017, the Department received an unmodified opinion from its independent auditors.

This report may be accessed via the Internet at [http://www.miami-dade.gov/wasd/reports\\_financial.asp](http://www.miami-dade.gov/wasd/reports_financial.asp).

The financial statements comprise the Management's Discussion and Analysis (MD&A), financial statements, notes to the financial statements, and Required Supplementary Information (RSI). Immediately following the independent auditors' report is the MD&A, which provides a narrative introduction, detail overview and analysis of the Department's financial activities for FY2017. The MD&A complements this Letter of Transmittal and should be read in conjunction with it.

## **PROFILE OF GOVERNMENT**

In December 1972, the Board of County Commissioners (Board) of Miami-Dade County, Florida (County) created the Miami-Dade Water and Sewer Authority (Authority) for the purpose of establishing an agency responsible for providing water and wastewater services throughout the County. In 1973, all properties of the water and wastewater systems of the City of Miami and of the County were put under the control of the Authority. The Board changed the status of the Authority to that of a County department effective November 1, 1983, under the provisions of Miami-Dade County Ordinance 83-92, establishing the "Miami-Dade Water and Sewer Authority Department." On October 19, 1993, the Department changed its name to the Miami-Dade Water and Sewer Department.

The Department's water system, considered the largest water utility in the Southeast United States, serving



approximately 443,615 retail customers and 15 municipal wholesale customers within Miami-Dade County. Water is drawn primarily from the surficial Biscayne Aquifer, a non-artesian (or near surface) aquifer, which underlies an area of about 3,200 square miles in Miami-Dade, Broward, and Palm Beach counties.

The water system consists of three regional water treatment plants (WTP), the shared Hialeah reverse osmosis water treatment plant, and five small auxiliary treatment facilities that service the southernmost area of the County. The three regional plants are John E. Preston, Hialeah and Alexander Orr, Jr. water treatment plants. The total combined rated treatment capacity of these three WTPs is 481 MGD (million gallons per day). There are fifteen wellfields comprised of 94 production wells and five aquifer storage and recovery wells. These wells supply untreated water to the treatment plants. In addition, a proposed South Miami Heights WTP is planned to replace three of the small auxiliary treatment facilities.

Water distribution throughout the 400 square miles service area is performed via seven remote finished water storage and pumping facilities and more than 8,200 miles of water mains ranging in size from 2 inches to 96 inches in diameter.

The wastewater system serves approximately 361,000 retail customers and 13 wholesale customers, consisting of 12 municipal customers and the Homestead Air Reserve Base. It consists of three regional wastewater treatment plants (WWTP), over 1,000 sewage pump stations and nearly 6,300 miles of collection and transmission pipelines. The service area of the system covers approximately 375 square miles. The three WWTPs are the South District, Central District and North District WWTPs. The disposal of the by-products of the treatment process (sludge and effluent or treated wastewater) is an important part of the Department's plan to improve and expand its sewer system.

Disposal of treated wastewater at the North District Plant and the Central District Plant is accomplished by discharge into the Atlantic Ocean. A portion of the treated effluent at the North District Plant is also disposed via deep injection wells. Environmental studies conducted by the Environmental Protection Agency (EPA) and examinations by the State and the Department conducted in 1994 have shown "no irreparable harm" and "no unreasonable degradation" to the environment because of the discharge of effluent from the North District Plant and the Central District Plant into the Atlantic Ocean. The State revised this policy when, during 2008, legislation was passed mandating a phase out of ocean outfall discharges.

The South District Plant disposes of its effluent through deep injection wells to the lower Floridan Aquifer at a depth below 2,400 feet. In 1995, the Department completed construction of five additional deep injection wells as part of its 112.5 million gallons per day (MGD) plant expansion project. In FY2014, the Department finalized operational permit for all the South District's 17 injection wells, which are now fully operational.

The Department continues to plan and design reclaimed water facilities. Currently, the Department reuses 13 MGD of treated wastewater, which includes 120,000 gallons per day for irrigation of the Florida International University Bay Vista Campus. Additional capacity and production of reclaimed water cur-

rently is available at the South District Plant, with 97.3 MGD of public access reuse quality water produced in FY2017. As part of the 20-Year Water Use Permit, the Department is committed to distributing about 117.5 MGD of additional reclaimed water for aquifer recharge, irrigation, power plant cooling and potentially coastal wetlands rehydration.

## **ECONOMIC CONDITION AND OUTLOOK**

This economic condition and outlook report outlines the level of economic activity throughout Fiscal Year (FY) 2017 and forecasts the area's economic outlook for next fiscal year.

One year ago, in the year-end outlook for the local economy, it was anticipated that the level of economic activity in Miami-Dade would continue to grow in FY 2017 at a somewhat slower pace than in FY 2016. The reasoning behind this outlook was the assertion that the economy had reached and was operating in the mature phase of its cycle, in such a phase employment is high and grows at a slow pace, the unemployment rate is low and if it drops, it does so, modestly, and prices tend to start rising. Also mentioned was that going forward, FY 2017 should display these same characteristics absent an external shock to the system.

Prospects for growth of the United States' economy were thought to hold at a healthy 2.3 percent as reported by the Organization for Economic Co-operation and Development (OECD). A unified government would lead to a more expansionary fiscal policy than had been possible up to 2016.

Economic growth in the emerging markets and more importantly Latin America was expected to stabilize as the region found its footing after the downturn experienced in FY 2016. The combination of a strong US dollar and continued weakness in Latin America was expected to prolong the strengthening of imports and weakening of exports in the Miami Customs District, possibly resulting in the first trade deficit for the District in at least 30 years. The same phenomenon was seen as likely to extend the rebalancing of the tourist mix away from international and towards domestic visitors in FY 2017.

Real estate and construction activity in FY 2017 was expected to be moderate as foreign buyers retreated and the effects of years of real estate appreciation affected affordability for residents.

Miami-Dade's employment would continue to grow given the health of the overall economy, but at a slower pace given that both idle workers and economic resources would be harder to come by. The higher utilization rate of economic inputs coupled with a more expansionary fiscal policy was expected to put upward pressure on prices.

This forecast of FY 2017 turned out to be a fair assessment of what actually took place at the international, national and local levels.

At the national level FY 2017 saw an upswing in economic activity, with real gross domestic product (GDP) increasing at an annual rate of 2.1 percent, compared to an increase of 1.5 percent in the prior



year. The acceleration in GDP growth was brought about by a level of investment that went from negative 1.3 percent in FY 2016 to positive 2.6 percent in FY 2017 and by a more favorable Net Exports component going from negative 10.6 percent in FY 2016 to negative 7.8 percent in FY 2017. Alongside the increased economic activity, and due in part to energy prices rebounding somewhat, inflation increased from FY 2016 0.9 percent to an ideal 2.1 percent. This uptick in the level of inflation came on the heels of a decrease of the headline unemployment rate of 50 basis points to 4.5 percent, the lowest level since FY 2007.

At the County level the signs of an economy functioning at or near the mature stage of the cycle were clearly visible. FY 2017 closed with the lowest unemployment rate since FY 2007 and after adding a smaller amount of workers to payrolls, FY 2017 ended with the highest number of employed persons ever. The residential real estate market continued to moderate with permits for new residential construction remaining flat over the previous year and both single-family and multifamily home sales declining for the second year in a row.

In the last month of the fiscal year Hurricane Irma reached Florida, and coupled with the economy being in the mature phase of its cycle, caused enough of a disruption to tip the performance of several indicators from positive to negative. Of note are Taxable sales, number of visitors to Miami, passenger traffic moving through Miami International Airport, all of which contracted in FY 2017 compared to FY 2016.

What follows is an overview of the economic conditions throughout the past year and a brief discussion about the trends associated with the area's key economic drivers.

## EMPLOYMENT

During FY 2017 nonagricultural wage and salary employment (annual average) recorded an overall gain of approximately 23,100 jobs. This was an increase of 2.0 percent, to put total employment at a record high of 1,173,900 according to non-seasonally adjusted data from the Bureau of Labor Statistics. This gain in employment represented a slowdown from the prior fiscal year. It also represents the second consecutive year of deceleration, signaling a maturing labor market characterized by less slack. At the same time, slower expansion of the labor force compared to the expansion of employment resulted in a decrease in the unemployment rate. The average annual unemployment rate for the year stood at 5.1 percent, compared to 5.5 percent a year earlier. Moreover, the unemployment rate for the month of September 2017 stood at 4.7 percent, a full percentage point lower than in September 2016 when it stood at 5.7 percent.

Government as well as private economic sectors with the exception of financial activities were contributors to employment growth. The top three sectors that gained jobs were education and health services, trade, transportation and utilities and leisure and hospitality, registering gains of 6,925, 4,583 and 4,300 jobs respectively. Significant job gains also occurred in other services adding 2,675 positions and government up 2,416 positions.



## REAL ESTATE MARKET

Traditionally, the real estate sector in Miami-Dade County is viewed as one of the most important measures of the County's economic health. In FY 2017, as prices continued to rise, single family home sales contracted for the second year in a row, while condominium sales hit a fourth year of decline, approaching 13,000 units after reaching 17,183 in FY 2013. At the same time distressed market activity appears to be winding down as new foreclosure filings continued to decline for the fifth year in a row.

During FY 2017 sales of existing single-family homes decreased 2.5 percent over the prior fiscal year with 12,864 homes sold. Sales of condominiums dropped 8.5 percent over the prior year with 13,033 units sold. Cash sales accounted for 56.3 percent of all condo sales in FY 2016 down from 62 percent in FY 2016. Much of this investor-cash activity can be attributed to the foreign-based demand for housing, especially from South America.

In terms of valuation, housing prices continued their upward trend in FY 2017. The end of the fiscal year, September of 2017, saw the median sales price of an existing single-family home in Miami-Dade reach \$335,000, up over 6.5 percent from September of last year. Existing condominiums exhibited growth in the median sales price of 7.0 percent from September of 2016 to \$234,500.

Data from the County Clerk shows new foreclosure filings are continuing to trend downward, approaching levels not seen since 2005 and 2006 prior to the housing bubble collapse. FY 2017 saw 6,333 new filings. Mortgage rates on thirty-year fixed rate mortgages in the Miami metropolitan area averaged 4.01 percent in FY 2017, up 25 basis points from the previous year.

Following a 9 percent drop for residential units permitted in FY 2016, FY 2017 saw permitting activity remain essentially flat. Over the year permits were issued for the construction of 10,600 residential units, up 0.5 percent over the prior year.

The commercial/industrial components of the real estate market continued to improve on the gains from the previous year. Office vacancy declined 70 basis points to 8.5 percent from 9.2 percent a year earlier, prompting the average rate per square foot to inch higher, up 0.6 percent. The retail vacancy rate increased slightly from FY 2016 to FY 2017 from 3.0 percent to 3.3 percent. Average lease rates for retail stand-alone space were up 14.9 percent year over year to \$39.90 per square foot while average lease rates in shopping centers increased 6.2 percent from FY 2016 to \$31.90 per square foot. The industrial market saw an increase in vacancy rate from 3.7 percent in FY 2016 to 4.1 percent in FY 2017. Average lease rates for Industrial space were down 3.5 percent in FY 2017 compared to FY 2016 to settle at \$11.34 per square foot, due to significant deliveries of new space. 5.3 million square feet remain under construction.

## SALES INDICATORS

Taxable sales declined an inflation adjusted 1.7 percent from FY 2016 to FY 2017 to settle at \$51.5 billion dollars. In nominal terms taxable sales increased by 0.3 percent, not enough to make up for an annual



inflation of 2.1 percent. September of 2017 saw a particularly sharp drop compared to September of 2016 leading to reason that Hurricane Irma left its imprint on this set of indicators. FY 2017 saw declines across-the-board for all major categories, with the exception of business, from the previous year.

After posting healthy increases in FY2015 and FY2016 Auto and Accessories experienced the sharpest decline among all sectors in FY2017, with a 6.9 percent drop to \$7.4 billion. Tourism experienced the second sharpest decline, posting a 2.8 percent drop to \$12.1 billion, followed by consumer nondurables with a decline of 1.9 percent, consumer durables down 1.7 percent and construction down 1.5 percent. The only sector that saw gains in taxable sales was Business with a 4.4 percent increase to end the year at 10.2 billion. The weakness in taxable sales was reflected in an Index of Retail Activity that remained unchanged between FY 2016 and FY2017 after increasing sharply the five prior years.

## INTERNATIONAL TRADE AND COMMERCE

International trade and commerce is a key component of Miami-Dade's economy. Since achieving its highest level ever measured by value (\$132.1 billion 2017 inflation adjusted dollars) in FY 2013, merchandise trade passing through the Miami Customs District (that includes an area broader than Miami-Dade) has fallen 15.7 percent to \$111.4 billion in FY 2017.

In contrast to the recurring merchandise trade deficits that the United States maintains year after year, the Miami Customs District exports more than it imports resulting in a trade surplus. Although the surplus is still present it had been narrowing in the five years to FY 2016. This trend reversed slightly in FY 2017 when exports registered an increase of 0.5 percent compared to a decrease of 9.6 percent during the prior year. Imports decreased by 1.4 percent following an increase of 2.5 percent in the prior year. Most of the Miami Customs District export markets are in South America, Central America, and the Caribbean accounting for 77 percent of the total. In addition, the majority of all U.S. imported perishables from these same regions are passing through the Miami District. The decrease in trade flows reflects the sluggish performance in the economies of most of the countries in these regions.

Two of Miami-Dade County's barometers of trade activity are the freight tonnage moving through Miami International Airport ("MIA") and Port Miami ("the Seaport").

At the former, overall air freight tonnage increased 1.6 percent, after increasing by 0.6 percent the preceding two years. At the Seaport, cargo tonnage figures were up by 4.4 percent after increasing 1.9 percent the year before. Port Miami accounts for 80 percent of total County trade measured by weight.

## TOURISM

The state of Florida played host to more than 115 million overnight visitors for the first time in FY 2017. Miami-Dade accounted for just over 13 percent of all visitors to the state.

Visitors to the Miami area fell by 0.7 percent in FY 2017, after increasing by 4.8 percent the previous year. In total, there were 15.7 million overnight visitors, down from 15.8 million recorded in FY 2016. The drop

in visitors resulted from a drop of 3.3 percent in domestic visitors outweighing an increase of international visitors of 2.1 percent. As with taxable sales, a big part of the explanation for the drop in total visitors in FY2017 can be traced back to Hurricane Irma, reflected in a 206,900 drop in visitors during the month of September 2017 vis-à-vis September 2016.

In conjunction with the decrease in visitors, the Miami International Airport passenger levels stood at 43.8 million in FY 2017, representing an annual drop of 2.5 percent compared to a gain of 3.6 percent in the prior year. By contrast passenger traffic at PortMiami increased by 7.2 percent to 5.34 million passengers in FY 2017 after a 1.3 percent increase in FY 2016 and no change in FY 2015.

The lower number of visitors coupled with an increased hotel room inventory, led to a reduction in hotel occupancy rates relative to a year ago. In FY 2017, hotel occupancy rate stood at 75.2 percent, down from 78.0 percent in FY 2016. The average hotel room rate remained unchanged at just over 190 dollars.

## **FUTURE OUTLOOK**

As mentioned in the introductory section, since FY 2016 the Miami-Dade economy has displayed signs of a mature phase of the economic cycle, in such a phase employment is high and grows at a slow pace, the unemployment rate is low and if it drops, it does so, modestly, and prices tend to start rising. Going forward, FY 2018 will continue to operate under these same dynamics, but now coupled with the effects of a recently passed deficit financed tax code overhaul.

Since FY 2017 was negatively affected by the direct impacts of Hurricane Irma, FY 2018 will benefit from both a low bar of comparison and the economic boosts of cleanup and reconstruction that followed the hurricane.

Because of its location and economic trade and tourism ties, Miami-Dade's economy is influenced by developments in both the broader US and Latin American economies.

On the domestic front, due to the structuring of the 2017 passed tax reform bill, investment spending should see a measurable increase, as well as more personal consumption derived from increased disposable income. Prospects for growth of the United States' economy are thought to accelerate to 2.5 percent by the Organization for Economic Co-operation and Development (OECD). A healthy rate by current standards, but well below the 3 percent average between 1987 and 2007.

Within the United States, Florida is particularly well suited to benefit from the tax overhaul, given the mixture of the state's taxing structure and the design of the new legislation.

At the same time economic conditions in Latin America should continue to improve as we enter the first worldwide concerted bout of growth since 2010. Forecasts for Brazil, Mexico, Argentina, Chile and Colombia, all point to stronger growth in 2018.



The recent pullback of the US dollar, the continued strengthening of Latin American economies, coupled with the increase in investments and consumer spending in the United States should help increase trade in the Miami Customs District. Depending on what forces enact a stronger influence the District's trade surplus will expand or contract.

Looking beyond FY 2018, the changing relationship of the United States with the rest of the world, possible changes in immigration policy, and how the changes to be implemented in the federal tax code during an expansionary economic phase play out remain factors to watch closely.

Real estate and construction activity in FY 2018 is expected to continue to benefit from foreign buyers returning while at the same time suffer from the effects of years of real estate appreciation affecting affordability for residents.

Employment should continue to grow given the health of the overall economy, but at a slower pace given that both idle workers and economic resources are harder to come by. The higher utilization rate of economic inputs coupled with a more restrictive immigration approach by the administration, and a deficit financed tax overhaul should lead to higher wages and ultimately exert upward pressure on prices.

Evaluating all the likely developments in major areas of the economy leads to a forecast that the Miami-Dade economy appears poised to continue growing through FY 2018, at least at the levels achieved during the previous fiscal year. The degree of expansion will depend upon the stability in government employment, the level of growth in investments by firms, the level of growth in tourism and growth rates in Central and South America and the Caribbean.

## Major Initiatives

### Water System

#### **Water-Use Efficiency Plan**

The Water Use Efficiency Plan (Plan) is in its tenth year of operation as required by the 20-year Water Use Permit (WUP) issued in 2007 by South Florida Water Management District and approved by the Board of County Commissioners. The Plan requires the implementation of water conservation Best Management Practices (BMPs) through a quantifiable process that provides for accountability of the water saved through the Plan. This effort has allowed the Department to capitalize on policy measures adopted as part of the plan including: permanent irrigation restrictions, aggressive water conservation information outreach campaigns to residents and businesses, construction requirements for water efficient fixtures and water loss reduction programs. The results of these initiatives and the Plan BMPs has provided for a 20 MGD finished water demand reduction as of December 31, 2016 compared to the finished water demand prior to implementation of the Plan. Miami Dade County's (County) conservation efforts have resulted in the extension of its WUP, cancellation of two alternative water supply projects and deferral of several other water supply projects making water conservation the least expensive form of alternative water supply. The County was the first in the state to use the Florida Department

of Environmental Protection's Conserve Florida "EZ GUIDE," a web-based application that facilitates the development of goal-based water conservation planning. The Plan's objectives include improving water-use efficiency, reducing loss and waste, and complying with the State's legislative criteria and water conservation initiatives.

The following BMP projects are currently being implemented:

- ◆ High efficiency fixture rebates including toilets, faucets, and showerheads for single-family and multi-family properties
- ◆ Senior high efficiency toilet purchase and installation rebates
- ◆ High efficiency rebates for commercial and lodging facilities
- ◆ Free high efficiency showerhead exchange program for single-family and multi-family properties
- ◆ Free high efficiency showerhead exchange program for lodging facilities
- ◆ Landscape irrigation evaluation rebates for residential and commercial properties
- ◆ Landscape ordinances requiring the use of drought tolerant plants
- ◆ Implementation of a county-wide permanent two day a week landscape irrigation ordinance
- ◆ Tiered rate structure that charges more for increasing water use
- ◆ Construction standards effective January 1, 2009 that codify high efficiency plumbing fixtures in new residential, industrial, commercial and institutional properties
- ◆ Comprehensive outreach campaigns to county residents including in-school education efforts to promote water conservation
- ◆ Implementation of a leak detection survey and repair of the entire water distribution system on an annual basis

### **Water Reclamation**

Reclaimed water is highly treated, filtered and disinfected wastewater that is reused for a variety of purposes. Reclaimed water can replace or supplement groundwater supplies. Currently, the Department has been able to replace potable water used for process water at its wastewater treatment plants with reclaimed water. Valuable drinking water is thus conserved by using reclaimed water in several wastewater treatment plant processes, as well as the landscape irrigation system at two of the Department's wastewater treatment plants and at Florida International University's Biscayne Bay Campus. The Department continues to evaluate opportunities for cost-effective use of reclaimed water that can reduce demands for potable water and meet the need for additional water to restore and enhance the environment, irrigate landscaping, and serve industrial water demands for electrical production.

## **Wastewater System**

### **Consent Decree Program**

The County negotiated a Consent Decree with EPA and the Florida Department of Environmental Protection (FDEP), which was lodged with the US District Court on June 6, 2013 and entered on April 9, 2014. This Consent Decree is designed to build on the successes achieved by the Department under previous Consent Decree programs. The overarching goal of the Consent Decree is to reduce sanitary sewer overflows from the wastewater system.





The Consent Decree requires the Department to upgrade its collection, transmission, and treatment facilities by completing over 80 individual capital improvement projects throughout the wastewater system. It also requires the County to implement a Capacity, Management, Operations and Maintenance (CMOM) Program to document and enhance many of its existing programs.

As of September 30, 2017, the County has completed eighteen (18) capital improvement projects with an approximate total cost of \$224M. Forty (40) projects are currently in procurement and construction with an approximate total cost of \$1.07B, and eighteen (18) projects are in the planning, design and permitting phases.

Regarding the CMOM Program, the County developed ten (10) Capacity, Management, Operations and Maintenance Plans with the objective of incorporating standard operation and maintenance activities with a new set of information management requirements. Nine (9) of these plans have been approved by EPA/FDEP and are currently in the implementation phase. In addition, the County remains in compliance with five additional plans that are a continuation from previous Consent Decree.

Implementation of the Consent Decree is underway, and the County is in full compliance with all Consent Decree requirements.

### **Ocean Outfall Legislation Program (OOL)**

In 2008, the Florida Legislature approved and the Governor signed a law requiring all wastewater utilities in southeast Florida utilizing ocean outfalls (OOL) for disposal of treated wastewater to reduce nutrient discharges by implementing advanced wastewater treatment by 2018 or equivalent, cease using the outfalls by 2025, and reuse 60 percent of the wastewater flows by 2025. Because of this law, the Department has analyzed several compliance options. Each option includes additional system capacity to meet average daily and peak flow demands anticipated in 2035. After considering several options, the Department's recommended option includes a new West District plant with an average daily flow of 102 million gallons per day (MGD), reduced daily flows to North District of 85 MGD and to Central District of 113 MGD, and flows to South District of 131 MGD. The estimated cost of system-wide OOL Plan upgrades is \$5.7 billion. This cost includes \$3.8 billion that is specifically required for OOL compliance.

The nutrient reduction by 2018 can be met by reducing the outfall baseline loadings of total nitrogen and total phosphorus, which would be equivalent to that which would be achieved by the Association of Water Technology (AWT) if the requirements were fully implemented beginning December 31, 2018, and continued through December 31, 2025. Since 2008, the Department has been using the existing deep injection wells at the North District Wastewater Plant to reduce flow going out the outfall. In addition, the Department has completed construction of one (1) industrial deep injection well, and is in the process of completing a second-deep injection well, at the Central District Wastewater Treatment Plant, which will be able to reduce nutrient loading to meet the criteria by removing the waste stream from the centrate process, the gas scrubbers, and the treated effluent from the ocean outfall discharge and injecting into a

deep injection well. The first injection well was initially permitted as an Underground Injection Control (UIC) Class V Exploratory Well on October 30, 2013 to evaluate the Oldsmar Formation Boulder Zone for wastewater disposal, and the Upper Cretaceous formations to identify additional potentially suitable wastewater disposal zones below the Floridan Aquifer System. On July 28, 2015, the Department submitted a permit application to convert the Class V well to a Class I and to include a second injection well, CDIIW-2. Construction on the wells was started in FY2014, and completed in FY2017.

### **The Pump Station Improvement Program (PSIP)**

The Pump Station Improvement Program was created to evaluate and improve the operation and transmission capacity for the more than 1,000 wastewater pump stations that Miami-Dade Water and Sewer Department owns and/or operates. Projects include sewer pump station refurbishing, installation of new pumps, electrical upgrades, reduction of infiltration/inflow, and the installation of new force mains. Currently, the Department is working in 112 geographic areas, known as sewer basins. This includes projects at 111 pumping stations and 25 force mains. Current estimated construction costs for this work is approximately \$172 million.

The PSIP Program Manager has validated all 112 Remedial Action Plans (RAPs) and developed a comprehensive master schedule for the entire program. This validation took into consideration several factors, including required regulatory milestones, development industry needs, sanitary sewer overflow locations, absolute moratorium stations, reserved capacity, roadway moratoria, and stations within drinking water wellfield protection areas. Since the program inception on January 2014 a total of 66 project have been completed.

### **Infiltration and Inflow (I & I) Reduction Program**

The Department continues to perform sanitary sewer evaluation surveys on approximately 33.9 million feet (6,422 miles) of sewage collection mains and laterals. During FY2017, more than 8,599 repairs were performed to the gravity system; 1,554,384 feet of gravity sewers and 9,984 manholes were inspected with closed circuit television. These activities help reduce the amount of miscellaneous water that enters the wastewater collection system through defects in existing pipe systems. This in return reduces the cost associated with wastewater treatment and disposal.

### **Supervisory Control and Data Acquisition System (SCADA)**

Essential to the Department's daily operations is the ability to monitor and control its water and wastewater functions from a remote location. The Department's SCADA system is at the heart of this capability and is one of the largest of its kind in the country. The SCADA system, which is particularly important in cases of emergency operations and as a tool in meeting requirements of the Consent Decree/Settlement Management (CD/SA) program, has allowed workers in the Department's 24-hour emergency call center to continuously oversee the operations at its pump stations. It has also allowed water and wastewater treatment plant operators to manage plant functions from remote control panels, providing an increased level of efficiency. To-date, all pump stations owned and operated by the Department have SCADA installed.







The Department's three regional water and three regional wastewater treatment plants have SCADA installed and operational. All water wellfields are monitored and controlled by SCADA, and all 94 production wells have flow meters installed with SCADA monitoring for compliance with SFWMD regulations.

Upgrades to the SCADA system are being planned as part of the overall infrastructure upgrades to improve real time management and operational control of treatment systems and the distribution and collection systems.

### **Water and Wastewater Transmission System Computer Models**

The Department maintains Water and Wastewater Transmission System Computer Models, which operate with the Geographic Information System (GIS) data on the respective systems. These models are critical for planning and evaluating the availability of system capacity for new developments and system upgrades. The models will also be used for the identification of long range transmission system facilities, including pumping stations and pipelines as part of the Integrated Water, Wastewater, and Reclaimed Water Master Plan. This plan will include upgrades needed to comply with the State of Florida Ocean Outfall Legislation which requires closing of the outfalls at the North and Central District Wastewater treatment plants by 2025. Water and wastewater flow projections needed for the model for this work were developed.

### **Performance Improvement**

The Department continues to participate in national and state benchmarking surveys that assist the Department in reviewing internal key performance indicators and allow for a comparison to other like agencies in the State and across the country. In FY 2017, the Department participated in the Florida Benchmarking Consortium Benchmarking Survey and the American Water Works Association Survey.

The Department continues to prepare its business plan following the County's prescribed process. The plan identifies key issues and priority initiatives in the achievement of the Department's mission. Performance measures and scorecard goals are aligned with key priorities and the budget to allow the Department to meet the defined objectives by capitalizing on regularly monitored progress. WASD is in the midst of a \$13.5 billion Capital Improvement Program (CIP), the largest in Miami-Dade County's history, to improve the aging infrastructure in the next 15 to 20 years. The community continues to benefit from safe, clean, high quality drinking water, increased wastewater service reliability and capacity, enhanced water pressure, and fire protection.

The CIP includes the following components:

- ◆ Pump Station Improvement Program - Projects to improve pump stations and build new sewer force mains.
- ◆ Consent Decree - A Federally mandated program which will provide upgrades to wastewater treatment plants, pump stations and force mains.
- ◆ Ocean Outfall Program - A state mandated program which will allow the Department to eliminate the current two ocean outfalls and build a new wastewater treatment plant in Northwest Miami Dade County.



- ◆ Other capital improvement projects - Includes new water treatment plants and improvements to the water and wastewater plants, pump stations and pipelines.

Objectives have been defined in the Departmental scorecard that meet the requirements of the Consent Decree as well as the Ocean Outfall legislation. This information is available on the Miami-Dade web page which provides information to the public.

The Miami-Dade Water and Sewer Department is a leader and a model for implementing innovative employee ideas which have resulted in cost savings to the Department and, in turn, its customers. During FY 2017, WASD employees implemented efficiency projects resulting in approximately \$50,000 in savings to the Department.

The Pebble Program recognizes employees who provide exceptional and outstanding customer service to WASD's internal and external customers. Nominations are submitted and ranked by a Pebble Review Committee based on the information provided and the Pebble Program criteria. Quarterly and annual winners are rewarded for exceptional customer service work.

### **Rate Increase**

On September 22, 2016, the Board of County commissioners adopted a County Budget Ordinance Number 16-104 authorizing an eight percent water and wastewater retail rate increase, effective October 1, 2016. The monthly bill of the average residential water and wastewater customer using 6,750 gallons was increased by approximately \$4.09, or to \$55.20 from \$51.11. In addition, the County Budget Ordinance authorized an average (dry and wet season) increase to the wastewater wholesale rate by \$0.1598 per thousand gallons to \$2.9477 from \$2.7879, and the water wholesale \$1.7341 per thousand gallons to remain the same. Wholesale water and wastewater rates per thousand gallons' rates are based on cost recovery.

## **Recent Developments**

### **Commercial Paper (CP) Implementation**

The Department has utilized \$400 million of its Commercial Paper program since its establishment in May 2016. The CP program has allowed the Department to fund its capital program as needed and reduce negative arbitrage.

### **WIFIA Loan**

The United States Environmental Protection Agency ("EPA") has selected the Department to be one of the 12 entities invited to apply for funding through the inaugural Water Infrastructure Finance and Innovation Act ("WIFIA") loan program. The Department has been invited to apply for approximately \$79 million in WIFIA funding for its Ocean Outfall Reduction and Resiliency Enhancement project. WIFIA will fund up to 49% of this project's costs. The Department is currently completing its application. Final finding is dependent upon approval by the EPA and the Board.





### **Building Better Communities General Obligation Bonds (GOB)**

In November 2004, Miami-Dade County voters approved a \$2.9 billion bond program which allows the County to issue long-term bonds to fund numerous neighborhood and regional capital projects to be completed over the next 11 years. The General Obligation Bonds are legally backed by the full faith and credit of the County which has committed future taxes over the next 40 years to repay the bonds. General Obligation Bonds typically are the least expensive type of debt available to government. Among the GOB funded capital projects are several addressing current and future water and wastewater infrastructure needs. Resolution R-537-14 adopted by the Board of County Commissioners on June 3, 2014 allocated funding for “Extension of Sewer System to Developed Commercial and Industrial Corridors of the County,” aka Commercial Corridor Project. Commercial Corridor Projects will be the largest single GOB project in Miami Dade Water and Sewer Department. The commercial corridor on Bird Road and the Industrial Park Area will be addressed by two Low Pressure Sewer System projects and is underway. Also, Basis of Design Report for ten (10) areas within the commercial corridor began in FY2016 and is ongoing. Other planned projects include countywide water and wastewater main installations; pump station rehabilitation projects; reclaimed water facilities and infrastructure. GOB funding continues to be used to mediate the risk associated with Dieldrin contamination of private wells in the Falls area at Caribbean Estates and currently an extensive area at Continental Park. In FY2018, the Department will have access to \$13.3 million dollars of funding for GOB projects.

### **GROWING WITH INFORMATION TECHNOLOGY (IT)**

The Department is committed to using the latest and best-available information technology to carry out operations and serve the expanding needs of customers. For functions from researching client records to managing assets, the Department has sought to create or purchase computer software that will significantly raise efficiency levels.

WASD Information Technology (IT) Division is responsible for supporting the Department’s IT needs. This includes support of all systems to include administrative business; operations and maintenance functions; and construction initiatives of the utility. To this end, there is close collaboration with business units, the Information Technology Department, other County departments and various vendors, consultants, and other providers to ensure the Department is supported with the needed and desired technology.

### **Collaborative Projects with External Agencies**

iWASD Allocations: System was fully launched, including data from the following building departments: Miami-Dade County, City of Miami, City of Doral. This system is used to assist municipalities with reporting requirements as stipulated in Miami-Dade County Code, Florida Statutes, and the Federal Consent decree to ensure adequate water supply and avoid sewer overflows. We are working with other municipalities so they can also begin to contribute permit information. Access to this application can be found at <http://www.miamidade.gov/water/gis-services.asp>.

iMDC Utility Coordination: System was fully launched, including data from the following agencies: Miami-Dade Department of Transportation and Public Works, Water and Sewer Department, and Florida

Department of Transportation. This system will be used to track all municipal and utility roadway projects within the County limits. With the thousands of CIP and other roadway projects planned by WASD alone, it is paramount to facilitate project coordination with other agencies to minimize construction impact to our citizens. We are working with other municipalities so they can also begin to contribute their construction projects. Access to this application can be found at <http://www.miamidade.gov/water/gis-services.asp>.

WAZE: WASD is contributing daily construction activity information. WASD staff has developed tools to allow inspectors to generate a WAZE report for each of their construction projects, estimated project duration, project number, and construction site image. This is being done for construction related to our CIP and donation (developer) projections. Since it was launched WASD has been submitted hundreds of notifications. Aside from the obvious benefit of minimizing traffic impact associated with WASD CIP activities, WASD WAZE reports have been used to improve project information details such as location and phase for dozens of projects. GIS and (Business Intelligence) BI dashboards also help managers monitor productivity and quickly determine where most of the construction is taking place on any given day.

### **Engineering, Planning, and Compliance**

(GIS) Data Maintenance: We met all 7 GIS Federal Consent Decree Deadlines which include: 1) Complete the GIS backlog of as-builts; 2) Facilitate mechanism to report discrepancies between the GIS, as-built and conditions on the ground; 3) Develop “flagging process” for damage investigations to note GIS inaccuracies; 4) Provision for additional GIS training and refresher training; 5) Wider usage of GIS web viewers; 6) Collect survey grade manhole rim and gravity invert elevation and reflect in the GIS; 7) Development of a system to interface with the Miami-Dade WCTS hydraulic computer model so that the information can be efficiently exported to the WCTS hydraulic computer model.

### **Meter to Cash**

During the past year the WASD Internet Self-Service application, which interfaces with the back-end Customer Care and Billing (CCB) system, continued to expand. Customers are now able to update their Contact Information (phone number, email address and mailing address), receiving email notifications that a change was made. Another feature was the implementation of AVA (Watson) Chatbox, which allows customers to ask questions using natural language, and to request payment extensions.

The CCB system was upgraded to version 2.4 and all Oracle databases were upgraded to version 12C. Real-time notifications were implemented to automatically cancel Field Activities issued to cut service for non-payment as soon as the customer makes the payment on the ACI website. New interfaces were built from CCB to the Avaya IVR system to implement ANI lookup, which derives the customer's account number from their phone number when they place a call. Another new interface performs account verification based on their zip code.

Current efforts include Self-Service application new features such as requests to disconnect, start and transfer service, and requests for bill adjustments in accordance with WASD Rules and Regulations.



Another current effort consists in the creation of a Data Warehouse which will allow for dashboard development and more effective reporting. Upgrade of Itron Meter Reading application to version 4.0 is also planned for the near future.

### **ERP Financials**

The ERP Financials system was successfully upgraded to version 9.2 in August 2017. This was a collaborative project among ITD, MDAD and WASD. The goal of this project was to upgrade the ERP Financial Tools and application software to a current level supported by Oracle and to take advantage of enhancements as well as new functionality in the new release of PeopleSoft ERP Financials.

New modules and/or functionality implemented include: Fluid Mobile, Work Centers, Work Bench, Pivot Grids, Activity Guides, AP Payment Request, Chart Field Request Workflow, Asset Transfer Workflow, Capital Asset Mobile Inventory, and Bank Reconciliation for ACH Payment.

The upgrade was completed on time and within budget.

### **Enterprise Asset Management System (EAMS)**

Deployed a tablet based mobile solution to Water Distribution and Wastewater Collection which better facilitates field data collection with GIS map capabilities and to improve work order data accuracy of equipment. Currently deployed to 120+ field staff. Plans include deployment to the Water and Wastewater plants consisting of approximately 250 users.

Planning, testing and configuration of Infor version 11.3 upgrade to maintain product support.

### **Systems Infrastructure**

The upgrade of WASD computing and technology infrastructure continues. This includes upgrades to servers, storage, switches, Wi-Fi upgrades, and replacement of obsolete computers. In addition, Windows 10 and Office 365 with accompanying applications: OneDrive, OneNote and Skype which provides for better management of emails, video conference, audio conferencing and files were implemented.

The deployment of SharePoint Online and 2016 for content management and collaboration. This includes the migration of SharePoint 2007 and 2013 sites and the decommissioning of related infrastructure. Additionally, SharePoint Online will replace WASD intranet site with a more flexible and responsive system leading to the decommissioning of the existing intranet infrastructure based on obsolete technology.

### **Big Data / Business Intelligence**

Big Data concepts have been applied to the management of SCADA Historical data. Over fifteen billion rows of SADA historical data have been loaded with an additional four million rows added each day into Microsoft Azure Data Warehouse. This system allows WASD to better manage and analyze the data.

Business Intelligence tools with dashboards have been developed. Use cases include: Rate Study,

Overtime, Wholesale Billing, Capital Planning, and Energy Consumption. Several other use cases have been identified such as Energy Usage, Wholesale Billing, and Vendor Payment. This technology allows for better analysis of data and presenting actionable information to help managers and other end users make more informed business decisions.

## COMMUNITY OUTREACH

The Department's Public Affairs Office sponsors and participates in several programs aimed at educating the public on the quality of its drinking water, its operations, under-utilized customer services and water conservation and the Department's Multi-Year Capital Improvement Program.

WASD provides direct customer outreach and advertising via radio, television, print, transit bus benches, movie theatres, publications, and the Internet about water quality, conservation programs, and customer service programs and services. In addition to traditional forms of media such as newspapers, television and radio talk shows, Public Affairs also has utilized Facebook, Twitter, Instagram, YouTube, and movie theaters to capture a wider and more diverse audience.

The Office also revamped and revised its internal and external websites making them more user-friendly and more transaction-oriented for customers to conduct their business 24-hours-a-day. The website has become a central point for customers to conduct business with the Department. The website was redesigned to improve customer contact and transactions.

There is now a self-service component to the Department website that streamlines many features, making conducting WASD on-line account business more user-friendly, as well as convenient to the customer because they can access this information 24-hours-a-day.

Furthermore, informational videos (currently posted on the Miami-Dade County portal and YouTube) promote the County's drinking water, the proper disposal of grease, how to read your meter, and how to check for leaks.

To promote the department's Multi-Year Capital Improvement Program and Consent Decree, an advertising campaign has been developed to educate the community of the need for upgrades throughout the system as well as the need for funding.

To promote Drinking Water Week, Public Affairs continued the Drinking Water Week Photo contest. Submissions were sent to WASD through the department's social media accounts – Facebook, Twitter, and Instagram – by posting the photo with the hash tag #miamidadewater. This outreach program earned WASD one of its eight National Association of Counties (Nacho) awards for government excellence. The winning photo will be featured in WASD's 2018 Drinking Water Week advertisements, as well as other departmental marketing campaigns.

In FY2017 – Public Affairs debuted the Value of Water PSA Contest where high school students are



encouraged to use creative writing, video production skills, and imagination to submit a 20 to 30 second Public Service Announcement to demonstrate the Value of Water. The winning PSA was aired County-wide in various movie theaters as part of the department's advertising campaigns.

In FY2017, the Office planned the Ninth Annual Model Water Tower Competition to dialogue with an underserved demographic – teens. The competition engages students by having them apply scientific theory learned in the classroom and apply it in real-life situations by building a working model water tower. By initiating this communication with high school students, they were introduced to government services, as well as future career opportunities in the water profession.



## Other Information

### INDEPENDENT AUDIT

The accompanying financial statements have been audited by the Department's independent auditors and their report on the financial statements resulting from their audit is included in the financial section of this report.

### AWARDS

#### **Certificate of Achievement for Excellence in Financial Reporting**

The Government Finance Officers Association of the United States and Canada (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to the Department for its Comprehensive Annual Financial Report for the fiscal year ended September 30, 2016. The Certificate of Achievement is a prestigious national award that recognizes conformance with the highest standards for preparation of state and local government financial reports. To be awarded a Certificate of Achievement, a government unit must publish an easily readable and efficiently organized comprehensive annual financial report, whose contents conform to program standards. Such report must satisfy both generally accepted accounting principles and applicable legal requirements. A Certificate of Achievement is valid for a period of one year only. The Department has received a Certificate of Achievement for the past 34 fiscal years. We believe our current report continues to

conform to the Certificate of Achievement program requirements, and are submitting it to the GFOA.

### ACKNOWLEDGEMENTS

We would like to thank all the Department's employees for their hard work and dedication during the past fiscal year. We would also like to thank the Department's Controller Division and the Public Affairs Section, and the County's Internal Services Department's Printing and Graphics Section, for their tireless efforts and professionalism in preparing this report, as well as our external auditors for their invaluable assistance. Finally, a special acknowledgment is extended to the Mayor and Board of County Commissioners for their continued leadership in enabling the Department to fulfill its role.



Lester Sola  
Director



Frances G. Morris  
Chief Financial Officer



Government Finance Officers Association

**Certificate of  
Achievement  
for Excellence  
in Financial  
Reporting**

Presented to

**Miami-Dade Water and Sewer  
Department, Florida**

For its Comprehensive Annual  
Financial Report  
for the Fiscal Year Ended

**September 30, 2016**

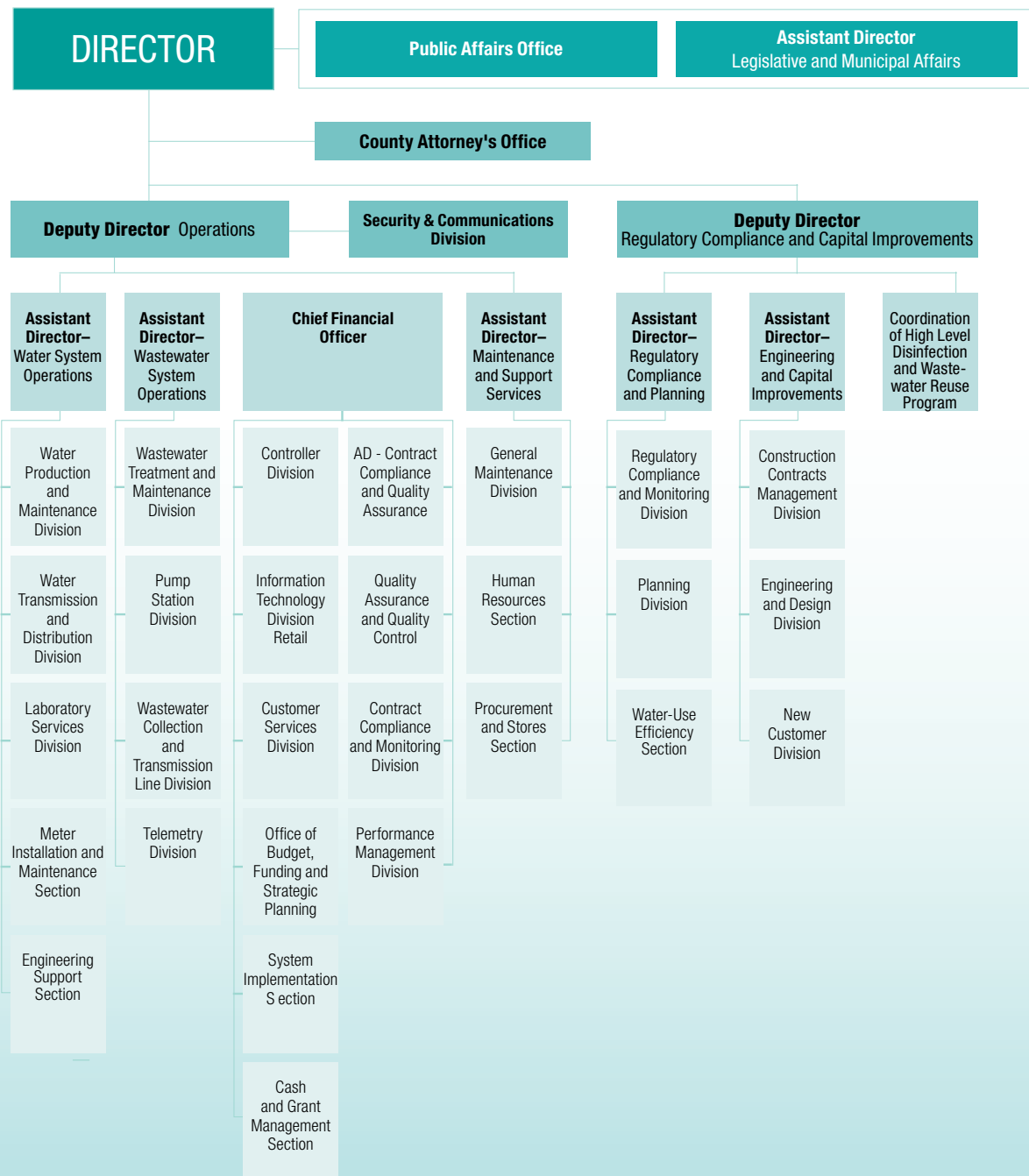
*Christopher P. Morill*

Executive Director/CEO





# Organizational Chart





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## Financial Section





## INDEPENDENT AUDITORS' REPORT

Honorable Carlos A. Gimenez, Mayor, and  
Honorable Chairperson and Members of the  
Board of County Commissioners  
Miami-Dade County, Florida

### *Report on the Financial Statements*

We have audited the accompanying financial statements of the Miami-Dade Water and Sewer Department, a department of Miami-Dade County, Florida (the Department), which comprise the statements of net position as of September 30, 2017 and 2016 and the related statements of revenues, expenses and changes in net position, and cash flows for the fiscal years then ended, and the related notes to the financial statements.

### *Management's Responsibility for the Financial Statements*

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

### *Auditors' Responsibility*

Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.



We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

### ***Opinion***

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the Department as of September 30, 2017 and 2016, and the changes in its financial position and its cash flows for the fiscal years then ended in accordance with accounting principles generally accepted in the United States of America.

### ***Emphasis of Matters***

As described in Note 1, the financial statements present only the Department and do not purport to, and do not, present fairly the financial position of Miami-Dade County as of September 30, 2017 and 2016, the changes in its financial position, or, where applicable, its cash flows for the fiscal years then ended in conformity with accounting principles generally accepted in the United States of America. Our opinion is not modified with respect to this matter.

### ***Other Matters***

#### ***Required Supplementary Information***

Accounting principles generally accepted in the United States of America require that the management's discussion and analysis, the schedule of funding progress - OPEB, the schedules of the Department's proportionate share of the net pension liability and the schedules of Department contributions on pages 33-36 and 67-69 be presented to supplement the financial statements. Such information, although not a part of the financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the financial statements, and other knowledge we obtained during our audits of the financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

#### ***Supplementary and Other Information***

Our audit was conducted for the purpose of forming an opinion on the financial statements that collectively comprise the Department's financial statements. The information identified in the table of contents as supplementary financial data is presented for purposes of additional analysis and is not a required part of the financial statements.

The supplementary financial data is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the financial statements. Such information has been subjected to the auditing procedures applied in the audits of the financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the financial statements or to the financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the supplementary financial data is fairly stated, in all material respects, in relation to the financial statements as a whole.

The introductory and statistical sections have not been subjected to the auditing procedures applied in the audits of the financial statements, and accordingly, we do not express an opinion or provide any assurance on it.

***Other Reporting Required by Government Auditing Standards***

In accordance with *Government Auditing Standards*, we have also issued our report dated February 28, 2018 on our consideration of the Department's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is solely to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the Department's internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the Department's internal control over financial reporting and compliance.

*Marcum LLP*

Miami, FL  
February 28, 2018



# Management's Discussion & Analysis

## **OVERVIEW**

The following Management's Discussion and Analysis (MD&A) serves as an introduction to the financial statements of the Miami-Dade Water and Sewer Department (Department) for the fiscal year ended September 30, 2017. The MD&A presents management's examination and analysis of the Department's financial condition and performance. It should be read in conjunction with the financial information of the transmittal letter in the introductory section and the financial statements in the financial section of this report. The financial statements include the statement of net position; statement of revenues, expenses, and changes in net position; statement of cash flows; notes to the financial statements; and required supplementary information.

The statement of net position presents the financial position of the Department as of a specific date. It provides information about the nature and amount of resources (assets and deferred outflows) and obligations (liabilities and deferred inflows), with net position being the difference between assets and deferred outflows and liabilities and deferred inflows. Increases or decreases in net position may serve as a useful indicator of whether the financial position of the Department is improving or deteriorating.

The statement of revenues, expenses and changes in net position present information showing how the Department's net position changed during the fiscal year. All changes in net position are reported as soon as the underlying event giving rise to the change occurs which may not coincide with the timing of the related cash flows.

The statement of cash flows presents the cash activities of the Department segregated in the following four major categories: operating, non-capital financing, capital and related financing, and investing. This statement also presents the changes in cash and cash equivalents of the Department. The notes to the financial statements provide required disclosures and other information that are essential to the full understanding of data provided in the statements.

## **FINANCIAL POSITION**

A summary of the Department's net position and related changes for the fiscal years ended September 30, 2017, 2016 and 2015 is shown on the following page. The unrestricted portion of net position (available to meet ongoing and future obligations of the Department) decreased by \$0.6 million, or 2.2% in 2017. In 2016, the unrestricted portion of net position increased by \$0.02 million, or 0.1%.

Total expenses decreased by \$8.3 million, or by 1.32%, in 2017 mainly due to a decrease in interest expense attributable to an increase in capitalized interest and improvements in the water purification process. In 2016, total expenses decreased by \$19.5 million, or by 3.0%. This decrease was primarily due to depreciation and interest expense attributable to an increase in capitalized interest.

Total net position as of September 30, 2017 and 2016 were approximately \$2.5 billion and \$2.3 billion, respectively. For the fiscal year ended September 30, 2017, the Department's total net position increased by \$140.9 million, or by 6.1%. For the fiscal year ended September 30, 2016, the Department's total net position increased by \$130.3 million, or by 5.9%.



# Management's Discussion & Analysis

(In thousands)

<b><u>SUMMARY OF NET POSITION</u></b>	2017	2016	2015
Current and Other Assets	\$ 1,046,074	\$ 915,453	\$ 1,001,506
Capital Assets, net	4,239,832	3,966,926	3,698,846
Total Assets	5,285,906	4,882,379	4,700,352
Deferred Outflows of Resources	145,737	148,703	115,112
Total Assets & Deferred Outflows of Resources	5,431,643	5,031,082	4,815,464
Current liabilities	317,708	266,953	252,053
Long-term Liabilities	2,635,660	2,429,925	2,345,369
Total Liabilities	2,953,368	2,696,878	2,597,422
Deferred Inflows of Resources	9,795	6,586	20,725
Total Liabilities & Deferred Inflows of Resources	2,963,163	2,703,464	2,618,147
Net Position			
Net Investment in Capital Assets	1,851,041	1,730,528	1,590,653
Restricted	356,540	330,257	340,066
Unrestricted	260,899	266,833	266,597
Total Net Position	\$ 2,468,480	\$ 2,327,618	\$ 2,197,316
<b><u>SUMMARY OF CHANGES IN NET POSITION</u></b>			
Water operating revenues	\$ 316,045	\$ 291,043	\$ 285,438
Wastewater operating revenues	391,287	368,739	327,878
Investment Income (Loss)	(9,649)	(4,853)	20,557
Other nonoperating revenues	29,457	51,455	51,904
Total Revenues	727,140	706,384	685,777
Water source of supply	14,193	14,284	10,931
Water power and pumping	1,976	1,982	2,054
Water purification	60,387	68,272	63,921
Water transmission and distribution	31,228	30,554	30,892
Wastewater collection system	33,457	26,866	27,634
Wastewater pumping	42,543	39,549	37,330
Wastewater treatment	92,347	91,915	92,308
Customer accounting	9,737	7,442	6,355
Customer service	24,423	22,797	21,713
General and Administrative	88,239	84,827	75,769
Depreciation	187,921	184,424	188,909
Interest expense	25,978	46,369	75,728
Other nonoperating expenses	8,958	10,412	15,718
Total Expenses	621,387	629,693	649,262
Income before contributions	105,753	76,691	36,515
Capital contributions	35,109	53,611	46,692
Increase in net position	140,862	130,302	83,207
Net position at beginning of year	2,327,618	2,197,316	2,219,687
GASB 68 Restatement <sup>(1)</sup>	-	-	(105,578)
Net position at end of year	\$ 2,468,480	\$ 2,327,618	\$ 2,197,316

<sup>(1)</sup> The Department implemented GASB Statement No. 68 in fiscal year 2015. As a result, the Department's beginning net position in fiscal year 2015 was restated to account for the effects of disclosing pension costs.





# Management's Discussion & Analysis

## CAPITAL ASSETS

The following table summarizes the Department's capital assets, net of accumulated depreciation, for the fiscal years ended September 30, 2017, 2016 and 2015 (in thousands). In 2017, total capital assets increased by \$272.9 million, or 6.9%. This increase was due to an increase in capital additions, net of plant retirements of \$171.7 million, offset by \$134.7 million net increase in accumulated depreciation. In 2016, total capital assets increased by \$268.08 million, or 7.2%. This increase was due to capital additions, net of plant retirements of \$168.0 million, offset by \$167.7 million net increase in accumulated depreciation. Additional information on changes in capital assets can be found in Note 6 to the financial statements on page 32.

	(In thousands)		
	2017	2016	2015
Land	\$ 75,155	\$ 71,568	\$ 58,654
Structures and improvements	2,743,072	2,795,293	2,744,579
Equipment	293,058	306,338	299,499
Construction work in progress	1,128,547	793,727	596,114
Total capital assets	<u>\$ 4,239,832</u>	<u>\$ 3,966,926</u>	<u>\$ 3,698,846</u>

This year's major expenditures in capital assets included:

### Water projects:

- Transmission mains, meters, and services (\$57.2 million)
- Treatment facilities and equipment (\$14.6 million)
- Transportation equipment (\$3.0 million)
- Pumping facilities (\$2.7 million)
- Computer equipment and software (\$2.3 million)

### Wastewater Projects

- Treatment facilities (\$99.3 million)
- Force mains (\$80.7 million)
- Pump stations (\$36.7 million)
- Inflow/infiltration/exfiltration (\$15.7 million)
- Gravity mains and services (\$13.9 million)

Budgeted capital expenditures for fiscal year 2018 amount to \$592.2 million and include \$222.0 million in water projects and \$370.2 million in wastewater projects.

## LONG-TERM DEBT

Long-term debt outstanding (including current portion) at September 30, 2017, 2016 and 2015 is presented in the following table (in thousands). FY2017 shows an increase of \$205.7 million from FY2016. FY2016 shows an increase of \$26.3 million from FY2015.

	(In thousands)		
	2017	2016	2015
Revenue Bonds	\$ 1,980,348	\$ 2,053,731	\$ 2,124,019
State Loan Obligations	165,449	161,272	164,698
Commercial Paper	375,000	100,000	-
Total long-term debt	<u>\$ 2,520,797</u>	<u>\$ 2,315,003</u>	<u>\$ 2,288,717</u>

# Management's Discussion & Analysis

During FY2017, draws made on state revolving loan commitments, recorded as debt, including capitalized interest, totaled \$16.1 million. Current long-term debt maturities were met in the amount of \$85.4 million. During FY2016, draws made on state revolving loan commitments, recorded as debt, including capitalized interest, totaled \$10.4 million. Current long-term debt maturities were met in the amount of \$84.1 million. Additional long-term debt details can be found in Note 7 on pages 32-37 of this report.

Subsequently, on December 7, 2017, the Department issued the Water and Sewer System Revenue Bonds, Series 2017A and the Water and Sewer System Revenue Refunding Bonds, Series 2017B for \$381.3 million and \$548.0 million, respectively. The Series 2017A Bonds will refund all outstanding Commercial Paper Notes - Series A-1 and Series B-1, make a deposit to the Reserve Account and pay the costs of issuance of the Series 2017A Bonds. The Series 2017B Bonds will refund \$567.6 million principal outstanding for the Miami-Dade County, Florida Water and Sewer System Revenue Bonds, Series 2010 maturing October 1, 2021 and pay the costs of issuance of the Series 2017B Bonds.

The Department is required to maintain rates and charges sufficient to meet two tiers of debt service coverage requirements. First, adjusted annual net operating revenues must equal or exceed 1.25 percent of the debt service on senior lien revenue bonds. The Department met the primary debt coverage for the year with a ratio of 1.94 percent. Second, adjusted net operating revenues, after payment of revenue bond debt service, must be at least equal to 1.15 percent of the debt service for the subordinate state loan obligations. The Department met the secondary debt service coverage with a ratio of 6.91 percent.

## ***REQUEST FOR INFORMATION***

Questions concerning this report or request for additional information should be directed to Frances G. Morris, Chief Financial Officer at 786-552-8104 or, at her office address at 3071 SW 38th Avenue, Miami, Florida 33146.



# Statement of Net Position

	September 30, <u>2017</u>	<u>2016</u>
	(In thousands)	
<b>ASSETS</b>		
<i>CURRENT ASSETS:</i>		
Cash and cash equivalents	\$ 8,746	\$ 55,119
Investments	103,718	47,888
Accounts Receivable (net of allowance for uncollectible accounts of \$20.2 million and \$17.7 million, respectively)	162,601	135,186
Inventory of materials and supplies	39,279	38,523
Other current assets	3,841	2,890
Restricted cash and cash equivalents	212,238	181,982
Total Current Assets	<u>530,423</u>	<u>461,588</u>
<i>NONCURRENT RESTRICTED ASSETS:</i>		
Cash and cash equivalents	43,321	120,463
Investment derivative instrument	31,778	45,230
Investments	398,248	242,651
Long-term receivable - General Fund	10,000	10,000
Contracts receivable	-	17
Grants receivable	206	74
Total Restricted Assets	<u>483,553</u>	<u>418,435</u>
<i>OTHER ASSETS:</i>		
Bond Insurance	4,150	4,776
Other charges, net	27,948	35,430
Total Other Assets	<u>32,098</u>	<u>40,206</u>
<i>CAPITAL ASSETS:</i>		
Land	75,155	71,568
Structures and Improvements	5,073,477	5,026,423
Equipment	1,205,066	1,182,902
Utility plant in service before depreciation	6,353,698	6,280,893
Less accumulated depreciation	(3,242,413)	(3,107,694)
Net utility plant in service	3,111,285	3,173,199
Construction work in progress	1,128,547	793,727
Total Capital Assets	<u>4,239,832</u>	<u>3,966,926</u>
Total Noncurrent Assets	<u>4,755,483</u>	<u>4,425,567</u>
Total Assets	<u>5,285,906</u>	<u>4,887,155</u>
<i>DEFERRED OUTFLOWS OF RESOURCES:</i>		
Loss on refundings	82,610	88,287
Outflow related to pension	63,127	55,640
Total Deferred Outflows of Resources	<u>145,737</u>	<u>143,927</u>
Total Assets and Deferred Outflows of Resources	<u>\$ 5,431,643</u>	<u>\$ 5,031,082</u>

(Continued)

# Statement of Net Position

(Continued)	September 30,	<u>2017</u>	<u>2016</u>
		(In thousands)	
<b>LIABILITIES</b>			
<i>CURRENT LIABILITIES (PAYABLE FROM UNRESTRICTED CURRENT ASSETS):</i>			
Accounts payable and accrued expenses	\$	69,589	\$ 46,173
Customer and developer deposits		18,860	18,368
Current portion of long-term debt		7,807	7,851
Liability for compensated absences		10,061	10,198
Other liabilities		854	2,381
Total current liabilities (payable from unrestricted current assets)		<u>107,171</u>	<u>84,971</u>
<i>CURRENT LIABILITIES (PAYABLE FROM RESTRICTED CURRENT ASSETS):</i>			
Accounts payable and accrued expenses		68,493	47,750
Retainage payable		19,565	13,618
Current portion of long-term debt		73,726	70,512
Accrued interest payable		47,805	49,321
Liability for self insurance		948	781
Total current liabilities (payable from restricted current assets)		<u>210,537</u>	<u>181,982</u>
Total current liabilities		<u>317,708</u>	<u>266,953</u>
<i>NONCURRENT LIABILITIES:</i>			
Revenue bonds payable, net		1,911,358	1,987,996
State loan obligations, net		152,906	148,644
Commercial Paper		375,000	100,000
Liability for self-insurance		997	2,026
Liability for compensated absences		32,133	31,521
Liability for post-employment benefits		6,756	5,980
Net pension liability		156,510	153,758
Total noncurrent liabilities		<u>2,635,660</u>	<u>2,429,925</u>
Total liabilities		<u>2,953,368</u>	<u>2,696,878</u>
<i>DEFERRED INFLOWS OF RESOURCES:</i>			
Inflow related to pension		9,795	6,586
Total deferred inflows of resources		<u>9,795</u>	<u>6,586</u>
Total liabilities and deferred inflows of resources		<u>2,963,163</u>	<u>2,703,464</u>
<b>NET POSITION</b>			
Net investment in capital assets		1,851,041	1,730,528
Restricted for:			
Capital projects		219,669	192,137
Debt service		136,871	138,120
Unrestricted		260,899	266,833
Total net position		<u>2,468,480</u>	<u>2,327,618</u>
Total Liabilities, Deferred Inflows of Resources and Net Position	\$	<u>5,431,643</u>	\$ <u>5,031,082</u>

The accompanying notes to financial statements are an integral part of these statements.



# Statement of Revenues, Expenses, and Changes in Net Position

For the fiscal years ended September 30,	<u>2017</u>	<u>2016</u>
	(In thousands)	
<i>OPERATING REVENUES:</i>		
Water	\$ 316,045	\$ 291,043
Wastewater	<u>391,287</u>	<u>368,739</u>
Total operating revenues	<u>707,332</u>	<u>659,782</u>
<i>OPERATING AND MAINTENANCE EXPENSES:</i>		
Water source of supply	14,193	14,284
Water power and pumping	1,976	1,982
Water purification	60,387	68,272
Water transmission and distribution	31,228	30,554
Wastewater collection system	33,457	26,866
Wastewater pumping	42,543	39,549
Wastewater treatment	92,347	91,915
Customer accounting	9,737	7,442
Customer service	24,423	22,797
General and administrative	<u>88,239</u>	<u>84,827</u>
Total operating and maintenance expenses	<u>398,530</u>	<u>388,488</u>
Operating income before depreciation	308,802	271,294
<i>DEPRECIATION EXPENSE</i>	<u>187,921</u>	<u>184,424</u>
Operating income	120,881	86,870
<i>NON-OPERATING REVENUES (EXPENSES):</i>		
Investment Loss	(9,649)	(4,853)
Interest expense	(25,978)	(46,369)
Amortization of insurance costs	(6,749)	(8,130)
Customer connection fees	27,706	37,091
Other revenues	1,751	14,364
Other expenses	<u>(2,209)</u>	<u>(2,282)</u>
Income before contributions	105,753	76,691
Capital contributions	<u>35,109</u>	<u>53,611</u>
Increase in net position	140,862	130,302
Net position at beginning of year	<u>2,327,618</u>	<u>2,197,316</u>
Net position at end of year	<u>\$ 2,468,480</u>	<u>\$ 2,327,618</u>

The accompanying notes to financial statements are an integral part of these statements.

# Statement of Cash Flows

	For the fiscal years ended September 30, <b>2017</b>	<b>2016</b>
	(In thousands)	
<i>CASH FLOWS FROM OPERATING ACTIVITIES:</i>		
Cash received from customers	\$ <b>707,124</b>	\$ 693,514
Cash paid to suppliers for goods and services	<b>(161,974)</b>	(186,051)
Cash paid to employees for services	<b>(217,369)</b>	(202,676)
Net cash provided by operating activities	<b>327,781</b>	304,787
<i>CASH FLOWS FROM NON-CAPITAL FINANCING ACTIVITIES:</i>		
Loan repayment received from County's General Fund	-	5,000
Net cash provided by non-capital financing activities	-	5,000
<i>CASH FLOWS FROM CAPITAL AND RELATED FINANCING ACTIVITIES:</i>		
Proceeds from bond issues, loan agreements and notes	<b>291,154</b>	110,425
Principal payments - bond, loans and notes	<b>(77,711)</b>	(76,491)
Bond premium	<b>(1,072)</b>	(1,831)
Interest paid	<b>(26,776)</b>	(64,933)
Acquisition and construction of capital assets	<b>(399,011)</b>	(363,926)
Net cash (used) by capital and related financing activities	<b>(213,416)</b>	(396,756)
<i>CASH FLOWS FROM INVESTING ACTIVITIES:</i>		
Purchase of investment securities	<b>(757,297)</b>	(401,686)
Proceeds from sale and maturity of investment securities	<b>475,194</b>	579,561
Interest on investments	<b>74,479</b>	1,990
Net cash provided (used) by investing activities	<b>(207,624)</b>	179,865
Net increase (decrease) in cash and cash equivalents	<b>(93,259)</b>	92,896
Cash and cash equivalents at beginning of year	<b>357,564</b>	264,668
Cash and cash equivalents at end of year	<b>\$ 264,305</b>	<b>\$ 357,564</b>

(Continued)



# Statement of Cash Flows

(Continued) For the fiscal years ended September 30, 2017 2016  
(In thousands)

## RECONCILIATION OF OPERATING INCOME TO NET CASH PROVIDED BY OPERATING ACTIVITIES:

Operating income	\$ 120,881	\$ 86,870
Adjustments to reconcile operating income to net cash provided by operating activities:		
Depreciation	187,921	184,424
Provision for uncollectible accounts	2,353	1,119
Other revenue	-	-
Non-operating other, net	27,246	45,092
Transfer to/from reserves	-	(6,211)
(Increase) decrease in assets and deferred outflows:		
Accounts Receivable	(29,769)	(19,229)
Inventory of materials and supplies	(755)	(103)
Other current assets	(951)	18
Contracts receivable	132	91
Other charges	994	7,482
Deferred outflows related to pension	(7,487)	(39,889)
Increase (decrease) in liabilities and deferred inflows:		
Accounts payable and accrued expenses	23,416	(8,164)
Customer and developer deposits	492	1,581
Accrued interest payable	(1,515)	2,643
Liability for compensated absences	474	(15)
Other liabilities	(1,526)	1,996
Liability for other post-employment benefits	776	488
Liability for self-insurance	(862)	828
Net pension liability	2,752	59,905
Deferred Inflows	3,209	(14,139)
Net cash provided by operating activities	<u>\$ 327,781</u>	<u>\$ 304,787</u>

## NONCASH INVESTING, CAPITAL AND FINANCING ACTIVITIES

Property, plant and equipment contributions were received in amounts of \$35.1 million in fiscal year 2017.

The change in the fair value of investments was a \$0.16 million decrease in fiscal year 2017.

The change in the fair value of swaps was an \$13.5 million decrease in fiscal year 2017.

## RECONCILIATION OF CASH AND CASH EQUIVALENTS AT END OF YEAR

Unrestricted Current Cash and Cash Equivalents	\$ 8,746	\$ 55,119
Restricted Current Cash and Cash Equivalents	212,238	181,982
Restricted Noncurrent Cash and Cash Equivalents	43,321	120,463
	<u>\$ 264,305</u>	<u>\$ 357,564</u>

The accompanying notes to financial statements are an integral part of these statements.

# Notes to Financial Statements

## NOTES TO FINANCIAL STATEMENTS

### 1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

#### REPORTING ENTITY

The Miami-Dade Water and Sewer Department (the Department) functions as a self-supporting governmental enterprise fund of Miami-Dade County, Florida (the County). An enterprise fund is used to account for the financing of services to the general public on a continuing basis with costs recovered primarily through user charges. Accordingly, its financial statements have been prepared on the accrual basis of accounting. The Department issues a separate comprehensive annual financial report and its financial statements are combined in the County's comprehensive annual financial report.

The accompanying financial statements combine the accounts of both the Water and Wastewater Systems to provide meaningful information with respect to the Department, with all transactions of the Department accounted for as one enterprise fund. All significant intersystem accounts and transactions have been eliminated.

#### BASIS OF ACCOUNTING

The financial statements are prepared in conformity with generally accepted accounting principles established by the Governmental Accounting Standards Board (GASB).

#### OPERATING/NONOPERATING REVENUES AND EXPENSES

Operating revenues and expenses are those that result from providing water and wastewater services. Non-operating revenues and expenses include capital, financing, investing and other activities either not related to or incidental to the provision of water and wastewater services.

#### REVENUE RECOGNITION

All water and wastewater revenues are recognized when the related services are provided. Unbilled receivables have been estimated and accrued as revenue from the date of last reading of the meters based on the billing cycle. Unbilled accounts receivable for fiscal years 2017 and 2016 were approximately \$41.7 million and \$43.3 million, respectively.

#### CAPITAL ASSETS

Property acquired with an initial individual cost of \$1,000 or more and an estimated useful life in excess of one year is capitalized at cost. Major outlays for construction of capital assets and improvements are capitalized at cost. Expenses for maintenance and repairs are expensed as incurred. Property contributions received from municipalities are recorded as capital assets by the Department at the acquisition cost to the municipality. Property contributed in aid of construction is capitalized at its acquisition value on the date received.

Only those intangible assets valued at more than \$100,000 are recorded as an asset (threshold determinations are based on aggregate cost). For fiscal years 2017 and 2016, no separately identifiable intangible assets met the threshold for recording.

Annualized depreciation expense, expressed as a percent of depreciable capital assets, was 3.0% for fiscal years ended September 30, 2017 and 2016. The Department utilizes the single-unit straight-line depreciation method with normal retirements charged to accumulated depreciation, and gain or loss is recognized on retirements. Assets with a change in estimated life are depreciated based on net book value over the remaining life of the asset. Estimated useful lives of capital assets in service are as follows:

	Water System	Wastewater System
	(Years)	
Structures and improvements	25-45	25-45
Equipment	3-20	3-20

Total depreciation expense for the fiscal years ended September 30, 2017 and 2016 was \$187.9 million and \$184.4 million, respectively.





# Notes to Financial Statements

## *CASH, CASH EQUIVALENTS AND INVESTMENTS*

Cash includes cash on hand, amounts in demand deposits, and positions in investment pools that can be deposited or withdrawn without notice or penalty. Cash equivalents are short-term, highly liquid securities with known market values and maturities, when acquired, of less than three months.

The Department has opted to report money market and non-participating investments, with remaining maturities of one year or less at the time of purchase, at amortized cost.

Investments are carried at fair value. Fair Value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The net increase or decrease in the fair value of investments is included as part of investment income in the accompanying statements of revenues, expenses, and changes in net position.

The Department categorizes its fair value measurements within the fair value hierarchy established by Generally Accepted Accounting Principles. The hierarchy is based on the valuation input used to measure the fair value of the asset with Level 1 assets being those where quoted prices in an active market for identical assets can be readily obtained, and Level 2 assets value using a matrix pricing technique of quoted process for similar assets or liabilities in active markets.

## *INVENTORY*

Materials and supplies inventories are stated at lower of weighted average cost or net realizable value.

## *INTEREST ON INDEBTEDNESS*

Interest is charged to expense, as incurred, except for interest related to borrowings used for construction projects which is capitalized, net of interest earned on construction funds borrowed. For fiscal year ended September 30, 2017 Interest expense incurred was \$100.3 million and capitalized interest was \$74.3 million. Interest expense incurred during the fiscal year ended September 30, 2016 was \$100.9 million and the amount for capitalized interest was \$54.6 million

For interest rate swap agreements, the amounts recorded in the financial statements are the net interest expense along with amortization of fees paid or received resulting from these agreements. The Department recorded an upfront payment for the swap option that was terminated during FY2009 and is amortizing the payment, net of interest expense, in the financial statements.

## *BOND DISCOUNT AND PREMIUM*

Discounts and premiums on bonds and notes payable are amortized using the straight-line method over the life of the related bond issuances or term of the notes. Discounts and premiums are presented net of the related debt.

## *CAPITAL CONTRIBUTIONS*

The Department records external capital contributions as revenues in the proprietary funds.

## *GRANTS FROM GOVERNMENT AGENCIES*

The Department records grants when all applicable eligibility requirements have been met. This normally occurs as amounts are expended and become reimbursable from the granting agency.

## *COMPENSATED ABSENCES*

The Department accounts for compensated absences by accruing a liability for employees' compensation for future absences.

## *PENSIONS*

In March 2016, the GASB issued Statement No. 82, *an amendment of GASB Statement No. 67, No. 68 and No. 73*. The objective of this Statement is to address certain issues that have been raised with respect to Statements No. 67, *Financial Reporting for Pension Plans*, No. 68, *Accounting and Financial Reporting for Pensions*, and No. 73, *Accounting and Financial Reporting for Pensions and Related Assets That Are Not within the Scope of GASB Statement 68, and Amendments to Certain Provisions of GASB Statements 67 and 68*. Specifically, this Statement addresses issues regarding (1) the presentation of payroll-related measures in required supplementary information, (2)

# Notes to Financial Statements

the selection of assumptions and the treatment of deviations from the guidance in an Actuarial Standard of Practice for financial reporting purposes, and (3) the classification of payments made by employers to satisfy employee (plan member) contribution requirements. The Department adopted this standard in fiscal year 2017.

## *COST ALLOCATION*

Certain engineering overhead and other costs are generally allocated to capital projects and operating expenses using standard rates developed by independent consultants. The rate is based on various allocation bases which bear reasonable relationship with the type of allocable expenditure.

## *USE OF ESTIMATES*

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America (GAAP) requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

## **2. CASH, CASH EQUIVALENTS AND INVESTMENTS**

The County is authorized through the Florida Statutes §218.415, Ordinance No. 84-47, Resolution R-31-09 and its Investment Policy to make certain investments. The County's Investment Policy objectives are, in order of priority, the safety of principal, liquidity of funds and maximizing investment income.

The Department pools all cash, cash equivalents and investments, except for certain amounts which are required to be held in trust and escrow accounts under the terms of bond ordinances and loan agreements. Various self-balancing account groups are participants in such pooling, sharing on a pro-rata basis in the pooled earnings, according to their respective average monthly balances.

## *DEPOSITS*

The carrying amounts of the Department's local deposits as of September 30, 2017 and 2016 were \$112.9 million and \$302.7, respectively. For fiscal years ended September 30, 2017 and 2016, the bank balances at local depositories were \$124.7 million and \$306.9 million, respectively, consisting of demand deposit accounts only. All deposits are fully insured by Federal Depository Insurance and a multiple financial institution collateral pool required by Chapter 280 Florida Statutes, "Florida Security for Public Deposits Act". Under the Act, all qualified public depositories are required to pledge eligible collateral having a market value equal to or greater than the average daily or monthly balance of all public deposits, times the depository's collateral pledging level. The pledging level may range from 50% to 125% depending upon the depository's financial condition and establishment period. All collateral must be deposited with a State-approved financial institution. Any losses to public depositors are covered by applicable deposit insurance, sale of securities pledged as collateral and, if necessary, assessments against other qualified public depositories of the same type as the depository in default.

As a rule, the County intends to hold all purchased securities until their final maturity date. There may be occasional exceptions, including, but not limited to the need to sell securities to meet unexpected liquidity needs.

Cash on hand and cash held by other parties as of September 30, 2017 and 2016 was approximately \$113.2 million and \$303.5 million, respectively.



# Notes to Financial Statements

## INVESTMENTS

The below hierarchy is based on the valuation input used to measure the fair value of the asset with Level 1 assets being those where quoted prices in an active market for identical assets can be readily obtained, and Level 2 assets valued using a matrix pricing technique of quoted prices for similar assets or liabilities in active markets. Level 3 is for assets that have unobservable valuation inputs and should only be used when Level 1 and Level 2 inputs are unavailable. The County does not have any Level 1 or Level 3 inputs.

The Department's carrying value of cash equivalents and investments include the following as of September 30, 2017 and 2016:

	<u>Fair Value</u>	
	2017	2016
<b><u>Investments Level 2</u></b>		
Commercial Paper	\$ 137,200	\$ 66,916
Federal Home Loan Mortgage Corporation	123,063	62,453
Federal Farm Credit Bank	113,247	57,853
Federal Home Loan Bank	101,763	60,327
Treasury Notes	87,841	7,869
Federal National Mortgage Association	85,471	82,595
Jubilee Issue Bonds	3,690	4,626
Total Investments	<u>\$ 652,275</u>	<u>\$ 342,639</u>
<b><u>Cash Equivalents</u></b>		
Interest Bearing	827	1,963
Total Investments and Cash Equivalents	<u>\$ 653,102</u>	<u>\$ 344,602</u>

## CREDIT RISK

The Policy, minimizes credit risk by restricting authorized investments to: Local Government Surplus Funds Trust Fund, or any intergovernmental investment pool authorized pursuant to the Florida Interlocal Cooperation Act; Securities and Exchange Commission (SEC) registered money market funds with the highest credit rating from a nationally recognized rating agency; interest bearing time deposits or saving accounts in qualified public depositories, pursuant to Florida Statutes §280.02, which are defined as banks, savings banks, or savings associations organized under the laws of the United States with an office in this state that is authorized to receive deposits, and has deposit insurance under the provisions of the Federal Deposit Insurance Act; direct obligations of the United States Treasury; federal agencies and instrumentalities; securities of, or other interests in, and open-end or closed-end management-type investment company or investment trust registered under the Investment Company Act of 1940, provided that the portfolio is limited to the obligations of the United States government or any agency or instrumentality thereof and fully collateralized by such United States government obligations, and provided that such investment company or investment trust takes delivery of such collateral either directly or through an authorized custodian; commercial paper of prime quality with a stated maturity of 270 days or less from the date of its issuance, which has the highest letter and numerical rating as provided for by at least two nationally recognized rating services; banker acceptances which have a stated maturity of 180 days or less from the date of issuance, and have the highest letter and numerical rating as provided for by at least two nationally recognized rating services, and are drawn on and accepted by commercial banks and which are eligible for purchase by the Federal Reserve Bank, investments in repurchase agreements ("Repos") collateralized by securities authorized by this policy. All Repos shall be governed by a standard SIFMA Master Repurchase Agreement; municipal securities issued by U.S., state or local governments, having at time of purchase, a stand-alone credit rating of AA or better assigned by two or more recognized credit rating agencies or a short-term rating of A1/P1 or equivalent from one or more recognized credit rating agencies. Securities lending, securities or investments purchased or held under the provisions of this section, may be loaned to securities dealers or financial institutions provided the loan is collateralized by cash or securities having a market value of at least 102 percent of the market value of the securities loan upon initiation of the transaction.

# Notes to Financial Statements

The following table summarizes the investments by type and credit ratings at September 30, 2017 and 2016:

	Credit Ratings 2017	Credit Ratings 2016
Federal Home Loan Mortgage Corporation	AA+/A-1+	AA+/A-1+
Federal Home Loan Bank	AA+/A-1+	AA+/A-1+
Federal Farm Credit Bank	AA+/A-1+	AA+/A-1+
Federal National Mortgage Association	AA+/A-1+	AA+/A-1+
Treasury Notes	AA+/A-1+	AA+/A-1+

## CUSTODIAL CREDIT RISK

The Policy requires that bank deposits be secured per Chapter 280, Florida Statutes. This requires local governments to deposit funds only in financial institutions designated as qualified public depositories by the Chief Financial Officer of the State of Florida and creates the Public Deposits Trust Fund, a multiple financial institution pool with the ability to assess its member financial institutions for collateral shortfalls if a default or insolvency has occurred. At September 30, 2017 and 2016, all of the County's bank deposits were in qualified public depositories.

The Policy requires the execution of a Custodial Safekeeping Agreement (CSA) for all purchased securities which shall be held for credit of the County in an account separate and apart from the assets of the financial institution.

## CONCENTRATION OF CREDIT RISK

The Policy establishes limitations on portfolio composition by investment type and by issuer to limit its exposure to concentration of credit risk. The Policy provides that a maximum of 50% of the portfolio may be invested in the State of Florida Local Government Surplus Funds Trust Fund ("Pool"); however, the bond proceeds may be temporarily deposited in the Pool until alternative investments have been purchased. Prior to any investment in the Pool, approval must be received from the Board of County Commissioners. A maximum of 30% of the portfolio may be invested in SEC registered money market funds with no more than 10% to any single money market fund; a maximum of 20% of the portfolio may be invested in non-negotiable interest bearing time certificates of deposit and savings account with no more than 5% deposited with any one insurer. There is no limit on the percent of the total portfolio that may be invested in direct obligations of the U.S. Treasury or federal agencies and instrumentalities; with no limits on individual issuers (investment in agencies containing call options shall be limited to a maximum of 25% of total portfolio). A maximum of 5% of the portfolio may be invested in open-end or closed-end funds; a maximum of 50% of the portfolio may be invested in prime commercial paper with a maximum of 5% with any one issuer; a maximum of 25% of the portfolio may be invested in banker's acceptances with a maximum of 10% with any one issuer, but a maximum of 60% of the portfolio may be invested in both commercial paper and banker's acceptances. A maximum of 20% of the portfolio may be invested in repurchase agreements with the exception of one (1) business day agreements, with a maximum of 10% of the portfolio with any one institution or dealer with the exception of one (1) business day agreements. A maximum of 25% of the portfolio may be directly invested in municipal obligations, up to 5% with any one municipal issuer.

As of September 30, 2017 and 2016, the following issuers held 5% or more of the investment portfolio:

	% of Portfolio 2017	% of Portfolio 2016
Commercial Paper	21.70	-
Federal Home Loan Mortgage Corporation	18.84	22.15
Federal Farm Credit Bank	17.34	17.68
Federal Home Loan Bank	15.58	31.44
Treasury Notes	13.45	-
Federal National Mortgage Association	13.09	25.80

The schedule excludes investments issued or explicitly guaranteed by the U.S. government.



# Notes to Financial Statements

## INTEREST RATE RISK

The Policy limits interest rate risk by requiring the matching of known cash needs and anticipated net cash outflow requirements; following historical spread relationships between different security types and issuers; evaluating both interest rate forecasts and maturity dates to consider short-term market expectations. The Policy requires that investments made with current operating funds shall maintain a weighted average of no longer than one year. Investments for bond reserves, construction funds and other non-operating funds shall have a term appropriate to the need for funds and in accordance with debt covenants. The Policy limits the maturity of an investment to a maximum of five years.

As of September 30, 2017, and 2016, the Department had the following investments with the weighted average maturity in years.

	Weighted Average in Years 2017	Weighted Average in Years 2016
Federal Home Loan Mortgage Corporation	1.92	1.39
Jubilee Issue Bonds	1.23	2.23
Federal National Mortgage Association	0.74	1.17
Federal Farm Credit Bank	0.59	0.46
Federal Home Loan Bank	0.44	0.28
Treasury Notes	0.15	0.19
Commercial Paper	0.13	0.12

## FOREIGN CURRENCY RISK

The Policy limits the County's foreign currency risk by excluding foreign investments as an investments option.

## 3. RECEIVABLES

Receivables for fiscal years ended September 30, 2017 and 2016 were as follows (in thousands):

	2017	2016
Trade Accounts	\$ 173,422	\$ 144,134
Non-retail accounts	8,126	7,322
Grants & Contracts	206	91
Other County funds	11,238	11,433
Gross receivables	192,992	162,980
Less: allowance for doubtful accounts	(20,185)	(17,703)
Net receivables	\$ 172,807	\$ 145,277

On September 22, 2011, the Department signed a Memorandum of Understanding (MOU) establishing a \$25 million loan to the County's General Fund as adopted in the fiscal year 2012 Budget Ordinance.

The Department transferred \$25 million cash to the General Fund and booked a receivable from the County. The term of this loan will be five years, no interest, with repayments of \$5 million per year to begin at the end of fiscal year 2014. As of September 30, 2017, the Department received \$15 million with a current balance due of \$10 million.



# Notes to Financial Statements

## 4. OTHER CURRENT ASSETS

Other current assets for fiscal years ended September 30, 2017 and 2016 were as follows (in thousands):

	2017	2016
Beginning Balance	\$ 2,890	\$ 2,909
Prepaid Expenses	(8)	(19)
Advance to City of Hialeah	959	-
Ending Balance	<u>\$ 3,841</u>	<u>\$ 2,890</u>

The County entered an agreement with the City of Hialeah (City) to construct a 10 MGD reverse osmosis water treatment plant. The City and the County shall have equal 50% ownership of a reverse osmosis water treatment plant (WTP), inclusive of land, structures, facilities, and appurtenances to be situated in the Annexation Area of the City. The City shall contribute and pay for 50% of the planning, design, construction, and construction management (design and construction) cost for the WTP and the County shall contribute 50% of the design and construction cost for the WTP. In Fall of 2013, the Plant began production capable of 7.5 MGD, with County and City each receiving 50% of the production. In fiscal year 2017, \$1.0 million was contributed to the City of Hialeah and the Department incurred \$1.7 million in operating expenses. As of September 30, 2017, and 2016, the Department contributed approximately \$47.8 million and 46.8 million, respectively, towards the construction of the WTP.

## 5. RESTRICTED ASSETS

Certain bond ordinances and loan agreements require the Department to establish accounts to be used in accounting for proceeds and collateral pledged because of the various issues of debt. In many cases, the applicable ordinances refer to the restricted accounts as “funds”. Such accounts are not “funds” as defined by the National Council of Governmental Accounting (NCGA) *Statement No. 1: Governmental Accounting and Financial Reporting Principles* and, therefore, are not funds for financial reporting purposes, but are maintained as separate accounts. Restricted assets for fiscal years ended September 30, 2017 and 2016 are represented in the following table (in thousands):

	2017	2016
Debt Service	\$ 185,856	\$ 188,107
Construction	149,156	77,139
Renewal and Replacement	78,772	61,968
Plant Expansion	147,465	143,070
Self-Insurance	4,463	5,232
Other	130,079	124,901
Total Restricted Assets	<u>\$ 695,791</u>	<u>\$ 600,417</u>



# Notes to Financial Statements

## 6. CAPITAL ASSETS

Capital asset activity during fiscal years 2016 and 2017 was as follows (in thousands):

	<u>Balance</u>			<u>2016</u>			<u>Balance</u>			<u>2017</u>			<u>Balance</u>
	9/30/2015	Additions	Deletions	9/30/2015	Additions	Deletions	9/30/2016	Additions	Deletions	9/30/2016	Additions	Deletions	9/30/2017
Capital Assets, not being depreciated:													
Land	\$ 58,654	\$ 12,914	\$ -	\$ 71,568	\$ 3,587	\$ -	\$ 75,155						
Construction work in progress	596,114	348,206	(150,593)	793,727	442,214	(107,394)	1,128,547						
Total capital assets, not being depreciated	654,768	361,120	(150,593)	865,295	445,801	(107,394)	1,203,702						
Capital Assets, being depreciated:													
Structures and improvements	4,845,954	190,912	(10,443)	\$ 5,026,423	102,251	(55,197)	5,073,477						
Equipment	1,138,066	51,828	(6,992)	1,182,902	31,291	(9,127)	1,205,066						
Total capital assets, being depreciated	5,984,020	242,740	(17,435)	6,209,325	133,542	(64,324)	6,278,543						
Less accumulated depreciation:													
Structures and improvements	(2,101,376)	(139,602)	9,847	(2,231,131)	(143,542)	44,267	(2,330,406)						
Equipment	(838,567)	(44,822)	6,826	(876,563)	(44,378)	8,934	(912,007)						
Total accumulated depreciation	(2,939,943)	(184,424)	16,673	(3,107,694)	(187,920)	53,201	(3,242,413)						
Total capital assets, being depreciated, net	3,044,077	58,316	(762)	3,101,631	(54,378)	(11,123)	3,036,130						
Total capital assets, net	\$ 3,698,846	\$ 419,436	\$ (151,355)	\$ 3,966,926	\$ 391,423	\$ (118,517)	4,239,832						

## 7. LONG-TERM DEBT

Long-term debt includes various bonds and loans which have been issued or approved by the County for the improvement of the Department's water and wastewater infrastructure, and defeasance of outstanding debt. General covenants, along with debt service requirements, are disclosed on page 33. See Note 5, Restricted Assets, for a discussion of the accounts used in accounting for proceeds and collateral pledged as a result of the issuance of the various forms of debt.

The Department's debt instruments contain various covenants and restrictions, which among other things, (1) prohibit the Department from taking any action that could jeopardize its tax-exempt status, and (2) require the Department to meet certain financial tests. Management believes that the Department followed all such covenants and restrictions at September 30, 2017 and 2016.

### MIAMI-DADE COUNTY REVENUE BONDS, SERIES 2007

On September 29, 2007, \$344.7 million of Miami-Dade County Water and Sewer System Revenue Refunding Bonds, Series 2007 were issued to refund the Miami- Dade County Water and Sewer System Revenue Bonds, Series 1997 maturing after October 1, 2009, and to pay issue costs. On June 3, 2015, \$481.2 million of Miami-Dade County Water and Sewer System Revenue Refunding Bonds, Series 2015 were issued to advance refund \$244.4 aggregate principal of Series 2007.

The Series 2007 Refunding Bonds are collateralized by the net operating revenues of the Department and are due serially on October 1 starting in 2008 through the year 2026 with semi-annual interest due on April 1 and October 1 of each year. Net revenue requirements of at least 1.10 times the current year's debt service requirements were met in fiscal years 2017 and 2016.



# Notes to Financial Statements

## CHANGES IN LONG-TERM LIABILITIES

A summary of long-term liability activity during fiscal years 2016 and 2017 is presented in the following table (in thousands):

Description	Outstanding Rate	Balance 9/30/2015	2016 Additions	2016 Deletions	Balance 9/30/2016	2017 Additions	2017 Deletions	Balance 9/30/2017	Due in 2018
<i>Dade County Revenue Bonds</i>									
Series 2007	4.00%-5.00%	\$ 41,305	\$ -	\$ 13,210	\$ 28,095	\$ -	\$ 13,760	\$ 14,335	\$ 14,335
Series 2008A & B	3.25%-5.25%	\$ 383,090	-	39,675	343,415	-	41,755	301,660	43,965
Series 2008C	4.00%-6.00%	\$ 29,880	-	6,900	22,980	-	7,265	15,715	7,650
Series 2010	2.00%-5.00%	\$ 586,150	-	2,855	583,295	-	2,955	580,340	3,040
Series 2013A	5.00%	\$ 340,265	-	-	340,265	-	-	340,265	-
Series 2013B	5.00%	\$ 152,400	-	-	152,400	-	-	152,400	-
Series 2015	4.00%-5.00%	\$ 481,175	-	-	481,175	-	-	481,175	-
Less: Unamortized Discount		\$ (249)	-	(83)	(166)	83	-	(83)	-
Plus: Unamortized Premium		\$ 110,003	-	7,731	102,272	-	7,731	94,541	-
Total revenue bonds		\$ 2,124,019	\$ -	\$ 70,288	\$ 2,053,731	\$ 83	\$ 73,466	\$ 1,980,348	\$ 68,990
<i>State Loan Obligations</i>									
State Revolving Fund	2.56%-4.17%	164,698	10,424	13,850	161,272	16,153	11,976	165,449	12,543
Total State Revolving Funds		\$ 164,698	\$ 10,424	\$ 13,850	\$ 161,272	\$ 16,153	\$ 11,976	\$ 165,449	\$ 12,543
<i>Commercial Paper</i>									
Commercial Paper		-	100,000	-	100,000	275,000	-	375,000	-
Total long-term debt		\$ 2,288,717	\$ 110,424	\$ 84,138	\$ 2,315,003	\$ 291,236	\$ 85,442	\$ 2,520,797	\$ 81,533
<i>Other liabilities</i>									
Compensated Absences		41,736	8,083	8,100	41,719	476	-	42,195	10,061
Self-Insurance		1,979	828	-	2,807	-	862	1,945	948
Other post-employment benefits		5,492	488	-	5,980	776	-	6,756	-
Net pension liability		93,853	59,905	-	153,758	2,752	-	156,510	-
Total long-term liabilities		\$ 2,431,777	\$ 179,728	\$ 92,238	\$ 2,519,267	\$ 295,240	\$ 86,304	\$ 2,728,203	\$ 92,542

## DEBT SERVICE REQUIREMENTS

As of September 30, 2017, the Department's debt service requirements to maturity for their term were as follows (in thousands):

Maturing in Fiscal Year	Revenue Bonds		State Loans		Total		Debt
	Principal	Interest	Principal	Interest	Principal	Interest	
2018	68,990	92,205	12,543	2,903	81,533	95,108	176,641
2019	71,055	88,758	12,089	2,665	83,144	91,423	174,567
2020	74,720	85,112	11,532	2,411	86,252	87,523	173,775
2021	78,590	81,273	11,756	2,161	90,346	83,434	173,780
2022	82,675	77,185	11,463	1,912	94,138	79,097	173,235
2023-2027	473,020	318,229	41,977	7,026	514,997	325,255	840,252
2028-2032	340,750	210,634	44,410	3,455	385,160	214,089	599,249
2033-2037	270,740	141,499	19,509	386	290,249	141,885	432,134
2038-2042	345,540	64,829	170	3	345,710	64,832	410,542
2043	79,810	1,996	-	-	79,810	1,996	81,806
	1,885,890	1,161,720	165,449	22,922	2,051,339	1,184,642	3,235,981
Unamortized Discount & Premium Amounts	94,458	-	-	-	94,458	-	94,458
Total	\$ 1,980,348	\$ 1,161,720	\$ 165,449	\$ 22,922	\$ 2,145,797	\$ 1,184,642	\$ 3,330,439





## Notes to Financial Statements

### *MIAMI-DADE COUNTY WATER AND SEWER SYSTEM REVENUE BONDS, SERIES 2008A*

On July 15, 2008, the County issued \$68.3 million of Miami-Dade County Water and Sewer System Revenue Bonds, Series 2008A to pay the costs of terminating the AIG Financial Products Corporation interest rate swap associated with the variable rate Dade County Water and Sewer System Revenue Bonds, Series 1994 and to pay issuance costs.

The Series 2008A Revenue Bonds are collateralized by the net operating revenues of the Department and are due serially October 1 starting in 2009 through the year 2022 with semi-annual interest due on April 1 and October 1 of each year. Net revenue requirements of at least 1.10 times the current year's debt service requirements were met in fiscal years 2017 and 2016.

### *MIAMI-DADE COUNTY WATER AND SEWER SYSTEM REVENUE REFUNDING BONDS, SERIES 2008B*

On July 15, 2008, \$374.6 million of Miami-Dade County Water and Sewer System Revenue Refunding Bonds, Series 2008B were issued to redeem all of the County's Water and Sewer System Revenue Bonds, Series 1994 and to pay issuance and surety costs.

The Series 2008B Refunding Bonds are collateralized by the net operating revenues of the Department and are due serially on October 1 starting in 2009 through the year 2022 with semi-annual interest due on April 1 and October 1 of each year. Net revenue requirements of at least 1.10 times the current year's debt service requirements were met in fiscal years 2017 and 2016.

### *MIAMI-DADE COUNTY WATER AND SEWER SYSTEM REVENUE REFUNDING BONDS, SERIES 2008C*

On December 18, 2008, \$306.8 million of Miami-Dade County Water and Sewer System Revenue Refunding Bonds, Series 2008C were issued to redeem all of the County's Water and Sewer System Revenue Refunding Variable Rate Demand Bonds, Series 2005 and to pay issuance and surety costs. The aggregate difference between the refunding and refunded debt resulted in a gain of \$13.8 million. On June 3, 2015, \$481.2 million of Miami-Dade County Water and Sewer System Revenue Refunding Bonds, Series 2015 were issued to advance refund \$255.7 aggregate principal of Series 2008C.

The Series 2008C Refunding Bonds are collateralized by the net operating revenues of the Department and are due serially on October 1 starting in 2009 through the year 2026 with semi-annual interest due on April 1 and October 1 of each year. Net revenue requirements of at least 1.10 times the current year's debt service requirements were met in fiscal years 2017 and 2016.

### *MIAMI-DADE COUNTY WATER AND SEWER SYSTEM REVENUE BONDS, SERIES 2010*

On March 10, 2010, \$594.3 million of Miami-Dade County Water and Sewer System Revenue Bonds, Series 2010 were issued to finance capital improvements under the Department's Multi-Year Capital plan, repay the Regions Bank Line of Credit and to pay issue costs.

The Series 2010 Revenue Bonds are collateralized by the net operating revenues of the Department and are due serially on October 1 starting in 2010 through the year 2040 with semi-annual interest due on April 1 and October 1 of each year. Net revenue requirements of at least 1.10 times the current year's debt service requirements were met in fiscal years 2017 and 2016.

### *MIAMI-DADE COUNTY WATER AND SEWER SYSTEM REVENUE BONDS, SERIES 2013A*

On August 2, 2013, the County issued \$340.3 million of Miami-Dade County Water and Sewer System Revenue Bonds, Series 2013A to pay cost of constructing and acquiring certain improvements under the Department's Multi-Year Capital Plan, pay capitalized interest on the bonds, make a deposit to the Reserve Account and to pay issue costs.

The Series 2013A Revenue Bonds are collateralized by the net operating revenues of the Department and are due serially on October 1 through the year 2043 with semi-annual interest due on April 1 and October 1 of each year. Net revenue requirements of at least 1.10 times the current year's debt service requirements were met in fiscal years 2017 and 2016.

## Notes to Financial Statements

### *MIAMI-DADE COUNTY WATER AND SEWER SYSTEM REVENUE REFUNDING BONDS, SERIES 2013B*

On August 2, 2013, the County issued \$152.4 million of Miami-Dade County Water and Sewer System Revenue Refunding Bonds, Series 2013B to refund all the County's outstanding Water and Sewer System Revenue Bonds, Series 1999A, to make a deposit to the Reserve Account and pay issue costs.

The Series 2013B Revenue Bonds are collateralized by the net operating revenues of the Department and are due serially on October 1 through the year 2030 with semi-annual interest due on April 1 and October 1 of each year. Net revenue requirements of at least 1.10 times the current year's debt service requirements were met in fiscal years 2017 and 2016.

### *MIAMI-DADE COUNTY WATER AND SEWER SYSTEM REVENUE REFUNDING BONDS, SERIES 2015*

On June 3, 2015, the County issued \$481.2 million of Miami-Dade County Water and Sewer System Revenue Refunding Bonds, Series 2015 to advance refund the \$244.4 million aggregate principal of the Miami-Dade County Revenue Bonds, Series 2007, \$255.7 million aggregate principal of Miami-Dade County Water and Sewer System Revenue Refunding Bonds, Series 2008C and pay the costs of issuance.

The Series 2015 Bonds are collateralized by the net operating revenues of the Department and are due serially on October 1 through the year 2026 with semi-annual interest due on April 1 and October 1 of each year. Net revenue requirements of at least 1.10 times the current year's debt service requirements were met in fiscal years 2017 and 2016.

### *STATE REVOLVING FUND*

Under the State Revolving Fund program, the Department has received various loan commitments for the construction of water and wastewater treatment facilities. Draws to date against committed loans as of September 30, 2017, are detailed in the following table (in thousands).

<u>Loan #</u>	<u>Draws</u>	<u>Closed Out Date</u>
377500	2,369	12/1/2003
377650	160	8/8/2003
377670	703	10/27/2003
377860	1,243	9/20/2006
377870	1,613	9/20/2006
37788P	1,497	9/27/2004
37789A	360	8/1/2007
37789L	706	9/26/2006
300010	12,972	8/4/2008
300080	1,225	4/28/2003
377900	112,525	Active
130200	141	Active
130201	74	Active
130230	10,824	Active
130240	18,421	Active
	<u>\$164,833</u>	

Related payments of principal and interest are due through the year 2034. No further draws will be made against closed loans.

The Department has agreed to maintain rates, together with other pledged revenues, sufficient to provide "net revenues" equal to at least 1.15 times the annual loan payments after meeting the primary debt service requirements. Reserve and debt service funding requirements, as required by the agreements, were met in fiscal years 2017 and 2016.

### *COMMERCIAL PAPER*

The Department established a commercial paper (CP) program to provide interim financing for the Department's capital improvement program. Two series of notes have been issued under the commercial paper program: The Series



# Notes to Financial Statements

A CP Notes in an aggregate principal amount not to exceed \$200.0 million and Series B CP Notes in an aggregate principal amount not to exceed \$200.0 million. Resolution No. R-347-16 adopted by the Board on May 17, 2016, authorizes issuance, from time to time, of the Notes in the aggregate principal amount not exceeding \$400.0 million outstanding at any time, maturing no later than the earliest of 270 days or the second business day prior to the expiry of the applicable letter of credit. Barclay's Capital Inc. and Citigroup Global Markets Inc. have been designated as the initial dealers with respect to the offering and sale of the notes.

The notes are issued for the purpose of providing temporary funding for a portion of the Department's Capital Improvement Program, financing the payment of the principal of and interest on any maturing notes or obligations and paying certain costs of issuance. Payment of principal and interest on maturing Series A Notes and Series B Notes are supported by an irrevocable transferrable direct-pay letter of credit issued by Barclays Bank PLC and Sumitomo Mitsui Banking Corp respectively.

## INTEREST RATE SWAP AGREEMENTS

The Department is currently a party to two interest rate swap agreements related to the various revenue bonds issued by the Department. The fair value of a swap is determined annually at September 30th based on an estimated mark-to-mid market assessment.

On June 15, 2008, Merrill Lynch Capital Services, Inc. exercised their option to terminate a fixed to variable rate swap option with a notional amount of \$215 million with respect to the Series 2007 Bonds at no cost to either party.

On August 2, 2013, the Department issued fixed rate bonds refunding the Miami-Dade County Revenue Bonds, Series 1999A. With the refunding of all outstanding obligations of the Series 1999A Bonds by the issuance of the fixed rate debt, the Series 2013B Bonds, the Department recognizes the swap association with the 2013B Bonds.

During fiscal year 2010, Statement No. 53 of the Governmental Accounting Standards Board, *Accounting and Financial Reporting for Derivative Instruments*, (GASB 53) became effective. This statement refers to the recognition, measurement and disclosure of information regarding derivative instruments entered into by the Department and reported at fair value. In accordance with GASB 53, Swap Financial Group, LLC evaluated the Department's swaps to determine whether they are effective hedging derivative instruments. It was determined that both swaps are basis swaps. Given that there is no identified financial risk being hedged by the swaps that can be expressed in terms of exposure to adverse changes in cash flows or fair values, the swaps are treated as investment derivative instruments, and not hedging derivative instruments. Accordingly, the change in fair value at September 30, 2017 was a decrease of \$13.5 million. This change in fair value is reflected in the investment income line item of the statement of revenues, expenses, and changes in net position. This decrease brings the total fair value to \$31.8 million which is reflected in the Investment Derivative Instrument line item of the noncurrent asset section of the balance sheet. The change in fair value at September 30, 2016 was a decrease of \$6.8 million. This decrease brought the total fair value to \$45.2 million.

## INTEREST RATE SWAP AGREEMENTS

Below is a recap of each of the interest rate swap agreements that the Department has entered into:

Associated Series of Bonds	Notional Amount	Counterparty	Counterparty Ratings <sup>(2)</sup>	Start Date	Termination Date	Counterparty Payment	County Payment	Fair Value at 09/30/17	Fair Value at 09/30/16
Series 2007	\$200,000,000	Bank of New York Mellon	Guarantor-Aa2, AA-, AA	7/18/2002	10/1/2026	Variable-USD-Libor-BBA+1.465%	Variable-(USD-SIFMA Municipal Swap Index/.0604)	\$12,356,593	\$17,552,591
Series 2013B <sup>(1)</sup>	\$205,070,000	Bank of New York Mellon	Guarantor- Aa2, AA-, AA	3/6/2006	10/1/2029	Variable-(USD-ISDA-Swap Rate) x 90.15% + 1.58%	Variable - (USD-SIFMA Municipal Swap Index/.0604)	\$19,421,631	\$27,677,531

<sup>(1)</sup> The underlying debt for the swap has been replaced with the Series 2013B Bonds.

<sup>(2)</sup> Moody's, S&P, Fitch.



# Notes to Financial Statements

## Risk Disclosure

**Credit Risk.** Because all of the swaps rely upon the performance of the third parties who serve as swap counterparties, the Department is exposed to credit risk or the risk that the counterparty fails to perform according to its contractual obligations. The appropriate measurement of this risk at the reporting date is the fair value of the swaps, as shown and labeled fair value on the Interest Rate Swap Agreements chart above. All fair values have been calculated using the mark-to-mid-market method. To mitigate credit risk, the County maintains strict credit standards for swap counterparties. All swap counterparties for longer term swaps are rated at least in the double- A category by both Moody's and Standard & Poor's. To further mitigate credit risk, the Department swap documents require counterparties to post collateral for the Department's benefit if they are downgraded below a designated threshold.

**Basis Risk.** The Department's swap agreements expose the County to basis risk. Should the relationship between the variable rates the Department receives on the swap fall short of the variable rate on the associated bonds, the expected savings may not be realized. As of September 30, 2017 and 2016, the Department had no variable rate debt outstanding.

**Tax Risk.** For basis swaps, the interplay between the taxable index and the tax-exempt index may be affected by changes to the marginal tax rates, the elimination of tax preferences or a flat tax. The Department considers these risks to be remote.

**Termination Risk.** The Department swap agreements do not contain any out-of-ordinary terminating events that would expose it to significant termination risk. In keeping with the market standards the Department or the counterparty may terminate each swap if the other party fails to perform under the terms of the contract. In addition, the swap documents allow either party to terminate in the event of a significant loss of creditworthiness. If at the time of the termination, a swap has a negative value, the Department would be liable to the counterparty for a payment equal to the fair value of such swap unless the counterparty is the defaulting party. The Department is subject to Bank of New York Mellon's 10-year call provision, whereby Bank of New York Mellon has a one-time termination option.

## 8. PAYABLES

Payables and accrued expenses for fiscal years ended September 30, 2017 and 2016 were as follows (in thousands):

	2017	2016
Other County funds	\$ 18,278	\$ 10,982
Vendors	49,112	24,114
Other governments	24,335	25,546
Salaries and benefits	6,460	5,381
Contractors	39,637	27,640
Other	260	260
Total payables	<u>\$ 138,082</u>	<u>\$ 93,923</u>

## 9. PENSION PLAN

The Department, as an agency of the County, participates in the Florida Retirement System (the FRS). The FRS was created in Chapter 121, Florida Statutes, to provide a defined benefit pension plan for participating public employees. The FRS was amended in 1998 to add the Deferred Retirement Option Program under the defined benefit plan and amended in 2000 to provide a defined contribution plan alternative to the defined benefit plan for FRS members effective October 1, 2002. This integrated defined contribution pension plan is the FRS Investment Plan. Chapter 112, Florida Statutes, established the Retiree Health Insurance Subsidy (HIS) Program, a cost-sharing multiple-employer defined benefit pension plan, to assist retired members of any state-administered retirement system in paying the costs of health insurance.

Essentially all regular employees of the Department are eligible to enroll as members of the State- administered FRS. Provisions relating to the FRS are established by Chapters 121 and 122, Florida Statutes; Chapter 112, Part IV, Florida Statutes; Chapter 238, Florida Statutes; and FRS Rules, Chapter 60S, Florida Administrative Code; wherein eligibility, contributions, and benefits are defined and described in detail. Such provisions may be amended at any time by further action from the Florida Legislature.



## Notes to Financial Statements

The FRS is a single retirement system administered by the Florida Department of Management Services, Division of Retirement, and consists of the two cost-sharing, multiple-employer defined benefit plans and other nonintegrated programs. A comprehensive annual financial report of the FRS, which includes its financial statements, required supplementary information, actuarial report, and other relevant information, is available from the Florida Department of Management Services' Web site: ([http://www.dms.myflorida.com/workforce\\_operations/retirement/publications](http://www.dms.myflorida.com/workforce_operations/retirement/publications)).

### *FRS Pension Plan Description*

The FRS Pension Plan (Plan) is a cost-sharing multiple-employer defined benefit pension plan, with a Deferred Retirement Option Program (DROP) for eligible employees.

Employees enrolled in the Plan prior to July 1, 2011, vest at six years of creditable service and employees enrolled in the Plan on or after July 1, 2011, vest at eight years of creditable service. All vested members enrolled prior to July 1, 2011 are eligible for normal retirement benefits at age 62 or at any age after 30 years of service (except for members classified as special risk who are eligible for normal retirement benefits at age 55 or at any age after 25 years of service). All members enrolled in the Plan on or after July 1, 2011, once vested, are eligible for normal retirement benefits at age 65 or any time after 33 years of creditable service (except for members classified as special risk who are eligible for normal retirement benefits at age 60 or at any age after 30 years of service). Members of the Plan may include up to 4 years of credit for military service toward creditable service.

The Plan also includes an early retirement provision; however, there is a benefit reduction for each year a member retires before his or her normal retirement date. The Plan provides retirement, disability, death benefits, and annual cost-of-living adjustments to eligible participants.

DROP, subject to provisions of Section 121.091, Florida Statutes, permits employees eligible for normal retirement under the Plan to defer receipt of monthly benefit payments while continuing employment with an FRS employer. An employee may participate in DROP for a period not to exceed 60 months after electing to participate, except that certain instructional personnel may participate for up to 96 months. During the period of DROP participation, deferred monthly benefits are held in the FRS Trust Fund and accrue interest. The net pension liability does not include amounts for DROP participants, as these members are considered retired and are not accruing additional pension benefits.

### *Benefits Provided*

Benefits under the Plan are computed on the basis of age and/or years of service, average final compensation, and service credit. Credit for each year of service is expressed as a percentage of the average final compensation. For members initially enrolled before July 1, 2011, the average final compensation is the average of the five highest fiscal years' earnings; for members initially enrolled on or after July 1, 2011, the average final compensation is the average of the eight highest fiscal years' earnings. The total percentage value of the benefit received is determined by calculating the total value of all service, which is based on the retirement class to which the member belonged when the service credit was earned. Members are eligible for in-line-of-duty or regular disability and survivors' benefits.

As provided in Section 121.101, Florida Statutes, if the member is initially enrolled in FRS before July 1, 2011, and all service credit was accrued before July 1, 2011, the annual cost-of-living adjustment is 3 percent per year. If the member is initially enrolled before July 1, 2011, and has service credit on or after July 1, 2011, there is an individually calculated cost-of-living adjustment. The annual cost-of-living adjustment is a proportion of 3 percent determined by dividing the sum of the pre-July 2011 service credit by the total service credit at retirement multiplied by 3 percent. Plan members initially enrolled on or after July 1, 2011, will not have a cost-of-living adjustment after retirement.

### *Contributions*

The Florida Legislature establishes contribution rates for participating employers and employees. For fiscal years ended September 30, 2017 and 2016, employees were required to contribute 3% of their gross salary. Employer contribution is based on class. For fiscal year ended September 30, 2017, the contribution rate for FRS Regular and DROP were 7.52% and 12.99% respectively. The Department's contributions for FRS totaled \$11.0 million and employee contributions totaled \$3.7 million. For the fiscal year ended September 30, 2016, the contribution rate for FRS Regular and DROP were 7.37% and 12.28% respectively. The Department's contributions for FRS totaled \$12.5 million and employee contributions totaled \$3.5 million.

# Notes to Financial Statements

## *Pension Liabilities, Pension Expense, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions*

At September 30, 2017, the Department reported a liability of \$121.5 million for its proportionate share of the Plan's net pension liability. The net pension liability was measured as of June 30, 2017, and the total pension liability used to calculate the net pension liability was determined by an actuarial valuation as of July 1, 2017.

At September 30, 2016, the Department reported a liability of \$111.7 million for its proportionate share of the Plan's net pension liability. The net pension liability was measured as of June 30, 2016, and the total pension liability used to calculate the net pension liability was determined by an actuarial valuation as of July 1, 2016.

For the fiscal year ended September 30, 2017, the Department recognized pension expense of \$19.6 million related to the Plan. For the fiscal year ended September 30, 2016, the Department recognized pension expense of \$15.7 million. In addition, for fiscal years 2017 and 2016, the Department reported, deferred outflows of resources and deferred inflows of resources related to pensions from the following sources (in thousands):

	2017		2016	
	Deferred Outflows of Resources	Deferred Inflows of Resources	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences between expected and actual experience	\$ 11,149	\$ 673	\$ 8,634	\$ 1,079
Change of assumptions	40,825	-	6,776	-
Net difference between projected and actual earnings on FRS pension plan investments	-	-	-	-
Changes in proportion and differences between Department's FRS contributions and proportionate share of contributions	-	3,011	28,194	639
Department's contributions subsequent to measurement date	2,125	2,714	1,676	4,367
	3,150	-	3,281	-
	<u>\$ 57,249</u>	<u>\$ 6,398</u>	<u>\$ 48,561</u>	<u>\$ 6,085</u>

For fiscal year ended September 30, 2017, the deferred outflows of resources related to pensions of approximately \$3.2 million, resulting from the Department's contributions to the Plan subsequent to the measurement date, will be recognized as a reduction of the net pension liability in the fiscal year ended September 30, 2018. For fiscal year ended September 30, 2016, the deferred outflows of resources related to pensions, of approximately \$3.3 million, resulting from the Department's contributions to the Plan subsequent to the measurement date, was recognized as a reduction of the net pension liability in the fiscal year ended September 30, 2017. Other amounts reported as deferred outflows of resources and deferred inflows of resources related to pensions would be recognized in pension expense as follows (in thousands):

Fiscal Year Ending September 30, 2017	Deferred outflows/(inflows), net	Fiscal Year Ending September 30, 2016	Deferred outflows/(inflows), net
2018	\$ 5,625	2017	\$ 4,826
2019	16,075	2018	4,826
2020	11,736	2019	15,818
2021	2,804	2020	11,267
2022	8,368	2021	1,877
Thereafter	3,094	Thereafter	581

## *Actuarial Assumptions*

The FRS pension as of July 1, 2017 and 2016 actuarial valuations were determined using the following actuarial assumptions, applied to all periods included in the measurement

	2017	2016
Inflation	2.60%	2.60%
Salary Increases (average, including inflation)	3.25%	3.25%
Investment Rate of Return (net of pension plan investment expense, including inflation.	7.10%	7.60%





## Notes to Financial Statements

The actuarial assumptions used in the July 1, 2017 and 2016 valuations were based on the results of an actuarial experience study for the period July 1, 2008 through June 30, 2013.

### *Long-Term Expected Rate of Return*

For fiscal years ended September 30, 2017 and 2016, the long-term expected rate of return on the Plan investments was not based on historical returns, but instead was based on a forward-looking capital market economic model. The allocation policy's description of each asset class was used to map the target allocation to the asset classes shown below. Each asset class assumption is based on a consistent set of underlying assumptions, and includes an adjustment for the inflation assumption. For fiscal years ended September 30, 2017 and 2016, the target allocation and best estimates of arithmetic and geometric real rates of return for each major asset class are summarized in the following table:

2017					2016				
Asset Class	Target Allocation <sup>1</sup>	Annual Arithmetic Return	Compound Annual (Geometric) Return	Standard Deviation	Asset Class	Target Allocation <sup>1</sup>	Annual Arithmetic Return	Compound Annual (Geometric) Return	Standard Deviation
Cash	1.0%	3.0%	3.0%	1.8%	Cash	1.0%	3.0%	3.0%	1.7%
Fixed income	18.0%	4.5%	4.4%	4.2%	Fixed income	18.0%	4.7%	4.6%	4.6%
Global equity	53.0%	7.8%	6.6%	17.0%	Global equity	53.0%	8.1%	6.8%	17.2%
Real estate (property)	10.0%	6.6%	5.9%	12.8%	Real estate (property)	10.0%	6.4%	5.8%	12.0%
Private equity	6.0%	11.5%	7.8%	30.0%	Private equity	6.0%	11.5%	7.8%	30.0%
Strategic investments	12.0%	6.1%	5.6%	9.7%	Strategic investments	12.0%	6.1%	5.6%	11.1%
	<u>100.0%</u>					<u>100%</u>			
Assumed inflation-Mean		2.6%		1.9%	Assumed inflation-Mean		2.6%		1.90%

Note: (1) As outlined in the Plan's investment policy

### *Discount Rate*

For fiscal year ended September 30, 2017 and 2016, the discount rate used to measure the net pension liability of the Plan was 7.10 percent and 7.60, respectively. The Plan's fiduciary net position was projected to be available to make all projected future benefit payments of current active and inactive employees. Therefore, the discount rate for calculating the total pension liability is equal to the long-term expected rate of return.

### *Sensitivity of the Department's Proportionate Share of the Net Position Liability to Changes in the Discount Rate*

For fiscal years ended September 30, 2017 and 2016, the following represents the Department's proportionate share of the net pension liability calculated using the discount rate of 7.10 and 7.60 percent, respectively; as well as what the Department's proportionate share of the net pension liability would be if it is calculated using a discount rate that is one percentage point lower (6.10 and 6.60 percent) or one percentage point higher (8.10 and 8.60 percent) than the current rate (in thousands):

Miami Dade County's proportionate share of the net pension liability allocated to the Department	1% Decrease 6.10%	Current Discount Rate 7.10%	1% Increase 8.10%
2017	\$ 219,866	\$ 121,477	\$ 39,792
2018	\$ 207,745	\$ 111,748	\$ 31,847

### *Pension Plan Fiduciary Net Position*

Detailed information about the Plan's fiduciary net position is available in the separately issued FRS Pension Plan and Other State-Administered Systems Comprehensive Annual Financial Report.



# Notes to Financial Statements

## Department's Allocation

The Department's proportionate share of the FRS Plan's net pension liability, deferred outflow of resources and deferred inflow of resources, and pension expense / adjustment for the fiscal years ended September 30, 2017 and 2016 were allocated as follows (in thousands):

Water and Sewer	FRS PLAN				
	Percent Allocation	Net Pension Liability	Deferred Outflow of Resources	Deferred Inflow of Resources	Pension Expense/Adjustment
2017	5.29%	\$ (121,477)	\$ 57,249	\$ (6,398)	\$ 1,354
2016	5.65%	\$ (111,748)	\$ 48,561	\$ (6,085)	\$ 4,439

## The Retiree Health Insurance Subsidy Program (HIS) Plan Description

The Retiree Health Insurance Subsidy Program (HIS Plan) is a cost-sharing multiple-employer defined benefit pension plan established under Section 112.363, Florida Statutes, and may be amended by the Florida Legislature at any time. The benefit is a monthly payment to assist retirees of the State-administered retirement systems in paying their health insurance costs and is administered by the Division of Retirement within the Florida Department of Management Services.

## Benefits Provided

For the fiscal years ended September 30, 2017 and 2016, eligible retirees and beneficiaries received a monthly HIS payment of \$5 for each year of creditable service completed at the time of retirement, with a minimum HIS payment of \$30 and a maximum HIS payment of \$150 per month, pursuant to Section 112.363, Florida Statutes. To be eligible to receive a HIS Plan benefit, a retiree under a State-administered retirement system must provide proof of health insurance coverage, which may include Medicare.

## Contributions

The HIS Plan is funded by required contributions from FRS participating employers as set by the Florida Legislature. Employer contributions are a percentage of gross compensation for all active FRS members. For the fiscal years ended September 30, 2017 and 2016, the HIS contribution for the periods July 1 through June 30, and from July 1, through September 30, was 1.66%. The County contributed 100 percent of its statutorily required contributions for the current year and preceding three years. The HIS Plan contributions are deposited in a separate trust fund from which payments are authorized. HIS Plan benefits are not guaranteed and are subject to annual legislative appropriation. In the event the legislative appropriation or available funds fail to provide full subsidy benefits to all participants, benefits may be reduced or canceled.

For the fiscal years ended September 30, 2017 and 2016, the Department's contributions to the HIS Plan totaled \$1.8 million.

## Pension Liabilities, Pension Expense, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions

At September 30, 2017, the Department reported a net pension liability of \$35.0 million for its proportionate share of the HIS Plan's net pension liability. The total pension liability was determined by an actuarial valuation date as of June 30, 2017, and was recalculated and projected to the measurement date of June 30, 2017 using a standard actuarial roll-forward technique. At September 30, 2016, the Department reported a net pension liability of \$42.0 million for its proportionate share of the HIS Plan's net pension liability. The total pension liability was determined by an actuarial valuation date as of July 1, 2015, and was recalculated and projected to the measurement date of June 30, 2016 using a standard actuarial roll-forward technique.

For the fiscal year ended September 30, 2017, the Department recognized pension expense of \$2.7 million related to the HIS Plan. For the fiscal year ended September 30, 2016 the Department recognized pension expense of \$3.3 million related to the HIS Plan. In addition, for fiscal years 2017 and 2016, the Department reported, deferred outflows or resources and deferred inflows of resources related to the HIS Plan from the following sources (in thousands):





# Notes to Financial Statements

	<u>2017</u>		<u>2016</u>	
	Deferred Outflows of Resources	Deferred Inflows of Resources	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences between expected and actual experience	\$ -	\$ 73	\$ -	\$ 94
Change of assumptions	4,924	3,029	6,468	-
Net difference between projected and actual earnings on HIS pension plan investments	-	-	-	-
Changes in proportion and differences between Department's HIS contributions and proportionate share of HIS contributions	-	-	-	-
Department's contributions subsequent to measurement date	453	295	93	407
	481	-	497	-
	<u>\$ 5,878</u>	<u>\$ 3,397</u>	<u>\$ 7,079</u>	<u>\$ 501</u>

For fiscal year ended September 30, 2017, the deferred outflows of resources related to pensions of approximately \$0.5 million, resulting from the Department's contributions to the HIS Plan subsequent to the measurement date, will be recognized as a reduction of the net pension liability in the fiscal year ended September 30, 2018. For fiscal year ended September 30, 2016, the deferred outflows of resources related to pensions, of approximately \$0.5 million, resulting from the Department's contributions to the HIS Plan subsequent to the measurement date, was recognized as a reduction of the net pension liability in the fiscal year ended September 30, 2017. Other amounts reported as deferred outflows of resources and deferred inflows of resources related to pensions will be recognized in pension expense as follows (in thousands):

<u>Fiscal Year Ending September 30, 2017</u>	<u>Deferred outflows/(inflows), net</u>	<u>Fiscal Year Ending September 30, 2016</u>	<u>Deferred outflows/(inflows), net</u>
2018	\$ 577	2017	\$ 1,079
2019	573	2018	1,079
2020	571	2019	1,075
2021	468	2020	1,073
2022	200	2021	965
Thereafter	(389)	Thereafter	810

## Actuarial Assumptions

The HIS pension as of July 1, 2017 and 2016 actuarial valuations were determined using the following actuarial assumptions, applied to all periods included in the measurement:

	<u>2017</u>	<u>2016</u>
Inflation	2.60%	2.60%
Salary Increases (average, including inflation)	3.25%	3.25%
Municipal Bond Rates	3.58%	2.85%

The actuarial assumptions used in the June 30, 2017 and 2016 valuations were based on the results of an actuarial experience study for the period July 1, 2008 through June 30, 2013.

## Discount Rate

For fiscal years ended September 30, 2017 and 2016, the discount rate used to measure the total pension liability for the HIS Plan was 3.58 percent and 2.85, respectively. In general, the discount rate for calculating the total pension liability is equal to the single rate equivalent to discounting at the long-term expected rate of return for benefit payments prior to the projected depletion date. Because the HIS benefit is essentially funded on a pay-as-you-go basis, the depletion date is considered to be immediate, and the single equivalent discount rate is equal to the municipal bond rate selected by the HIS Plan sponsor. The Bond Buyer General Obligation 20-Bond Municipal Bond Index was adopted as the applicable municipal bond index.

## Sensitivity of the Department's Proportionate Share of the Net Pension Liability to Changes in the Discount Rate

For fiscal years ended September 30, 2017 and 2016, the following represents the Department's proportionate share of the net pension liability calculated using the discount rate of 3.58 and 2.85 percent, respectively; as well as what the Department's proportionate share of the net pension liability would be if it is calculated using a discount rate that

## Notes to Financial Statements

is one percentage point lower (2.58 and 1.85 percent) or one percentage point higher (4.58 and 3.85 percent) than the current rate (in thousands):

Miami Dade County's proportionate share of the net pension liability allocated to the Department	1% Decrease 2.58%	Current Discount Rate 3.58%	1% Increase 4.58%
2017	\$ 39,976	\$ 35,033	\$ 30,914
2018	\$ 48,181	\$ 42,010	\$ 36,887

### *Pension plan fiduciary net position*

Detailed information regarding the HIS Plan's fiduciary net position is available in the separately issued FRS Pension Plan and Other State-Administered Systems Comprehensive Annual Financial Report.

### *Department's Allocation*

The Department's proportionate share of the HIS Plan's net pension liability, deferred outflow of resources and deferred inflow of resources, and pension expense / adjustment for the fiscal years ended September 30, 2017 and 2016 were allocated as follows (in thousands):

Water and Sewer	HIS PLAN				
	Percent Allocation	Net Pension Liability	Deferred Outflow of Resources	Deferred Inflow of Resources	Pension Expense/Adjustment
2017	5.29%	\$ (35,033)	\$ 5,878	\$ (3,397)	\$ (2,881)
2016	5.65%	\$ (42,010)	\$ 7,079	\$ (501)	\$ 1,438

The below table represents the Department's aggregate net pension liability, deferred outflow of resources related to pensions, deferred inflow of resources related to pensions, and the pension expense/adjustments for FRS and HIS plans as of the end of the fiscal year.

Water and Sewer	FRS & HIS PLAN				
	Percent Allocation	Net Pension Liability	Deferred Outflow of Resources	Deferred Inflow of Resources	Pension Expense/Adjustment
2017	5.29%	\$ (156,510)	\$ 63,127	\$ (9,795)	\$ (1,527)
2016	5.65%	\$ (153,758)	\$ 55,640	\$ (6,586)	\$ 5,877

### *FRS – Defined Contribution Pension Plan*

The Department contributes to the FRS Defined Contribution Investment Plan (Investment Plan). The Investment Plan is administered by the State Board of Administration (SBA), and is reported in the SBA's annual financial statements and in the State of Florida Comprehensive Annual Financial Report.

As provided in Section 121.4501, Florida Statutes, eligible FRS members may elect to participate in the Investment Plan in lieu of the FRS defined benefit plan. Miami-Dade County employees participating in the DROP are not eligible to participate in the Investment Plan. Employer and employee contributions, including amounts contributed to individual member's accounts, are defined by law, but the ultimate benefit depends in part on the performance of investment funds. Benefit terms, including contribution requirements, for the Investment Plan are established and may be amended by the Florida Legislature. The Investment Plan is funded with the same employer and employee contribution rates that are based on salary and membership class (Regular Class, Elected County Officers, etc.), as the FRS Pension Plan. Contributions are directed to individual member accounts, and the individual members allocate contributions and account balances among various approved investment choices. Allocations to the investment member's accounts, as established by Section 121.72, Florida Statutes, are based on a percentage of gross compensation, by class.

For all membership classes, employees are immediately vested in their own contributions and are vested after one year of service for employer contributions and investment earnings. If an accumulated benefit obligation for service credit originally earned under the FRS Pension Plan is transferred to the Investment Plan, the member must have the years



# Notes to Financial Statements

of service required for FRS Pension Plan vesting (including the service credit represented by the transferred funds) to be vested for these funds and the earnings on the funds. Non-vested employer contributions are placed in a suspense account for up to five years. If the employee returns to FRS-covered employment within the five-year period, the employee will regain control over their account. If the employee does not return within the five-year period, the employee will forfeit the accumulated account balance. At years ended September 30, 2017 and 2016, the costs of administering the Investment Plan, including the FRS Financial Guidance Program, were funded through an employer contribution of 0.06 and 0.04 percent of payroll, respectively, and by forfeited benefits of Investment Plan members. For the fiscal years ended September 30, 2017 and 2016, the information for the amount of forfeitures was unavailable from the SBA; however, management believes that these amounts, if any, would be immaterial to Miami Dade County.

After termination and applying to receive benefits, the member may rollover vested funds to another qualified plan, structure a periodic payment under the Investment Plan, receive a lump-sum distribution, leave the funds invested for future distribution, or any combination of these options. Disability coverage is provided; the member may either transfer the account balance to the FRS Pension Plan when approved for disability retirement to receive guaranteed lifetime monthly benefits under the FRS Pension Plan, or remain in the Investment Plan and rely upon that account balance for retirement income.

For the fiscal years ended September 30, 2017 and 2016, the Department's Investment Plan pension contributions totaled \$1.1 million and \$0.09 million, respectively.

## 10. RISK MANAGEMENT

The Department is exposed to various risks of loss related to torts; theft of, damage to and destruction of assets; errors and omissions; job-related injuries or illnesses to employees; natural disasters and employee health and accident. In the year ended September 30, 1987, the Department established a self-insurance program for general and automobile liability exposures as provided by Section 706 of County Ordinance 78-82, as amended. Ordinance 78-82 was amended and restated by Ordinance 93-134 and Section 609 continues to provide for such self-insurance program.

Claims are administered by the County's Risk Management Division, and the program is based upon an actuarial study performed annually by consulting actuaries. Liabilities are reported when it is possible that a loss has occurred and the amount of that loss can be reasonably estimated. Liabilities also include an amount for claims that have been incurred but not reported (IBNR). Because actual claims liability depends on such complex factors as inflation, change in legal doctrines and damage awards, the process used in computing claims liability does not necessarily result in an exact amount. Claims liabilities are re-evaluated periodically to take into consideration recently settled claims, the frequency of claims and other economic and social factors.

Changes in the balance of claim liabilities for the general and automobile self-insurance program during fiscal year 2017 and 2016 were as follows (in thousands):

	2017	2016
Balance at beginning of year	\$ 2,807	\$ 1,979
Claims and changes in estimates	493	1,498
Less: Payments	(1,355)	(670)
Balance at end of year	<u>\$ 1,945</u>	<u>\$ 2,807</u>

The Department participates in the workers' compensation self-insurance program of the County, administered by the Risk Management Division. Risk Management charges a "premium" to each County department based on amounts necessary to provide funding for expected payments during the fiscal year. The estimate of IBNR losses is performed by an independent actuary. The Department maintains a liability in the amount of \$1.9 million at September 30, 2017, and \$2.8 million at September 30, 2016 for possible funding of these IBNR losses. The County maintains no excess coverage with independent carriers for workers' compensation. The Department's total self-insurance liability was \$3.5 million and \$3.6 million as of September 30, 2017 and 2016, respectively.

The Department also participates in the County's group health and life self-insurance program, administered by an independent administrator. The County charges a uniform "premium" per employee to each County department based on recent trends in actual claims experience, and makes provisions for catastrophic losses. Current year premiums are adjusted for County-wide prior year actual claims experience.

# Notes to Financial Statements

The Department purchases a master property insurance policy covering most properties. For windstorm losses the policy carries a deductible of 5% of the total insured value of the damaged building(s), including contents, subject to a minimum of \$250,000 and a maximum of \$40,000,000 per occurrence. A \$1,000,000 deductible applies to most other perils. The current limit of the policy is \$200,000,000 per occurrence.

The Department continues to carry commercial insurance for all other risks of loss. Settled claims resulting from these risks have not exceeded commercial insurance coverage in any of the past three fiscal years.

## 11. CONTRIBUTIONS

Contributions during fiscal years 2017 and 2016 are presented as follows (in thousands):

	2017	2016
Contributed Facilities:		
Developers	\$35,109	\$53,611

## 12. RELATED PARTY TRANSACTIONS

The Department provides water and wastewater services to other County departments as part of the normal course of business, based on regular retail rates. The Department also provides billing services to other County departments. The County provides various services to the Department which are charged using direct and indirect cost allocation methods. The Department reimburses the County (General Fund) for certain administrative services. The following table presents a list of providers of services and respective payments for the fiscal years ended September 30, 2017 and 2016 (in thousands):

	2017	2016
General Fund	\$ 19,024	\$ 19,968
Other County Departments	59,605	7,987
Solid Waste	23,247	-
Regulatory	16,750	-
Information Technology	16,397	13,298
Internal Services Department	15,225	12,288

In addition to the payments, the Department had related payables of \$18.3 million at September 30, 2017. The Department also has receivables from other County departments amounting to \$11.2 million at September 30, 2017. The Department has every intention of paying the outstanding payables on a timely basis, and is confident it will collect the outstanding receivables. For year ended September 30, 2016, the Department had related payables of \$10.9 million. The Department also had receivables from other County departments amounting to \$11.4 million.

The Department has also entered other transactions with various County entities. These transactions arise from the normal course of business and in connection with the management of ongoing projects.

## 13. COMMITMENTS AND CONTINGENCIES

### CONSTRUCTION

For fiscal years ended September 30, 2017 and 2016, the Department had contractual commitments of \$489.2 million and \$433.2 million, respectively.

### LEGAL CONTINGENCIES

The County is a defendant in various actions brought by parties in the normal course of business of the Department. Based on consultation with the County Attorney's Office, it is the opinion of management that the ultimate resolution of these suits would not materially affect the financial position of the Department or its ability to conduct its business.

### FEDERAL AND STATE GRANTS

Federal and state grant awards are audited under the provisions of the Single Audit Act to determine that the Department has complied with the terms and conditions of the grant awards. Federal and state grants received are also subject to audit by the grantor agency. It is management's opinion that no material liabilities will result from any such audits.



# Notes to Financial Statements

## *REBATABLE ARBITRAGE EARNINGS*

Federal tax law requires that arbitrage interest earnings be remitted to the federal government, unless the local government qualifies for an exemption. As of September 30, 2017, and 2016, the Department had no obligation to rebate and in 2017, the Department did not record any obligation of interest earned on bond proceeds invested in taxable securities in excess of interest costs. These arbitrage rebates are payable five years from the date of bond issuance and each five years thereafter. The amount of the obligation, if any, will be determined based on actual interest earned.

## *SETTLEMENT AGREEMENTS AND CONSENT DECREES*

In 1993, the Department entered into a Settlement Agreement with the Florida Department of Environmental Protection (FDEP) resulting in very limited restriction on new sewer construction in certain areas of the County until adequate capacity became available in the wastewater system. Subsequently, in 1994 and 1995, two consent decrees, the First Partial Consent Decree (FPCD) and the Second and Final Partial Consent Decree (SFPCD), were entered into with the United States of America whereby the Department accelerated its improvement program of the wastewater system. All requirements of the Settlement Agreement were satisfied and the Agreement was closed by FDEP on September 1, 2011.

On May 21, 2013, the Board of County Commissioners approved a Resolution authorizing execution of a new Consent Decree between Miami-Dade County, the United States of America, the State of Florida and Florida Department of Environmental Protection (FDEP). It was lodged with the Clerk of the Court for the U.S. District Court for the Southern District of Florida on June 6, 2013, and became effective on December 6, 2013. The new Consent Decree was subsequently approved by The Court; the date of entry is recorded as April 9, 2014. Upon the Date of Entry, the previous FPCD and SFPCD were terminated with the Department having maintained compliance with all the provision, incurring no penalties. The terms and conditions of the new Consent Decree are intended to replace and supersede the terms and provisions of the FPCD and SFPCD, and recognize that appropriate modifications and updates are warranted due to the fact that conditions within and circumstances surrounding the Miami-Dade's Wastewater Collection and Transmission System (WCTS) have changed since entry of the FPCD and SFPCD in the middle of the 1990s. The Department is in compliance with the provisions of the new Consent Decree.

## **14. POSTEMPLOYMENT BENEFITS OTHER THAN PENSIONS**

### *PLAN DESCRIPTION*

Miami-Dade County administers a single-employer defined benefit healthcare plan (the Plan) that provides postemployment medical and dental coverage to retirees as well as their eligible spouses and dependents. Benefits are provided through the County's group health insurance plan, which covers both active and retired members. Benefits are established and may be amended by the Miami-Dade County Board of County Commissioners (BCC), whose powers derive from F.S. 125.01(3)(a). The Plan does not issue a publicly available financial report.

To be eligible to receive retiree medical and dental benefits, participants must be eligible for retirement benefits under the Florida Retirement System (FRS) or the Public Health Trust of Miami-Dade County, Florida, Defined Benefit Retirement Plan and pay required contributions. Refer to note 9, Pension Plan, for a description of eligibility requirements.

The medical plans offered provide hospital, medical and pharmacy coverage. Pre-65 retirees are able to select from four medical plans as follows:

- AvMed POS
- AvMed HMO High
- AvMed HMO Select
- Jackson First HMO

Post-65 retirees are able to select from three medical plans, as follows. The County only contributes to post-65 retirees electing an AvMed Medicare Supplement Plan.

- AvMed Medicare Supplement Low Option with prescription drug coverage
- AvMed Medicare Supplement High Option with prescription drug coverage
- AvMed Medicare Supplement High Option without prescription drug coverage

# Notes to Financial Statements

## FUNDING POLICY

The County contributes to both the pre-65 and post-65 retiree medical coverage. Medical contributions vary based on plan and tier. Retirees pay the full cost of dental coverage. The postretirement medical is currently funded on a pay-as-you go basis. Contributions are required for both retiree and dependent coverage. Retirees contribute a portion of the full active premium equivalent rates for health coverage. The County subsidy is assumed to remain flat.

The County's contribution is the actual pay-as-you-go postemployment benefit payments less participant contributions. No assets have been segregated and restricted to provide postretirement benefits. For fiscal years 2017 and 2016, the Department contributed \$1.9 million and \$2.1 million to the plan, respectively.

## ANNUAL OPEB COST AND NET OPEB OBLIGATION

The Department's annual other postemployment benefit (OPEB) cost (expense) is calculated based on the *annual required contribution of the employer (ARC)*, an amount actuarially determined in accordance with the parameters of GASB Statement No. 45. The ARC represents a level of funding that, if paid on an ongoing basis, is projected to cover normal cost each year and to amortize any unfunded actuarial liabilities (or funding excess) over a period not to exceed thirty years.

The Department's annual OPEB cost for fiscal years 2017 and 2016 were as follows (dollar amounts in thousands):

	2017	2016
Annual required contribution	\$2,734	\$2,640
Interest on OPEB obligation	239	220
Adjustment of annual required contribution	229	269
Annual OPEB Cost	2,744	2,591
Contributions made	1,968	2,103
Increase in net OPEB obligation	776	488
Net OPEB obligation – beginning of year	5,980	5,492
Net OPEB obligation – end of year	\$6,756	\$5,980

The Department's annual OPEB cost, the percentage of annual cost contributed to the plan, and the net OPEB obligation for fiscal years 2017 and 2016 were as follows (dollars in thousands):

	2017	2016
Annual OPEB cost	\$2,744	\$2,591
Percentage of Annual OPEB Cost Contributed	71.7%	81.1%
Net OPEB Obligation	\$6,756	\$5,980

## FUNDED STATUS AND FUNDING PROGRESS

The schedule below shows the balance of the County's actuarial accrued liability (AAL), all of which was unfunded as of September 30, 2017 and 2016. An estimated 9% of this liability can be attributed to the Department (dollar amounts in thousands).

	2017	2016
Actuarial Valuation Date	10/1/2016	10/1/2015
Actuarial Value of Assets (a)	-	-
Actuarial Accrued Liability (AAL) (b)	\$373,487	\$375,536
Unfunded AAL (UAAL) (b-a)	\$373,487	\$375,536
Funded Ratio (a/b)	0%	0%
Estimated Covered Payroll (c)	\$1,526,403	\$1,526,403
UAAL as % of Covered Payroll ([b-a]/c)	25%	25%





# Notes to Financial Statements

Actuarial valuations involve estimates of the value of reported amounts and assumptions about the probability of events in the future. Amounts determined regarding the funded status of the Plan and the annual required contributions by the County are subject to continual revision as actual results are compared to past expectations and new estimates are made about the future. The required schedule of funding progress, presented as required supplementary information, provides multi-year trend information that shows whether the actuarial value of Plan assets is increasing or decreasing over time relative to the actuarial accrued liability for benefits.

## ACTUARIAL METHODS AND ASSUMPTION

Projections of benefits are based on the substantive plan (the Plan as understood by the employer and plan members) and include the types of benefits in force at the valuation date and the pattern of sharing benefit costs between the County and the Plan member to that point. Actuarial calculations reflect a long-term perspective and employ methods and assumptions that are designed to reduce short-term volatility in actuarial accrued liabilities and the actuarial value of assets.

The actuarial cost method used in the valuation to determine the Actuarial Accrued Liability (AAL) and the Actuarial Required Contribution (ARC) was the Projected Unit Credit Method with service prorated. Under this method, the total present value of benefits is determined by projecting the benefit to be paid after the expected retirement date (or other event) and discounting those amounts to the valuation date. The normal cost is computed by dividing the total present value of benefits by the participant's total service (actual plus expected service) at retirement. The AAL under this method represents the total present value of benefits multiplied by the ratio of the participant's actual service to date and divided by expected service at retirement. The AAL for participants currently receiving payments and deferred vested participants is calculated as the actuarial present value of future benefits expected to be paid. No normal cost for these participants is payable. The AAL and normal costs were calculated at measurement date, which is the beginning of the applicable fiscal year using standard actuarial techniques.

The following summarizes other significant methods and assumptions used in valuing the AAL and benefits under the plan.

Actual valuation date	10/1/2016	10/1/2015
	Level	Level
Amortization method	percentage	percentage
	of payroll,	of payroll,
Remaining amortization period	21 years	22 years
Actuarial Assumptions:		
Discount rate	4.00%	4.00%
Payroll growth assumption	3.00%	3.00%
Inflation rate	3.50%	3.50%
Health care trend rates	8% initial to	8% initial to
	5% ultimate	5% ultimate
Mortality table	RP 2014	RP 2014

Further, the participation assumption used in the valuation (the assumed percentage of future retirees that participate and enroll in the health plan) is 20% for those prior to age 55 (50 if special risk) and 60% until age 65. Once reaching Medicare eligibility, the participation rate is assumed to be 20%.

The valuation assumes that the County will continue to fund the liability on a pay-as-you-go basis and that the County's per-capita contribution for retiree benefits will remain flat. As a result, the retiree contributions will be increased to the extent necessary so that they are sufficient to provide for the difference between the gross costs and the fixed County contributions.

## 15. SUBSEQUENT EVENTS

On September 28, 2017, the Board of County Commissioners adopted a County Budget Ordinance Number 17-65 authorizing a modification to the Department's retail tiered-based structure that will generate enough revenues to support costs and to minimize the impact to the retail water and sewer user. Over the last eight years, the average water usage has decreased due to proactive conservation and low flow water fixtures, this modification will help to

## Notes to Financial Statements

stabilize revenues that support fixed-costs. The median monthly bill of the residential customer using 5,236 gallons (7 ccf) per month will be \$42.54 or \$7.44 higher from the current estimated bill of \$35.10. The FY 2017-18 Adopted Budget also includes the addition of a new rate category for mixed-use buildings with one meter serving both residential and non-residential areas. In addition to changes to retail customers rate schedules, the County Budget Ordinance increased the water wholesale rate by \$0.10 per thousand gallons from \$1.7341 to \$1.8341, and the wastewater wholesale rate by \$0.146 per thousand gallons from \$2.944 to \$3.0937. The County Ordinance also authorized adjustments to other miscellaneous fees and charges. All changes will be effective October 9, 2017.

On December 7, 2017, the Department issued the Water and Sewer System Revenue Bonds, Series 2017A and the Water and Sewer System Revenue Refunding Bonds, Series 2017B for \$381.3 million and \$548.0 million, respectively. The Series 2017A Bonds will refund all outstanding Commercial Paper Notes - Series A-1 and Series B-1, make a deposit to the Reserve Account and pay the costs of issuance of the Series 2017A Bonds. The Series 2017B Bonds will refund \$567.6 million principal outstanding for the Miami-Dade County, Florida Water and Sewer System Revenue Bonds, Series 2010 maturing October 1, 2021 and pay the costs of issuance of the Series 2017B Bonds.





# Required Supplementary Information

## SCHEDULE OF FUNDING PROGRESS

Postemployment Healthcare Plan

Miami-Dade County\*

(dollar amount in thousands)

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (UAAL) (b-a)	Funded Ratio (a/b)	Estimated Covered Payroll (c)	UAAL as % of Covered Payroll ([b-a]/c)
10/1/2016	0	\$373,487	\$373,487	0%	\$1,526,403	25%
10/1/2015	0	375,536	\$375,536	0%	1,526,403	25%
10/1/2015	0	332,637	\$332,637	0%	1,430,604	23%
10/1/2013	0	330,042	330,042	0%	1,430,604	23%
10/1/2013	0	362,669	362,669	0%	1,447,127	25%
10/1/2011	0	357,006	357,006	0%	1,661,941	21%
10/1/2010	0	297,218	297,218	0%	1,620,593	18%

\* This schedule shows the balance of the County's actuarial accrued liability (AAL). An estimated 9% of this liability can be attributed to the Department.



# Required Supplementary Information

**MIAMI-DADE WATER & SEWER DEPARTMENT  
REQUIRED SUPPLEMENTARY INFORMATION  
SCHEDULE OF THE DEPARTMENT'S PROPORTIONATE SHARE  
OF THE NET PENSION LIABILITY  
FLORIDA RETIREMENT SYSTEM PENSION PLAN  
(dollars in thousands)**

<b>JUNE 30th,</b>	<b>2017</b>	<b>2016</b>	<b>2015</b>	<b>2014</b>
Department's proportion of the County's FRS net pension liability	5.29%	5.65%	5.93%	5.93%
Department's proportionate share of the County's FRS net pension liability	\$ 121,477	\$ 111,748	\$ 56,648	\$ 27,104
Department's covered employee payroll	\$ 168,335	\$ 168,798	\$ 131,903	\$ 126,610
Department's proportionate share of the County's FRS net pension liability as a percentage of its covered employee payroll	72.16%	66.20%	42.95%	21.41%
FRS Plan fiduciary net position as a percentage of the total pension liability	84%	85%	92%	96%

**MIAMI-DADE WATER & SEWER DEPARTMENT  
REQUIRED SUPPLEMENTARY INFORMATION  
SCHEDULE OF THE DEPARTMENT'S CONTRIBUTIONS-  
FLORIDA RETIREMENT SYSTEM PENSION PLAN  
(dollars in thousands)**

<b>SEPTEMBER 30th,</b>	<b>2017</b>	<b>2016</b>	<b>2015</b>	<b>2014</b>
Contractually required FRS contribution	\$ 10,691	\$ 10,534	\$ 10,693	\$ 9,730
FRS contribution in relation to the contractually required contribution	10,691	10,534	10,693	9,730
FRS contribution deficiency (excess)	\$ -	\$ -	\$ -	\$ -
Department's covered payroll	\$ 169,397	\$ 174,697	\$ 141,267	\$ 126,719
FRS contribution as a percentage of covered employee payroll	6.31%	6.03%	7.57%	7.68%

Note: The schedules presented above illustrate the requirements of GASB Statement No. 68. However, until a full 10-year trend is compiled, information for those years for which information is available will be presented.



# Required Supplementary Information

**MIAMI-DADE WATER & SEWER DEPARTMENT  
REQUIRED SUPPLEMENTARY INFORMATION  
SCHEDULE OF THE DEPARTMENT'S PROPORTIONATE SHARE  
OF THE NET PENSION LIABILITY  
HEALTH INSURANCE SUBSIDY PENSION PLAN  
(dollars in thousands)**

<b>JUNE 30th,</b>	<b>2017</b>	<b>2016</b>	<b>2015</b>	<b>2014</b>
Department's proportion of the County's HIS net pension liability	5.29%	5.65%	5.93%	5.93%
Department's proportionate share of the County's HIS net pension liability	\$ 35,033	\$ 42,010	\$ 37,204	\$ 33,960
Department's covered employee payroll	\$ 134,720	\$ 134,855	\$ 164,213	\$ 156,448
Department's proportionate share of the County's HIS net pension liability as a percentage of its covered employee payroll	26.00%	31.15%	22.66%	21.71%
HIS Plan fiduciary net position as a percentage of the total pension liability	0.00%	0.97%	0.50%	0.99%

**MIAMI-DADE WATER & SEWER DEPARTMENT  
REQUIRED SUPPLEMENTARY INFORMATION  
SCHEDULE OF THE DEPARTMENT'S CONTRIBUTIONS-  
HEALTH INSURANCE SUBSIDY PENSION PLAN  
(dollars in thousands)**

<b>SEPTEMBER 30th,</b>	<b>2017</b>	<b>2016</b>	<b>2015</b>	<b>2014</b>
Contractually required HIS contribution	\$ 1,734	\$ 1,770	\$ 1,394	\$ 1,244
HIS contribution in relation to the contractually required contribution	1,734	1,770	1,394	1,244
HIS contribution deficiency (excess)	\$ -	\$ -	\$ -	\$ -
Department's covered payroll	\$ 135,685	\$ 139,403	\$ 162,174	\$ 156,889
HIS contribution as a percentage of covered employee payroll	1.28%	1.27%	0.86%	0.79%

Note: The schedules presented above illustrate the requirements of GASB Statement No. 68. However, until a full 10-year trend is compiled, information for those years for which information is available will be presented.

## Supplementary Financial Data

Bond Ordinance 93-134 requires the Department to establish restricted accounts to be used in accounting for proceeds and collateral pledged as a result of the debt. In many cases, the bond ordinance refers to the restricted accounts as “funds”. Such accounts are not “funds” as defined by *NCGA Statement 1: Governmental Accounting and Financial Reporting Principles* and, therefore, are not funds for financial reporting purposes.

Similarly, the Water and Wastewater Systems do not meet the above-referenced definition and, therefore, combining statements are not presented. The following system schedules are furnished solely as supplementary information and are not required by GAAP.



# Water System

## SCHEDULE OF NET POSITION

September 30,	<u>2017</u>	<u>2016</u>
	(In thousands)	
<b>ASSETS</b>		
<i>CURRENT ASSETS:</i>		
Cash and cash equivalents	\$ 8,070	\$ 11,732
Investments	45,487	36,408
Accounts Receivable (net of allowance for uncollectible accounts of \$11.1 million and \$9.8 million, respectively)	66,145	55,022
Inventory of materials and supplies	16,199	16,616
Other current assets	3,841	2,890
Restricted cash and cash equivalents	54,760	40,188
Total Current Assets	<u>194,502</u>	<u>162,856</u>
<i>NONCURRENT RESTRICTED ASSETS:</i>		
Cash and cash equivalents	43,321	93,481
Investment derivative instrument	15,889	22,615
Investments	156,341	57,968
Long-term receivable - General Fund	10,000	10,000
Grants receivable	206	74
Total Restricted Assets	<u>225,757</u>	<u>184,138</u>
<i>OTHER ASSETS:</i>		
Bond Insurance	837	952
Other charges, net	5,164	6,504
Total Other Assets	<u>6,001</u>	<u>7,456</u>
<i>CAPITAL ASSETS:</i>		
Land	23,316	23,316
Structures and Improvements	1,960,058	1,954,975
Equipment	367,328	353,078
Utility plant in service before depreciation	2,350,702	2,331,369
Less accumulated depreciation	(1,075,502)	(1,029,916)
Net utility plant in service	1,275,200	1,301,453
Construction work in progress	254,250	185,370
Total Capital Assets	<u>1,529,450</u>	<u>1,486,823</u>
Total Noncurrent Assets	<u>1,761,208</u>	<u>1,678,417</u>
Total Assets	<u>1,955,710</u>	<u>1,841,273</u>
<i>DEFERRED OUTFLOWS OF RESOURCES:</i>		
Loss on refundings	14,831	15,871
Outflow related to pension	29,195	25,826
Total Deferred Outflows of Resources	<u>44,026</u>	<u>41,697</u>
Total Assets and Deferred Outflows of Resources	<u>\$ 1,999,736</u>	<u>\$ 1,882,970</u>

(Continued)

# Water System

## SCHEDULE OF NET POSITION

(Continued)	September 30,	2017	2016
		(In thousands)	
<b>LIABILITIES</b>			
<i>CURRENT LIABILITIES (PAYABLE FROM UNRESTRICTED CURRENT ASSETS):</i>			
Accounts payable and accrued expenses		\$ 26,674	\$ 19,274
Customer and developer deposits		12,860	11,589
Current portion of long-term debt		2,480	1,997
Liability for compensated absences		2,681	2,770
Other liabilities		831	1,582
Total Current Liabilities (payable from unrestricted current assets)		<u>45,526</u>	<u>37,212</u>
<i>CURRENT LIABILITIES (PAYABLE FROM RESTRICTED CURRENT ASSETS):</i>			
Accounts payable and accrued expenses		15,702	8,583
Retainage payable		3,531	3,541
Current portion of long-term debt		13,606	12,845
Accrued interest payable		19,359	14,438
Liability for self insurance		948	781
Total Current Liabilities (payable from restricted current assets)		<u>53,146</u>	<u>40,188</u>
Total Current Liabilities		<u>98,672</u>	<u>77,400</u>
<i>NONCURRENT LIABILITIES:</i>			
Revenue bonds payable, net		475,520	489,864
State loan obligations, net		22,219	14,415
Commercial Paper		75,000	20,000
Liability for self-insurance		997	2,026
Liability for compensated absences		12,879	12,609
Liability for post-employment benefits		6,756	5,980
Net pension liability		75,122	73,884
Total Noncurrent Liabilities		<u>668,493</u>	<u>618,778</u>
Total Liabilities		<u>767,165</u>	<u>696,178</u>
<i>DEFERRED INFLOWS OF RESOURCES:</i>			
Inflow related to pension		5,444	4,000
Total Deferred Inflows of Resources		<u>5,444</u>	<u>4,000</u>
Total Liabilities and Deferred Inflows of Resources		<u>772,609</u>	<u>700,178</u>
<b>NET POSITION</b>			
Net investment in capital assets		975,646	965,055
Restricted for:			
Capital projects		87,865	49,887
Debt service		23,781	30,228
Unrestricted		139,835	137,622
Total Net Position		<u>1,227,127</u>	<u>1,182,792</u>
Total Liabilities, Deferred Inflows of Resources and Net Position		<u>\$ 1,999,736</u>	<u>\$ 1,882,970</u>



# Water System

## SCHEDULE OF REVENUES, EXPENSES AND CHANGES IN NET POSITION

For the fiscal years ended September 30,	<u>2017</u>	<u>2016</u>
	(In thousands)	
<i>OPERATING REVENUES:</i>		
Retail	\$ 265,636	\$ 247,088
Wholesale	34,916	28,572
Other Revenues	15,493	15,383
Total operating revenues	<u>316,045</u>	<u>291,043</u>
<i>OPERATING AND MAINTENANCE EXPENSES:</i>		
Source of supply	14,193	14,284
Power and pumping	1,976	1,982
Treatment	60,387	68,272
Transmission and distribution	31,228	30,554
Customer accounting	5,389	4,093
Customer service	13,677	12,766
General and administrative	39,683	37,983
Total operating and maintenance expenses	<u>166,533</u>	<u>169,934</u>
Operating income before depreciation	149,512	121,109
<i>DEPRECIATION EXPENSE</i>	<u>74,142</u>	<u>72,180</u>
Operating income	75,370	48,929
<i>NON-OPERATING REVENUES (EXPENSES):</i>		
Investment income (Loss)	(5,178)	(2,650)
Interest expense	(17,434)	(16,290)
Amortization of insurance costs	(1,478)	(1,470)
Customer connection fees	6,483	7,615
Other revenues	(878)	7,381
Other expenses	<u>(1,662)</u>	<u>(1,683)</u>
Income before contributions	55,223	41,832
Capital contributions	21,632	28,860
Transfer (to) Wastewater System	<u>(32,520)</u>	<u>(128,373)</u>
Increase (Decrease) in net position	44,335	(57,681)
Net position at beginning of year	<u>1,182,792</u>	<u>1,240,473</u>
Net position at end of year	<u>\$ 1,227,127</u>	<u>\$ 1,182,792</u>

# Water System

## SCHEDULE OF CASH FLOWS

For the fiscal years ended September 30,

	2017	2016
	(In thousands)	
<i>CASH FLOWS FROM OPERATING ACTIVITIES:</i>		
Cash received from customers	\$ 310,327	\$ 304,445
Cash paid to suppliers for goods and services	(70,044)	(81,408)
Cash paid to employees for services	(91,376)	(85,112)
Transfer from Wastewater System	(32,520)	(128,373)
Net cash provided by operating activities	<u>116,387</u>	<u>9,552</u>
<i>CASH FLOWS FROM NON-CAPITAL FINANCING ACTIVITIES:</i>		
Loan repayment received from County's General Fund	-	5,000
Net cash provided by non-capital financing activities	<u>-</u>	<u>5,000</u>
<i>CASH FLOWS FROM CAPITAL AND RELATED FINANCING ACTIVITIES:</i>		
Proceeds from bond issues, loan agreements and notes	66,112	20,000
Principal payments - bond, loans and notes	(14,842)	(14,200)
Bond premium	(438)	(316)
Interest paid	(12,536)	(17,658)
Acquisition and construction of capital assets	(88,029)	(94,900)
Net cash (used) by capital and related financing activities	<u>(49,733)</u>	<u>(107,074)</u>
<i>CASH FLOWS FROM INVESTING ACTIVITIES:</i>		
Purchase of investment securities	(122,158)	(196,224)
Proceeds from sale and maturity of investment securities	(159,107)	378,459
Interest on investments	175,361	(52,212)
Net cash provided (used) by investing activities	<u>(105,904)</u>	<u>130,023</u>
Net increase (decrease) in cash and cash equivalents	(39,250)	37,501
Cash and cash equivalents at beginning of year	<u>145,401</u>	<u>107,900</u>
Cash and cash equivalents at end of year	<u>\$ 106,151</u>	<u>\$ 145,401</u>

(Continued)





# Water System

## SCHEDULE OF CASH FLOWS

(Continued)	For the fiscal years ended September 30,	<u>2017</u>	<u>2016</u>
		(In thousands)	
<i>RECONCILIATION OF OPERATING INCOME TO NET CASH PROVIDED BY OPERATING ACTIVITIES:</i>			
Operating income	\$	75,370	\$ 48,929
Adjustments to reconcile operating income to net cash provided by operating activities:			
Depreciation		74,142	72,180
Provision for uncollectible accounts		1,254	552
Other revenues			-
Non-operating other, net		3,942	9,230
Transfer to/from reserves		(32,520)	(128,373)
(Increase) decrease in assets and deferred outflows:			
Accounts Receivable		(12,378)	(2,671)
Inventory of materials and supplies		418	1,014
Other current assets		(951)	18
Contracts receivable		132	74
Other charges		(5,270)	1,340
Deferred outflows related to pension		(3,369)	(17,950)
Increase (decrease) in liabilities and deferred inflows:			
Accounts payable and accrued expenses		7,400	(1,673)
Customer and developer deposits		1,270	1,154
Accrued interest payable		4,922	2,592
Liability for compensated absences		180	(6)
Other liabilities		(751)	1,232
Liability for other post-employment benefits		776	488
Liability for self-insurance		(862)	828
Net pension liability		1,238	26,957
Deferred inflows related to pension		1,444	(6,363)
Net cash provided by operating activities	\$	<u>116,387</u>	\$ <u>9,552</u>

### *NONCASH INVESTING, CAPITAL AND FINANCING ACTIVITIES*

Property, plant and equipment contributions were received in amounts of \$21.6 million in fiscal year 2017.

The change in the fair value of investments was a \$0.07 million decrease in fiscal year 2017.

The change in the fair value of swaps was a \$6.7 million decrease in fiscal year 2017.

### *RECONCILIATION OF CASH AND CASH EQUIVALENTS AT END OF YEAR*

Unrestricted current cash and cash equivalents	\$	8,070	\$ 11,732
Restricted current cash and cash equivalents		54,760	40,188
Restricted noncurrent cash and cash equivalents		43,321	93,481
Total cash and cash equivalents at end of year	\$	<u>106,151</u>	\$ <u>145,401</u>

# Water System

## SCHEDULE OF OPERATING AND MAINTENANCE EXPENSES

Budget and Actual  
For the fiscal year ended September 30, 2017  
(In thousands)

	<u>Budget</u>	<u>Actuals</u>	<u>Variance under (over)</u>
Source of Supply	\$ 11,948	\$ 14,193	\$ (2,245)
Power and pumping	1,674	1,976	(302)
Treatment	71,961	60,387	11,574
Transmission and distribution	32,590	31,228	1,362
Customer accounting	3,932	5,389	(1,457)
Customer service	16,034	13,677	2,357
General and administrative	47,546	39,683	7,863
Totals	<u>\$ 185,685</u>	<u>\$ 166,533</u>	<u>\$ 19,152</u>



# Wastewater System

## SCHEDULE OF NET POSITION

September 30,	<u>2017</u>	<u>2016</u>
	(In thousands)	
<b>ASSETS</b>		
<i>CURRENT ASSETS:</i>		
Cash and cash equivalents	\$ 676	\$ 43,387
Investments	58,231	11,480
Accounts Receivable	-	
(net of allowance for uncollectible accounts of \$9.1 million and \$7.9 million, respectively)	96,456	80,164
Inventory of materials and supplies	23,080	21,907
Restricted cash and cash equivalents	157,478	141,794
Total Current Assets	<u>335,921</u>	<u>298,732</u>
<i>NONCURRENT RESTRICTED ASSETS:</i>		
Cash and cash equivalents	-	26,982
Investment derivative instrument	15,889	22,615
Investments	241,907	184,683
Contracts receivable	-	17
Total Restricted Assets	<u>257,796</u>	<u>234,297</u>
<i>OTHER ASSETS:</i>		
Bond Insurance	3,313	3,824
Other charges, net	22,784	28,926
Total Other Assets	<u>26,097</u>	<u>32,750</u>
<i>CAPITAL ASSETS:</i>		
Land	51,839	48,252
Structures and Improvements	3,113,419	3,071,448
Equipment	837,738	829,824
Utility plant in service before depreciation	4,002,996	3,949,524
Less accumulated depreciation	(2,166,911)	(2,077,778)
Net utility plant in service	1,836,085	1,871,746
Construction work in progress	874,297	608,357
Total Capital Assets	<u>2,710,382</u>	<u>2,480,103</u>
Total Noncurrent Assets	<u>2,994,275</u>	<u>2,747,150</u>
Total Assets	<u>3,330,196</u>	<u>3,045,882</u>
<i>DEFERRED OUTFLOWS OF RESOURCES:</i>		
Loss on refundings	67,779	72,416
Outflow related to pension	33,932	29,814
Total Deferred Outflows of Resources	<u>101,711</u>	<u>102,230</u>
Total Assets and Deferred Outflows of Resources	<u>\$ 3,431,907</u>	<u>\$ 3,148,112</u>

(Continued)

# Wastewater System

## SCHEDULE OF NET POSITION

(Continued)	September 30,	2017	2016
		(In thousands)	
<b>LIABILITIES</b>			
<i>CURRENT LIABILITIES (PAYABLE FROM UNRESTRICTED CURRENT ASSETS):</i>			
Accounts payable and accrued expenses	\$	42,915	\$ 26,899
Customer and developer deposits		6,000	6,779
Current portion of long-term debt		5,327	5,854
Liability for compensated absences		7,380	7,428
Other liabilities		23	799
Total Current Liabilities (payable from unrestricted current assets)		<u>61,645</u>	<u>47,759</u>
<i>CURRENT LIABILITIES (PAYABLE FROM RESTRICTED CURRENT ASSETS):</i>			
Accounts payable and accrued expenses		52,791	39,167
Retainage payable		16,034	10,077
Current portion of long-term debt		60,120	57,667
Accrued interest payable		28,446	34,883
Total Current Liabilities (payable from restricted current assets)		<u>157,391</u>	<u>141,794</u>
Total Current Liabilities		<u>219,036</u>	<u>189,553</u>
<i>NONCURRENT LIABILITIES:</i>			
Revenue bonds payable, net		1,435,838	1,498,132
State loan obligations, net		130,687	134,229
Commercial Paper		300,000	80,000
Liability for compensated absences		19,254	18,912
Net pension liability		81,388	79,874
Total noncurrent liabilities		<u>1,967,167</u>	<u>1,811,147</u>
Total liabilities		<u>2,186,203</u>	<u>2,000,700</u>
<i>DEFERRED INFLOWS OF RESOURCES:</i>			
Inflow related to pension		4,351	2,586
Total Deferred Inflows of Resources		<u>4,351</u>	<u>2,586</u>
Total Liabilities and Deferred Inflows of Resources		<u>2,190,554</u>	<u>2,003,286</u>
<b>NET POSITION</b>			
Net investment in capital assets		875,395	765,473
Restricted for:			
Capital projects		131,804	142,250
Debt service		113,090	107,892
Unrestricted		121,064	129,211
Total Net Position		<u>1,241,353</u>	<u>1,144,826</u>
Total Liabilities, Deferred Inflows of Resources and Net Position	\$	<u>3,431,907</u>	\$ 3,148,112



# Wastewater System

## SCHEDULE OF REVENUES, EXPENSES AND CHANGES IN NET POSITION

For the fiscal years ended September 30,	<u>2017</u>	<u>2016</u>
	(In thousands)	
<i>OPERATING REVENUES:</i>		
Retail	\$ 288,910	\$ 273,058
Wholesale	88,938	82,380
Other Revenues	13,439	13,301
Total operating revenues	<u>391,287</u>	<u>368,739</u>
<i>OPERATING AND MAINTENANCE EXPENSES:</i>		
Collection system	33,457	26,866
Pumping	42,543	39,549
Treatment	92,347	91,915
Customer accounting	4,348	3,349
Customer service	10,746	10,031
General and administrative	48,556	46,844
Total operating and maintenance expenses	<u>231,997</u>	<u>218,554</u>
Operating income before depreciation	159,290	150,185
<i>DEPRECIATION EXPENSE</i>	<u>113,779</u>	<u>112,244</u>
Operating Income	45,511	37,941
<i>NON-OPERATING REVENUES (EXPENSES):</i>		
Investment income (Loss)	(4,471)	(2,203)
Interest expense	(8,544)	(30,079)
Amortization of insurance costs	(5,271)	(6,660)
Customer connection fees	21,223	29,476
Other revenues	2,629	6,983
Other expenses	(547)	(599)
Income before contributions	50,530	34,859
Capital contributions	13,477	24,751
Transfer from Water System	32,520	128,373
Increase in net position	96,527	187,983
Net position at beginning of year	<u>1,144,826</u>	<u>956,843</u>
Net position at end of year	<u>\$ 1,241,353</u>	<u>\$ 1,144,826</u>

# Wastewater System

## SCHEDULE OF CASH FLOWS

For the fiscal years ended September 30,

	<u>2017</u>	<u>2016</u>
	(In thousands)	
<i>CASH FLOWS FROM OPERATING ACTIVITIES:</i>		
Cash received from customers	\$ 396,797	\$ 389,069
Cash paid to suppliers for goods and services	(91,930)	(104,643)
Cash paid to employees for services	(125,993)	(117,564)
Transfer to Wastewater System	32,520	128,373
Net cash provided by operating activities	<u>211,394</u>	<u>295,235</u>
<i>CASH FLOWS FROM CAPITAL AND RELATED FINANCING ACTIVITIES:</i>		
Proceeds from bond issues, loan agreements and notes	225,042	90,425
Principal payments - bond, loans and notes	(62,869)	(62,291)
Bond premium	(634)	(1,515)
Interest paid	(14,240)	(47,275)
Acquisition and construction of capital assets	(310,982)	(269,026)
Net cash (used) by capital and related financing activities	<u>(163,683)</u>	<u>(289,682)</u>
<i>CASH FLOWS FROM INVESTING ACTIVITIES:</i>		
Purchase of investment securities	(635,139)	(205,462)
Proceeds from sale and maturity of investment securities	634,301	201,102
Interest on investments	(100,882)	54,202
Net cash provided (used) by investing activities	<u>(101,720)</u>	<u>49,842</u>
Net increase (decrease) in cash and cash equivalents	(54,009)	55,395
Cash and cash equivalents at beginning of year	<u>212,163</u>	<u>156,768</u>
Cash and cash equivalents at end of year	<u>\$ 158,154</u>	<u>\$ 212,163</u>

(Continued)



# Wastewater System

## SCHEDULE OF CASH FLOWS

(Continued)	For the fiscal years ended September 30,	<u>2017</u>	<u>2016</u>
		(In thousands)	
<i>RECONCILIATION OF OPERATING INCOME TO NET CASH PROVIDED BY OPERATING ACTIVITIES:</i>			
Operating income	\$	45,511	\$ 37,941
Adjustments to reconcile operating income to net cash provided by operating activities:			
Depreciation		113,779	112,244
Provision for uncollectible accounts		1,099	567
Other revenues			-
Non-operating other, net		23,304	35,862
Transfer to/from reserves		32,520	122,162
(Increase) decrease in assets and deferred outflows:			
Accounts Receivable		(17,391)	(16,558)
Inventory of materials and supplies		(1,173)	(1,117)
Other current assets			0
Contracts receivable			17
Other charges		6,264	6,142
Deferred outflows related to pension		(4,118)	(21,939)
Increase (decrease) in liabilities and deferred inflows:			
Accounts payable and accrued expenses		16,016	(6,491)
Customer and developer deposits		(778)	427
Accrued interest payable		(6,437)	51
Liability for compensated absences		294	(9)
Other liabilities		(775)	764
Net pension liability		1,514	32,948
Deferred Inflows related to pension		1,765	(7,776)
Net cash provided by operating activities	\$	<u>211,394</u>	\$ <u>295,235</u>

### *NONCASH INVESTING, CAPITAL AND FINANCING ACTIVITIES*

Property, plant and equipment contributions were received in amounts of \$13.5 million in fiscal year 2017.

The change in the fair value of investments was a \$0.09 million decrease in fiscal year 2017.

The change in the fair value of swaps was a \$6.8 million decrease in fiscal year 2017.

### *RECONCILIATION OF CASH AND CASH EQUIVALENTS AT END OF YEAR*

Unrestricted current cash and cash equivalents	\$	676	\$ 43,387
Restricted current cash and cash equivalents		157,478	141,794
Restricted noncurrent cash and cash equivalents		-	26,982
Total cash and cash equivalents at end of year	\$	<u>158,154</u>	\$ <u>212,163</u>

# Wastewater System

## SCHEDULE OF OPERATING AND MAINTENANCE EXPENSES

Budget and Actual  
For the fiscal year ended September 30, 2017  
(In thousands)

	<u>Budget</u>	<u>Actuals</u>	<u>Variance under (over)</u>
Collection system	\$ 32,273	\$ 33,457	\$ (1,184)
Pumping	39,350	42,543	(3,193)
Treatment	99,095	92,347	6,748
Customer accounting	3,197	4,348	(1,151)
Customer service	12,096	10,746	1,350
General and administrative	58,132	48,556	9,576
Totals	<u>\$ 244,143</u>	<u>\$ 231,997</u>	<u>\$ 12,146</u>





Statistical Section



# Statistical Section

This part of the Department's comprehensive annual report details information as a context for understanding what the information in the financial statements, note disclosures, and required supplementary information says about the Department's overall financial health.

## Contents

### *Financial Trends*

These schedules, found on pages 67-70, contain trend information to help the reader understand how the Department's financial performance and well-being have changed over time.

### *Revenue Capacity*

These schedules, found on pages 71-73, contain information to help the reader assess the factors affecting the Department's ability to generate revenue.

### *Debt Capacity*

These schedules, found on pages 74-75, present information to help the reader assess the affordability of the Department's current levels of outstanding debt and the Department's ability to issue additional debt in the future.

### *Demographic and Economic Information*

These schedules, found on pages 76-82, offer demographic and economic indicators to help the reader understand the environment within which the Department's financial activities take place.

### *Operating and Capital Information*

These schedules, found on pages 83-85, contain service and infrastructure data to help the reader understand how the information in the Department's financial report related to the services the Department provides and the activities it performs.



# Net Position

**BY COMPONENTS** - LAST TEN FISCAL YEARS

(in thousands)	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
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*COMBINED WATER AND WASTEWATER SYSTEMS:*

Net investment in capital assets	\$1,851,041	\$1,730,528	\$1,590,653	\$1,542,930	\$1,474,197	\$1,567,455	\$1,530,096	\$1,535,755	\$1,590,038	\$1,396,153
Restricted	356,540	330,257	340,066	321,122	273,623	223,887	243,292	279,576	150,114	397,803
Unrestricted	260,899	266,833	266,597	355,635	449,515	431,933	413,233	379,683	436,651	345,543
<b>Total net position</b>	<b>\$2,468,480</b>	<b>\$2,327,618</b>	<b>\$2,197,316</b>	<b>\$2,219,687</b>	<b>\$2,197,335</b>	<b>\$2,223,275</b>	<b>\$2,186,621</b>	<b>\$2,195,014</b>	<b>\$2,176,803</b>	<b>\$2,139,499</b>

*WATER SYSTEM*

Net investment in capital assets	\$975,646	\$965,055	\$1,013,229	\$988,585	\$943,883	\$971,727	\$947,539	\$936,355	\$911,206	\$830,671
Restricted	111,646	80,115	80,841	93,302	96,841	73,822	84,993	110,491	50,571	140,103
Unrestricted	139,835	137,622	146,403	189,084	252,612	222,278	214,739	193,724	233,984	191,960
<b>Total net position</b>	<b>\$1,227,127</b>	<b>\$1,182,792</b>	<b>\$1,240,473</b>	<b>\$1,270,971</b>	<b>\$1,293,336</b>	<b>\$1,267,827</b>	<b>\$1,247,271</b>	<b>\$1,240,570</b>	<b>\$1,195,761</b>	<b>\$1,162,734</b>

*WASTEWATER SYSTEM*

Net investment in capital assets	\$875,395	\$765,473	\$577,424	\$554,345	\$530,314	\$595,728	\$582,557	\$599,400	\$678,832	\$565,482
Restricted	244,894	250,142	259,225	227,820	176,782	150,065	158,298	169,086	99,543	257,700
Unrestricted	121,064	129,211	120,194	166,551	196,903	209,655	198,495	185,958	202,667	153,583
<b>Total net position</b>	<b>\$1,241,353</b>	<b>\$1,144,826</b>	<b>\$956,843</b>	<b>\$948,716</b>	<b>\$903,999</b>	<b>\$955,448</b>	<b>\$939,350</b>	<b>\$954,444</b>	<b>\$981,042</b>	<b>\$976,765</b>

# Combined Water and Wastewater System

## SCHEDULE OF REVENUES AND EXPENSES - LAST TEN FISCAL YEARS

(in thousands)	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
<b>OPERATING REVENUES:</b>										
Retail	\$ 554,546	\$ 520,146	\$ 486,201	\$ 465,057	\$ 437,778	\$ 429,003	\$ 428,832	\$ 393,420	\$ 372,265	\$ 342,303
Wholesale	123,854	110,951	98,810	85,771	88,754	82,710	90,671	84,489	68,178	72,246
Other	28,932	28,685	28,305	28,022	21,876	24,589	26,157	40,486	38,293	22,927
Total operating revenues	707,332	659,782	613,316	578,850	548,408	536,302	545,660	518,395	478,736	437,476
<b>OPERATING AND MAINTENANCE EXPENSES:</b>										
Source of supply	14,193	14,284	10,931	10,788	10,874	10,705	13,558	12,354	14,208	12,006
Collection system	33,457	26,866	27,634	22,500	21,638	20,150	20,385	21,523	15,987	19,293
Pumping	44,519	41,532	39,384	37,355	36,508	35,883	32,892	31,919	32,611	32,790
Treatment	152,734	160,186	156,229	145,513	139,555	134,178	134,650	130,010	134,454	129,219
Transmission and distribution	31,228	30,554	30,892	28,844	27,882	27,423	27,929	28,459	25,428	26,528
Customer accounting and service	34,160	30,239	28,068	23,180	25,155	23,574	24,231	28,003	27,572	25,906
General and administrative	88,239	84,827	75,769	81,662	78,552	73,164	79,165	97,364	78,669	76,222
Total operating and maintenance expense	398,530	388,488	368,907	349,842	340,164	325,077	332,810	349,632	328,929	321,964
Operating income before depreciation	308,802	271,294	244,409	229,008	208,244	211,225	212,850	168,763	149,807	115,512
<b>DEPRECIATION EXPENSE</b>										
Operating income (loss)	187,921	184,424	188,909	183,557	177,570	163,315	159,158	160,469	152,428	154,881
	120,881	86,870	55,500	45,451	30,674	47,910	53,692	8,294	(2,621)	(39,369)
<b>NON-OPERATING REVENUES/EXPENSES:</b>										
Investment income (loss)	(9,649)	(4,853)	20,557	3,933	(18,351)	21,797	6,193	18,160	13,440	28,489
Interest expense	(25,978)	(46,369)	(75,728)	(89,678)	(78,538)	(85,478)	(85,511)	(71,229)	(63,787)	(66,320)
Other income	20,499	41,043	36,186	42,670	28,572	24,269	15,897	18,588	33,857	36,517
Income (loss) before contributions and transfers	105,753	76,691	36,515	2,376	(37,643)	8,498	(9,729)	(26,187)	(19,111)	(40,683)
Capital contributions	35,109	53,611	46,692	35,810	19,459	28,156	33,556	30,487	56,415	26,761
Transfers to County's General Fund	-	-	-	-	-	-	(32,220)	-	-	-
Increase (decrease) in net position	\$ 140,862	\$ 130,302	\$ 83,207	\$ 38,186	\$ (18,184)	\$ 36,654	\$ (8,393)	\$ 4,300	\$ 37,304	\$ (13,922)



# Water System

## SCHEDULE OF REVENUES AND EXPENSES - LAST TEN FISCAL YEARS

(in thousands)	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
<b>OPERATING REVENUES:</b>										
Retail	\$ 265,636	\$ 247,088	\$ 233,464	\$ 219,880	\$ 207,117	\$ 202,633	\$ 202,189	\$ 193,632	\$ 169,568	\$ 154,796
Wholesale	34,916	28,572	37,008	28,815	29,210	35,330	37,990	38,554	29,041	22,909
Other	15,493	15,383	14,966	14,908	11,985	13,167	13,517	12,936	27,102	12,839
Total operating revenues	316,045	291,043	285,438	263,603	248,312	251,130	253,696	245,122	225,711	190,544
<b>OPERATING AND MAINTENANCE EXPENSES:</b>										
Source of supply	14,193	14,284	10,931	10,788	10,874	10,705	13,558	12,354	14,208	12,006
Pumping	1,976	1,982	2,054	1,911	1,816	1,798	1,942	2,003	2,407	2,134
Treatment	60,387	68,272	63,921	58,741	60,188	59,811	62,138	61,967	64,457	61,317
Transmission and distribution	31,228	30,554	30,892	28,844	27,882	27,423	27,929	28,459	25,428	26,528
Customer accounting and service	19,066	16,859	15,651	13,025	13,908	12,841	13,325	15,602	15,325	14,337
General and administrative	39,683	37,983	34,078	36,711	35,292	32,936	35,644	43,860	35,380	34,864
Total operating and maintenance expenses	166,533	169,934	157,527	150,020	149,960	145,514	154,536	164,245	157,205	151,186
Operating income before depreciation	149,512	121,109	127,911	113,583	98,352	105,616	99,160	80,877	68,506	39,358
<b>DEPRECIATION EXPENSE</b>	74,142	72,180	66,642	65,456	69,581	61,158	61,122	62,604	59,028	60,859
Operating income (loss)	75,370	48,929	61,269	48,127	28,771	44,458	38,038	18,273	9,478	(21,501)
<b>NON-OPERATING REVENUES/(EXPENSES):</b>										
Investment income (loss)	(5,178)	(2,650)	10,127	1,769	(8,574)	10,980	3,061	8,383	6,713	12,273
Interest expense	(17,434)	(16,290)	(19,169)	(21,731)	(14,203)	(17,437)	(18,932)	(14,088)	(15,313)	(15,035)
Other income	2,463	11,843	9,812	13,090	6,461	10,024	8,602	8,374	19,491	12,997
Income (loss) before contributions and transfers	55,221	41,832	62,039	41,255	12,455	48,025	30,769	20,942	20,369	(11,266)
Capital contributions	21,632	28,860	27,918	21,370	11,490	15,749	24,108	18,245	28,896	14,518
Transfers to County's General Fund	-	-	-	-	-	-	(14,499)	-	-	-
Transfer (to) from Wastewater System	(32,520)	(128,373)	(67,666)	(80,939)	1,564	(43,218)	(33,677)	(1,333)	(16,238)	8,306
Increase (decrease) in net position	\$ 44,333	\$ (57,681)	\$ 22,291	\$ (18,314)	\$ 25,509	\$ 20,556	\$ 6,701	\$ 37,854	\$ 33,027	\$ 11,558

# Wastewater System

## SCHEDULE OF REVENUES AND EXPENSES - LAST TEN FISCAL YEARS

(in thousands)	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
<b>OPERATING REVENUES:</b>										
Retail	\$ 288,910	\$ 273,058	\$ 252,737	\$ 245,167	\$ 230,661	\$ 226,370	\$ 226,643	\$ 215,945	\$ 202,697	\$ 187,507
Wholesale	88,938	82,380	61,802	56,956	59,544	47,380	52,681	45,936	39,137	49,337
Other	13,439	13,301	13,339	13,114	9,891	11,422	12,640	11,392	11,191	10,088
Total operating revenues	391,287	368,739	327,878	315,237	300,096	285,172	291,964	273,273	253,025	246,932
<b>OPERATING AND MAINTENANCE EXPENSES:</b>										
Collection system	33,457	26,866	27,634	22,500	21,638	20,150	20,385	21,523	15,987	19,293
Pumping	42,543	39,549	37,330	35,444	34,692	34,085	30,950	29,916	30,204	30,656
Treatment	92,347	91,915	92,308	86,772	79,367	74,367	72,512	68,043	69,997	67,902
Customer accounting and service	15,094	13,380	12,417	10,155	11,247	10,733	10,906	12,401	12,247	11,569
General and administrative	48,556	46,844	41,691	44,951	43,260	40,228	43,521	53,504	43,289	41,358
Total operating and maintenance expenses	231,997	218,554	211,380	199,822	190,204	179,563	178,274	185,387	171,724	170,778
Operating income before depreciation	159,290	150,185	116,498	115,415	109,892	105,609	113,690	87,886	81,301	76,154
<b>DEPRECIATION EXPENSE</b>	113,779	112,244	122,267	118,101	107,989	102,157	98,036	97,865	93,400	94,022
Operating income (loss)	45,511	37,941	(5,769)	(2,686)	1,903	3,452	15,654	(9,979)	(12,099)	(17,868)
<b>NON-OPERATING REVENUES/(EXPENSES)</b>										
Investment income (loss)	(4,471)	(2,203)	10,430	2,164	(9,777)	10,817	3,132	9,777	6,727	16,216
Interest expense	(8,544)	(30,079)	(56,559)	(67,947)	(64,335)	(68,041)	(66,579)	(57,141)	(48,474)	(51,285)
Other income	18,034	29,200	26,374	29,580	22,111	14,245	7,295	10,214	14,366	23,520
Income (loss) before contributions and transfers	50,530	34,859	(25,524)	(38,889)	(50,098)	(39,527)	(40,498)	(40,129)	(39,480)	(29,417)
Capital contributions	13,477	24,751	18,774	14,440	7,969	12,407	9,448	12,242	27,519	12,243
Transfers to County's General Fund	-	-	-	-	-	-	(17,721)	-	-	-
Transfer (to) from Water System	32,520	128,373	67,666	80,939	(1,564)	43,218	33,677	1,333	16,238	(8,306)
Increase (decrease) in net position	\$ 96,527	\$ 187,983	\$ 60,916	\$ 56,490	\$ (43,693)	\$ 16,098	\$ (15,094)	\$ (26,554)	\$ 4,277	\$ (25,480)



# Water and Wastewater System Rates

LAST TEN FISCAL YEARS

	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
<i>WATER RATES:</i>										
Meter Size Rate										
5/8"	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
1"	12.38	11.42	10.77	10.16	9.41	9.41	9.41	8.96	8.00	8.61
1.5"	24.76	22.84	21.55	20.33	18.82	18.82	18.82	17.92	16.00	13.43
2"	39.60	36.53	34.46	32.51	30.10	30.10	30.10	28.67	25.60	28.73
3"	79.21	73.07	68.93	65.03	60.21	60.21	60.21	57.34	51.20	61.32
4"	123.76	114.17	107.71	101.61	94.08	94.08	94.08	89.60	80.00	95.77
6"	247.50	228.32	215.40	203.21	188.16	188.16	188.16	179.20	160.00	153.22
8"	396.02	365.33	344.65	325.14	301.06	301.06	301.06	286.72	256.00	268.16
10"	569.28	525.16	495.43	467.39	432.77	432.77	432.77	412.16	368.00	574.63
12"	1,064.30	981.83	926.25	873.82	809.09	809.09	809.09	770.56	688.00	1,085.41
14"	1,980.07	1,826.63	1,723.24	1,625.70	1,505.28	1,505.28	1,505.28	1,433.60	1,280.00	2,043.13
16"	2,722.61	2,511.63	2,369.46	2,235.34	2,069.76	2,069.76	2,069.76	1,971.20	1,760.00	3,830.87
Composite rate (revenues/flows)	4.09	3.85	3.66	3.46	2.99	2.93	2.95	2.75	2.57	2.38
<i>WASTEWATER RATES:</i>										
Base rate (per 1,000 gallons)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.25	3.25
Meter Size Rate										
5/8"	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	-
1"	12.53	11.60	10.94	10.32	9.56	9.56	9.56	9.10	8.13	-
1.5"	25.05	23.19	21.88	20.64	19.11	19.11	19.11	18.20	16.25	-
2"	40.08	37.11	35.01	33.03	30.58	30.58	30.58	29.12	26.00	-
3"	80.14	74.20	70.00	66.04	61.15	61.15	61.15	58.24	52.00	-
4"	125.22	115.94	109.38	103.19	95.55	95.55	95.55	91.00	81.25	-
6"	250.46	231.90	218.77	206.39	191.10	191.10	191.10	182.00	162.50	-
8"	400.72	371.03	350.03	330.22	305.76	305.76	305.76	291.20	260.00	-
10"	576.03	533.36	503.17	474.69	439.53	439.53	439.53	418.60	373.75	-
12"	1,076.93	997.16	940.72	887.47	821.73	821.73	821.73	782.60	698.75	-
14"	2,003.59	1,855.18	1,750.17	1,651.10	1,528.80	1,528.80	1,528.80	1,456.00	1,300.00	-
16"	2,754.95	2,550.88	2,406.49	2,270.27	2,102.10	2,102.10	2,102.10	2,002.00	1,787.50	-
Composite rate (revenues/flows)	5.74	5.51	5.16	4.98	4.69	4.64	4.67	4.38	4.08	3.78

Increases in Water and Wastewater rates must be approved by the Board of County Commissioners.

Beginning fiscal year 2009, base rate is no longer used for Wastewater; Meter size rate is now used for the two systems.

# Water Treatment

LAST TEN FISCAL YEARS

(millions of gallons)	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
<b>WATER PUMPED:</b>										
Water treatment plants:										
Alexander Orr, Jr.	66,190	65,968	62,566	60,183	58,666	59,805	60,191	59,969	57,025	57,257
John E. Preston	27,891	26,789	27,044	26,942	30,586	27,232	26,555	27,632	30,638	29,468
Hialeah	20,093	20,142	19,488	19,248	21,241	22,688	23,685	24,335	23,880	22,794
South Dade Water System	3,752	3,921	3,570	2,607	2,670	2,658	2,580	2,274	2,502	2,384
Purchase water	116	192	164	124	178	152	179	145	386	676
Total water pumped	118,042	117,013	112,832	109,104	113,341	112,535	113,190	114,355	114,431	112,579
<b>WATER SOLD:</b>										
Wholesale:										
Miami Beach	8,566	8,249	8,346	7,615	7,903	7,918	8,410	6,952	6,489	6,848
Hialeah	7,040	6,857	6,623	7,285	9,429	9,121	9,598	9,103	8,110	8,081
North Miami	2,313	1,538	2,096	1,693	1,655	1,374	1,331	1,175	1,502	2,123
Opa-Locka	894	993	950	895	876	876	887	788	845	909
Hialeah Gardens	742	768	694	638	576	591	693	654	695	694
Homestead <sup>(1)</sup>	668	684	520	188	151	40	-	-	-	-
Bal Harbor	487	506	503	407	494	430	486	455	466	447
North Bay Village	435	419	430	405	415	391	387	395	365	343
Medley	378	381	365	470	516	479	328	400	393	398
Bay Harbor Islands	319	291	328	318	309	310	302	317	329	358
Surfside	389	325	326	303	299	312	317	328	343	327
West Miami	344	319	251	278	236	292	275	293	290	266
Indian Creek Village	143	119	134	117	120	122	133	121	140	133
Virginia Gardens	80	84	82	91	95	93	91	98	100	63
North Miami Beach <sup>(2)</sup>	83	-	3	-	-	-	-	100	107	1,013
Miami Springs <sup>(3)</sup>	-	-	-	-	-	-	-	-	-	771
Total wholesale	22,881	21,533	21,651	20,703	23,074	22,349	23,238	21,179	20,174	22,774
Retail	64,968	64,108	63,783	63,539	63,386	63,169	62,937	64,430	66,086	65,147
Total water sold	87,849	85,641	85,434	84,242	86,460	85,518	86,175	85,609	86,260	87,921
Non-account water	30,193	31,373	27,398	24,862	26,881	27,017	27,015	28,746	28,171	24,658
Non-account water as a percentage of total water pumped	25.58%	26.81%	24.28%	22.79%	23.72%	24.01%	23.87%	25.14%	24.62%	21.90%
Unaccounted for water as a percentage of total water pumped	6.69%	10.10%	8.37%	5.67%	8.88%	3.02%	10.46%	8.27%	9.90%	3.70%

<sup>(1)</sup> Homestead usage of water is limited to an as needed basis. Their usage is not consistent to that of a wholesale customer.

<sup>(2)</sup> North Miami Beach constructed their own water plant and beginning fiscal year 2009, has not had the need to purchase water.

<sup>(3)</sup> Miami Springs water system was purchased by the Department and beginning fiscal year 2009, is no longer a wholesale customer.





# Wastewater Treatment

LAST TEN FISCAL YEARS

(millions of gallons)	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
<b>WASTEWATER PLANT FLOWS:</b>										
North District Plant	34,251	30,734	32,745	34,296	32,000	35,141	27,403	31,810	31,984	34,047
Central District Plant	40,000	46,432	40,662	44,044	43,696	45,014	37,653	41,654	45,095	41,987
South District Plant	38,207	38,115	33,413	37,382	36,274	41,472	33,036	33,997	32,241	33,163
Total wastewater plant flows	112,458	115,281	106,820	115,722	111,970	121,627	98,092	107,461	109,320	109,197
<b>WASTEWATER TREATED:</b>										
<b>Wholesale:</b>										
Miami Beach	8,054	8,797	8,399	8,312	8,141	7,452	6,983	7,870	8,733	8,764
Hialeah	9,203	8,943	7,169	7,102	7,050	7,002	6,084	6,903	7,373	8,109
North Miami	3,654	3,711	3,722	3,619	3,745	3,699	3,418	3,523	3,533	3,923
Coral Gables	1,477	1,432	1,231	1,041	1,088	1,144	987	1,060	1,114	1,196
Homestead	1,763	1,643	938	1,374	736	946	879	419	529	383
Opa-Locka	702	729	861	1,174	733	684	653	492	627	714
Hialeah Gardens	704	700	757	877	865	940	817	801	618	607
North Miami Beach	580	510	505	499	622	727	718	859	940	853
Medley	456	617	477	644	544	708	628	504	619	834
Florida City	425	458	464	420	457	494	412	404	412	431
North Bay Village <sup>(1)</sup>	409	457	433	418	408	316	39	-	-	-
West Miami	169	185	147	147	162	202	163	144	128	131
Homestead Air Force Base	86	98	78	79	69	65	47	98	185	196
Miami Springs <sup>(2)</sup>	-	-	-	-	-	-	-	-	-	1,237
Total wholesale	27,682	28,281	25,181	25,706	24,620	24,379	21,828	23,077	24,811	27,378
Retail	50,334	49,550	48,998	49,247	49,345	48,752	48,547	49,315	49,671	49,646
Unaccounted for wastewater	34,442	37,450	32,641	40,769	38,005	48,496	27,717	35,069	34,838	32,173
Total wastewater treated	112,458	115,281	106,820	115,722	111,970	121,627	98,092	107,461	109,320	109,197
Unaccounted for wastewater as a percentage of total wastewater treated	30.63%	32.49%	30.56%	35.23%	33.94%	39.87%	28.26%	32.63%	31.87%	29.46%
<b>ANNUAL RAINFALL (inches): <sup>(3)</sup></b>	<b>78.33</b>	<b>75.11</b>	<b>47.22</b>	<b>73.70</b>	<b>60.60</b>	<b>97.90</b>	<b>58.70</b>	<b>68.60</b>	<b>51.30</b>	<b>63.60</b>

<sup>(1)</sup> North Bay Village was added as a new wholesale customer beginning in fiscal year 2011.

<sup>(2)</sup> Miami Springs was purchased by WASD and beginning fiscal year 2009 is no longer a wholesale customer.

<sup>(3)</sup> Source: National Weather Service Forecast Office in Miami for rainfall recorded in inches at Miami International Airport.



# Debt Service Coverage

LAST TEN FISCAL YEARS

(in thousands)	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
<b>PRIMARY DEBT SERVICE COVERAGE</b>										
Net operating revenues	\$308,802	\$271,293	\$244,409	\$229,007	\$208,432	\$211,225	\$212,850	\$168,763	\$149,807	\$115,513
Investment earnings <sup>(1)</sup>	3,144	1,823	1,198	1,166	1,479	1,336	2,111	2,550	12,596	29,390
Net transfers from (to) Rate Stabilization Fund	-	-	-	-	-	-	-	-	-	-
Net revenues available for debt service	\$311,946	\$273,116	\$245,607	\$230,173	\$209,911	\$212,561	\$214,961	\$171,313	\$162,403	\$144,903
Debt service requirements <sup>(2)</sup>	\$161,194	\$157,036	\$153,211	\$143,622	\$138,711	\$137,625	\$115,198	\$114,653	\$103,627	\$113,758
Actual coverage	1.94	1.74	1.60	1.60	1.51	1.54	1.87	1.49	1.57	1.27
Required coverage	1.25	1.25	1.25	1.25	1.25	1.10	1.10	1.10	1.10	1.10
<b>SUBORDINATE DEBT SERVICE COVERAGE</b>										
Net revenues available for debt service	\$311,946	\$273,116	\$245,607	\$230,173	\$209,911	\$212,561	\$214,961	\$171,313	\$162,403	\$144,903
Less: Maximum principal and interest <sup>(3)</sup>	161,195	161,195	161,195	163,181	161,340	146,270	146,270	146,270	115,198	114,030
Adjusted net revenues	\$150,751	\$111,921	\$84,412	\$66,992	\$48,571	\$66,291	\$68,691	\$25,043	\$47,205	\$30,873
<b>STATE REVOLVING FUND LOANS DEBT SERVICE COVERAGE</b>										
Net revenues available for debt service	\$311,946	\$273,116	\$245,607	\$230,173	\$209,911	\$212,561	\$214,961	\$171,313	\$162,403	\$144,903
Less: revenue required for primary debt service coverage <sup>(4)</sup>	201,493	196,295	191,514	179,528	173,389	151,388	126,718	126,119	113,989	125,133
Adjusted net revenues	\$110,453	\$76,821	\$54,093	\$50,646	\$36,522	\$61,173	\$88,243	\$45,194	\$48,414	\$19,770
Debt service requirements <sup>(5)</sup>	15,973	16,819	18,081	15,369	\$11,386	\$13,501	\$13,501	\$13,479	\$13,470	\$13,434
Actual coverage	6.92	4.57	2.99	3.30	3.21	4.53	6.54	3.35	3.59	1.47
Required coverage	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15

<sup>(1)</sup> Excludes interest income from Construction Fund

<sup>(2)</sup> Represents debt service requirements on outstanding Bonds for such fiscal year.

<sup>(3)</sup> Maximum principal and interest requirements on the Bonds for such fiscal year

<sup>(4)</sup> Represents 110% of primary debt service requirements.

<sup>(5)</sup> Represents debt service requirements on outstanding State Revolving Fund Loans for such fiscal year.

Note: Debt Service requirements are on "Cash" basis.



# Ratio of Outstanding Debt by Type

LAST TEN FISCAL YEARS

(In thousands)

Fiscal Year	Revenue Bonds	Loans	Line of Credit <sup>(1)</sup>	Commercial Paper <sup>(2)</sup>	Total Outstanding Debt	Total Per Customer
2017	\$ 1,980,348	\$ 165,449	\$ -	\$ 375,000	\$ 2,520,797	\$ 3.16
2016	2,053,731	161,272	-	100,000	2,315,003	2.90
2015	2,024,019	164,698	-	-	2,188,717	2.77
2014	2,132,906	175,796	-	-	2,308,702	2.95
2013	2,193,562	154,873	-	-	2,348,435	3.03
2012	1,896,641	143,843	-	-	2,040,484	2.66
2011	1,932,611	124,162	-	-	2,056,773	2.70
2010	1,980,844	119,255	-	-	2,100,099	2.77
2009	1,432,012	119,093	40,000	-	1,591,105	2.11
2008	1,452,127	107,943	-	-	1,560,070	2.07

<sup>(1)</sup> Financing from Regions Bank to fund multiple Capital Improvement Projects as per County Ordinance 08-126. Entered on April 27, 2009.

<sup>(2)</sup> Financing from Commercial Paper to provide interim financing for the Department's Capital Improvement Program.

# Customer Statistics

## LARGEST SYSTEM CUSTOMERS

CURRENT YEAR AND NINE YEARS AGO

<u>Name</u>	Dollar Amount <sup>(1)</sup> (in thousands)	Percent of System Gross Revenues
<i>WATER SYSTEM:</i>		
City of Miami Beach	\$ 14,855	4.7%
City of Hialeah	12,209	3.9%
City of North Miami	4,011	1.2%
Dade County Aviation	3,653	1.3%
Florida Power & Light Company	1,994	0.6%
FL Dept of Corrections	1,736	0.5%
City of Opa-Locka	1,550	0.5%
Hialeah Gardens	1,287	0.4%
City of Homestead	1,159	0.4%
Jackson Memorial Hospital	1,008	0.3%

<i>WASTEWATER SYSTEM:</i>		
City of Hialeah	\$ 27,341	7.0%
City of Miami Beach	23,826	6.1%
City of North Miami	10,755	2.7%
City of Homestead	5,265	1.3%
City of Coral Gables	4,511	1.2%
Miami Int'l Airport	3,379	0.9%
City of Opa-Locka	2,083	0.5%
City of Hialeah Gardens	2,080	0.5%
FL Dep't of Corrections	1,774	0.4%
City of North Miami Beach	1,743	0.5%

### October 2008 - September 2009

<u>Name</u>	Dollar Amount (in thousands)	Percent of System Gross Revenues
<i>WATER SYSTEM:</i>		
City of Hialeah	\$ 11,058	5.6%
City of Miami Beach	9,506	4.8%
Dade County Aviation	3,684	1.9%
City of North Miami	2,200	1.1%
Florida Power & Light Company	1,391	0.7%
City of Opa Locka	1,238	0.6%
Hialeah Gardens	1,019	0.5%
Bal Harbour	683	0.3%
Medley	575	0.3%
North Bay Village	534	0.3%

<i>WASTEWATER SYSTEM:</i>		
City of Miami Beach	\$ 14,894	6.2%
City of Hialeah	12,643	5.2%
City of North Miami	5,991	2.5%
City of Homestead	2,614	1.1%
Dade County Aviation	1,994	0.8%
City of Coral Gables	1,924	0.8%
City of North Miami Beach	1,584	0.7%
City of Opa Locka	1,064	0.4%
Hialeah Gardens	1,042	0.4%
Medley	1,034	0.4%



# Customer Statistics

## NUMBER OF CUSTOMERS

LAST TEN FISCAL YEARS

<u>Year</u>	<u>Water</u>	<u>Wastewater</u>	<u>Customers to Water</u>
2017	443,615	361,055	81.4%
2016	441,059	357,882	81.1%
2015	436,862	354,006	81.0%
2014	432,315	349,778	80.9%
2013	428,631	346,285	80.8%
2012	424,764	342,539	80.6%
2011	422,016	339,927	80.5%
2010	420,367	338,368	80.5%
2009	417,983	336,272	80.5%
2008	418,258	336,290	80.4%

# Building Permits

Number of Buildings Permits Issued for Housekeeping Units  
and Value of Permits for Housekeeping and Total Units  
Miami-Dade County, Florida  
Last Ten Fiscal Years

Calendar Year	<u>Number of Permits Issued</u>		Value of Permits Issued Residential Construction (in thousands)
	Single Family Houses	Multi-family Buildings	
2017 <sup>(1)</sup>	(1)	(1)	(1)
2016	2,873	6,279	(1)
2015	2,800	9,817	(1)
2014	2,077	5,654	(1)
2013	2,266	8,050	(1)
2012	1,819	3,250	(1)
2011	962	1,656	(1)
2010	941	2,262	395,139
2009	624	771	252,407
2008	1,086	2,388	477,424

Source: University of Florida, Bureau of Economic and Business Research, [Building Permit Activity in Florida](#)

(1) Information unavailable as of the date of this report.



# Population

## MIAMI-DADE COUNTY, FLORIDA

LAST TEN FISCAL YEARS

<u>Fiscal Year</u>	<u>Annual Resident Population</u>	<u>Increase (Decrease)</u>	<u>Percent Change</u>
2017	2,743,095	46,742	1.7%
2016	2,696,353	42,419	1.6%
2015	2,653,934	67,644	2.5%
2014	2,586,290	20,605	0.8%
2013	2,565,685	14,430	0.6%
2012	2,551,255	(44,759)	-1.8%
2011	2,596,014	32,129	1.2%
2010	2,563,885	31,885	1.2%
2009	2,532,000	40,604	1.6%
2008	2,491,396	29,819	1.2%

Source: U.S. Bureau of the Census figures 2010; Miami-Dade County Department of Regulatory and Economic Resources, Research Section.



# Construction Activity

MIAMI-DADE COUNTY, FLORIDA

LAST TEN FISCAL YEARS

Fiscal Year	Commercial Construction		Residential Construction	
	Number of Buildings	Value (in thousands)	Number of Units	Value (in thousands)
2017 <sup>(b)</sup>	92	\$ 408,257	2,259	\$ 467,543
2016 <sup>(a)</sup>	83	176,969	2,064	324,500
2015	94	74,157	3,472	451,617
2014	137	242,138	1,932	265,791
2013	105	81,734	2,387	309,243
2012	95	130,148	1,535	187,533
2011	120	54,001	1,963	182,480
2010	231	184,566	1,453	129,129
2009	202	263,754	556	55,417
2008	274	477,442	1,262	159,407

Source: Miami-Dade County Building Department. Includes only Unincorporated Area.

<sup>(a)</sup> For FY2016, Real Property Value, total actual and assessed values reflect the Final 2016 Tax Roll certified on June 22, 2017.

<sup>(b)</sup> For FY2017, total actual and assessed values are based on estimates on the First Certified 2017 Tax Roll made October 14, 2016, prior to any adjustments processed by the Value Adjustment Board.

The Final Certified Tax Roll for 2017 has not been released as of the date of this report.





# Principal Employers

**MIAMI-DADE COUNTY, FLORIDA**

CURRENT YEAR AND NINE YEARS AGO

<u>Employer</u>	2017 <sup>(1)</sup>			2008		
	Employees	Rank	Percentage of Total County Employment	Employees	Rank	Percentage of Total County Employment
Miami-Dade County Public Schools	31,000	1	2.32%	50,000	1	4.15%
Miami-Dade County	24,692	2	1.85%	32,000	2	2.65%
U.S. Federal Government	19,300	3	1.45%	20,400	3	1.69%
Florida State Government	19,200	4	1.44%	17,000	4	1.41%
University of Miami	13,864	5	1.04%	9,874	8	0.82%
Baptist Health South Florida	13,369	6	1.00%	10,826	6	0.90%
American Airlines	11,773	7	0.88%	9,000	9	0.75%
Jackson Health System	8,163	8	0.61%	10,500	7	0.87%
Florida International University	4,951	9	0.37%	-	-	-
City of Miami	3,820	10	0.29%	4,034	14	0.33%
Mount Sinai Medical Center	3,402	11	0.25%	-	-	-
Florida Power & Light Company	3,011	12	0.23%	3,900	15	0.32%
Miami Children's Hospital	2,991	13	0.22%	-	-	-
Homestead AFB	2,810	14	0.21%	-	-	-
Miami-Dade College	2,572	15	0.19%	6,500	10	0.54%
Precision Response Corporation	-	-	-	6,000	11	0.50%
Bell South Corporation - Florida	-	-	-	5,500	12	0.40%
Winn Dixie Stores	-	-	-	4,833	13	0.40%
Publix Super Markets	-	-	-	11,000	5	0.91%
	<u>164,918</u>		<u>12.35%</u>	<u>201,367</u>		<u>16.64%</u>

Source: The Beacon Council, Miami, Florida, Miami Business Profile

(1) Information is based on data from year 2015. The data for year 2017 is not available as of the date of this report.

# Economic Statistics

## U.S. UNEMPLOYMENT RATE AND LABOR FORCE

LAST 10 FISCAL YEARS

Fiscal Year	Total Personal Income	Per Capita Personal Income	Unemployment Rate	Labor Force
2017	(1)	(1)	5.0%	1,375,376
2016	\$ 123,276,064	\$ 45,440	5.8%	1,334,404
2015	116,553,169	43,278	6.2%	1,321,033
2014	111,528,866	43,123	7.2%	1,282,854
2013	104,373,301	40,680	8.9%	1,289,617
2012	100,688,604	39,466	9.7%	1,290,751
2011	96,657,710	37,834	12.7%	1,300,030
2010	92,227,399	36,846	12.0%	1,257,324
2009	90,915,774	37,909	8.9%	1,218,871
2008	88,954,732	37,264	5.3%	1,205,913

Source: U.S. Department of Commerce, Economics and Statistics Administration, Economic Analysis/Regional Economic Information System, Florida Agency for Workforce Innovation, Labor Market Statistics, Miami-Dade County Department of Regulatory and Economic Resources, Research Section University of Florida, Bureau of Economic and Business Research

(1) Information unavailable as of the date of this report.



# Employees by Identifiable Activity

LAST 10 FISCAL YEARS

	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
<i><b>WATER:</b></i>										
Water Distribution	222	230	221	220	205	206	210	206	214	210
Water Production and Maintenance <sup>(1)</sup>	231	243	240	241	231	226	240	232	240	239
Laboratory Services	57	59	59	59	56	55	49	51	47	50
<i><b>SEWER:</b></i>										
Sewer Collection	210	206	194	194	183	187	175	189	188	180
Plant Maintenance <sup>(1)</sup>	-	-	-	-	-	-	-	-	-	-
Wastewater Treatment and Maintenance <sup>(1)</sup>	370	367	358	358	340	337	341	329	331	324
Pump Station Maintenance	230	208	195	197	193	192	193	187	192	206
<i><b>ENGINEERING:</b></i>										
Utility Pipeline and Plant Engineering & Construction	66	71	71	71	70	75	75	75	77	82
Surveying	14	-	-	-	-	-	-	15	15	15
Utilities Development	107	105	104	94	73	73	74	89	87	107
Capital Improvements Program	29	55	50	69	65	71	71	77	81	62
Planning	25	25	19	19	17	17	17	22	24	23
<i><b>ADMINISTRATION:</b></i>										
Office of Director	21	24	17	32	15	30	30	33	31	36
Office of Deputy Director of Regulatory Compliance and Capital Improvements	16	21	9	6	5	6	8	13	16	15
Office of Deputy Director of Operations	3	4	47	45	43	13	12	11	10	8
Office of Assistant Director of Engineering	2	1	1	1	1	1	1	1	1	2
Office of Chief Financial Officer	40	41	66	38	53	36	37	38	35	33
Office of Assistant Director of Maintenance and Support Services	73	77	114	114	112	143	136	155	156	157
Office of Assistant Director of Water	104	108	108	110	106	109	109	111	113	117
Office of Assistant Director of Wastewater	41	43	46	48	46	48	47	38	36	31
Office of Assistant Director of Regulatory Compliance and Planning	9	5	5	5	5	5	5	5	3	3
Attorney's Office	4	4	4	4	4	4	4	4	4	4
Controller	118	125	106	112	110	114	114	134	135	125
Information Technology <sup>(3)</sup>	-	76	71	69	65	68	69	70	70	71
Retail Customer Service	219	238	255	243	227	224	216	253	268	266
Regulatory Compliance and Monitoring	15	17	17	16	14	15	16	18	17	16
General Maintenance	112	124	114	114	110	116	113	120	127	122
Human Resources Division <sup>(2)</sup>	44	44	-	-	-	-	-	-	-	-
Office of Assistant Contracts Compliance and Quality Assurance <sup>(2)</sup>	3	4	-	-	-	-	-	-	-	-
Quality Assurance and Control Division <sup>(2)</sup>	4	13	-	-	-	-	-	-	-	-
Performance Improvements & Management Division <sup>(2)</sup>	13	17	-	-	-	-	-	-	-	-
Contract Compliance and Monitoring Division <sup>(2)</sup>	20	27	-	-	-	-	-	-	-	-
Security and Communications Division <sup>(2)</sup>	43	44	-	-	-	-	-	-	-	-
<b>Total</b>	<b>2,465</b>	<b>2,626</b>	<b>2,491</b>	<b>2,479</b>	<b>2,349</b>	<b>2,371</b>	<b>2,362</b>	<b>2,476</b>	<b>2,518</b>	<b>2,504</b>

<sup>(1)</sup> The Plant Maintenance Division was eliminated as of October 1, 2007 and the employees were assigned to the Water Production and Maintenance Division and the Wastewater Treatment and Maintenance Division.

<sup>(2)</sup> The Department's internal reorganization resulted in new divisions.

<sup>(3)</sup> The Department's Information Technology Division was transferred to the County's Information Technology Department.

# Capital Indicators

LAST 10 FISCAL YEARS

	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
<i>WATER:</i>										
Water mains <sup>(1)</sup> (miles)	6,264	6,131	6,035	6,004	5,988	5,969	5,922 <sup>(2)</sup>	5,907	5,747	5,641
Water treatment plants	9	9	9	9	9	8	8	8	8	8
Permitted water treatment capacity (million gallons per day)	461	461	464	464	454	454	452	452	452	452
Water supply wells	100	100	100	100	100	100	100	100	100	100
<i>WASTEWATER:</i>										
Sanitary sewers <sup>(1)</sup> (miles)	4,184	4,165	4,110	4,072	4,048	4,027	3,995 <sup>(2)</sup>	3,975	3,981	3,948
Wastewater treatment plants	3	3	3	3	3	3	3	3	3	3
Permitted wastewater treatment capacity (million gallons per day)	376	376	376	376	376	376	368	368	368	368
Wastewater pump stations	1,049	1,049	1,047	1,047	1,042	1,039	1,039	1,039	1,035	1,035

<sup>(1)</sup> Does not include laterals.

<sup>(2)</sup> In fiscal year 2010 & 2011, the measurements for water mains and sanitary sewers do not include miscellaneous and private pipes.



## Insurance in Force

Type of Coverage and Insurance Company	Policy Period	Details of Coverage	Limits of Liability
Crime Policy: Fidelity & Deposit Co. of Maryland	08/19/17- 08/19/18	Employee Dishonesty	\$1,000,000
Money and Securities: Fidelity & Deposit Co. of Maryland	11/25/17- 11/25/18	Theft of money and securities	Values scheduled per location
Accidental Death: Hartford Life Insurance Co.	01/01/17- 01/01/18	Accidental death and dismemberment	\$25,000
Property Insurance: Ace American Ins. Co. Aspen Specialty Ins. Co. Liberty International Undwtrs Arch Specialty Ins. Co. Colony Ins. Co. Landmark American Ins. Co. Liberty Surplus Ins. Co. Steadfast Ins. Co. Alterra E & S Ins. Co. Hiscox, Inc. Lloyds of London Chubb Custom Ins. Co. Evanston Ins. Co.	03/02/17 – 03/02/18	"All risk" coverage on real and personal property and outfalls	\$200,000,000
Automobile Liability:	Continous	Self-Insured	\$200,000 per person/\$300,000 per occurrence pursuant to F.S. 768.28 (certain claims may not fall with the parrameters of FS)
General Liability:	Continous	Self-Insured	\$200,000 per person/\$300,000 per occurrence pursuant to F.S. 768.28 (certain claims may not fall with the parrameters of FS)
Workers' Compensation:	Continous	Self-Insured	Statutory coverage pursuant to F.S. 440





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## Miami-Dade Water and Sewer Department

A Department of Miami-Dade County, Florida

3071 S.W. 38 Avenue

Miami, Florida 33146

305-665-7471

Miami-Dade County provides equal access and equal opportunity in employment and services and does not discriminate on the basis of disability. It is the policy of Miami-Dade County to comply with all the requirements of the Americans with Disabilities Act.



## **APPENDIX D**

### **THE BOND ORDINANCE**

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ORDINANCE NO. 93-134

ORDINANCE AUTHORIZING ISSUANCE OF NOT TO EXCEED \$500,000,000 OF DADE COUNTY, FLORIDA WATER AND SEWER SYSTEM REVENUE REFUNDING BONDS, SERIES 1993, FOR PURPOSE OF ADVANCE REFUNDING, REDEEMING AND PAYING, TOGETHER WITH OTHER AVAILABLE FUNDS AND REVENUES, AN AGGREGATE OUTSTANDING PRINCIPAL BALANCE OF \$389,015,000 TOGETHER WITH ACCRUED INTEREST AND REDEMPTION PREMIUMS, OF DADE COUNTY WATER AND SEWER SYSTEM REVENUE BONDS, DADE COUNTY WATER SYSTEM REVENUE BONDS, DADE COUNTY WATER SYSTEM REVENUE REFUNDING BONDS, SERIES 1992, DADE COUNTY WATERWORKS SYSTEM GENERAL OBLIGATION BONDS AND STATE LOANS AND LOAN OBLIGATIONS, PROVIDING FOR ESTABLISHMENT OF TERMS, MATURITIES, INTEREST RATES AND OTHER DETAILS OF BONDS BY SUBSEQUENT RESOLUTION, PROVIDING BY SUBSEQUENT RESOLUTION FOR ESCROW DEPOSIT AGREEMENT AND OTHER DOCUMENTATION NECESSARY FOR REFUNDING; AUTHORIZING ISSUANCE OF NOT TO EXCEED \$500,000,000 OF DADE COUNTY WATER AND SEWER SYSTEM REVENUE BONDS, SERIES 1993A FOR PURPOSE OF PAYING OR REIMBURSING, TOGETHER WITH OTHER AVAILABLE FUNDS AND REVENUES, COST OF CERTAIN ADDITIONS, EXTENSIONS AND IMPROVEMENTS TO COUNTY'S WATER AND SEWER TREATMENT PLANTS, FACILITIES AND DISTRIBUTION AND COLLECTION SYSTEMS; PROVIDING FOR ESTABLISHMENT OF TERMS, MATURITIES, INTEREST RATES AND OTHER DETAILS OF SAID BONDS; PROVIDING TERMS AND CONDITIONS FOR ISSUANCE OF ADDITIONAL BONDS; PROVIDING OTHER TERMS AND PROVISIONS FOR ISSUANCE OF ALL BONDS AUTHORIZED UNDER THIS ORDINANCE; AUTHORIZING HEDGE AGREEMENTS, HEDGE OBLIGATIONS AND HEDGE CHARGES; PROVIDING FOR SEVERABILITY AND EFFECTIVE DATE.

WHEREAS, the Board of County Commissioners (the "Board") of Dade County, Florida (the "County"), by applicable ordinances and resolutions, has previously authorized the issuance of certain Dade County Water and Sewer System Revenue Bonds, Dade County Water System Revenue Bonds, Dade County Waterworks System General Obligation Bonds and various state loans and loan obligations, more particularly described and defined herein (collectively, the "Refunded Obligations"); and

WHEREAS, as of the date of this Ordinance the Refunded Obligations constitute an aggregate outstanding principal balance of \$389,015,000 consisting of ten separate issuances, identified and described herein as the Water and Sewer System Revenue Bonds, Series A (the "Series A Bonds"), the Dade County Water System Revenue Refunding Bonds, Series 1992 (the "Series 1992 Bonds"), the Dade County Waterworks System General Obligation Bonds, Series A (the "Series A G.O. Bonds"), the Dade County Waterworks System General Obligation Bonds, Series B (the "Series B G.O. Bonds"), Dade County Waterworks System Refunding Bonds, Series 1987 (the "Series 1987 Bonds"), and certain state loans and loan obligations under Loan Agreements between the County as the "Local Agency" and the State of Florida as the "State Agency" (the "Series H State Loan", the "Series T State Loan", the "Series V State Loan", the "Series W State Loan"; and the "Series X State Loan"); and

WHEREAS, in order to achieve debt service savings and to modernize the underlying provisions by which the County will hereafter issue its water and sewer system bonds, and for other reasons related thereto, the Board desires to refund, redeem and pay, on a current or advance basis, as applicable, the Refunded Obligations; and, to accomplish this purpose, the Board has determined to issue water and sewer system revenue refunding bonds, Series 1993 (the "Series 1993 Refunding Bonds") in a principal amount not exceeding \$500,000,000, for the purpose of refunding the said Refunded Obligations, funding a reserve account, paying costs of credit enhancement, all as applicable, and paying the cost of issuance of said bonds; and

WHEREAS, the Board also has determined to issue bonds in an original principal amount not exceeding (\$500,000,000), to be designated Dade County, Florida Water and Sewer System Revenue Bonds, Series 1993A (the "Series 1993A Bonds"), for the purpose of paying, together with other available funds and revenues, the cost of certain additions and improvements to the County's water and wastewater treatment plants, facilities and distribution and collection systems (the "Series 1993A Project"), providing a reserve fund, if appropriate, providing credit enhancement, if appropriate, providing for capitalized interest, if applicable, and paying the cost of issuance of the Series 1993A Bonds; and

WHEREAS, the Board desires to make provision for the issuance of Additional Bonds from time to time, subject to the terms of this Ordinance; now therefore,

BE IT ORDAINED BY THE BOARD OF COUNTY COMMISSIONERS OF DADE COUNTY, FLORIDA:

ARTICLE I

Incorporation of Recitals and Definitions

SECTION 101. **Incorporation of Recitals.** The Board hereby finds and determines and does hereby incorporate as part of this Ordinance the matters set forth in the foregoing recitals.

SECTION 102. **Meaning of Words and Terms.** In addition to words and terms elsewhere defined in this Ordinance, the following words and terms as used in this Ordinance shall have the following meanings, unless some other meaning is plainly intended:

"Accountant" means the certified public accountants or firm of certified public accountants employed by the County under the provisions of Section 608 of this Ordinance to perform and carry out the duties imposed on the Accountant by this Ordinance.

"Accreted Value" means, with respect to any Compounding Interest Bond, (a) the amount representing the Accreted Value of such Bonds as of any Compounding Date, as established by the schedule of Accreted Values relating to such Bond, which amount represents the initial principal amount thereof plus the amount of interest that has accrued to such Compounding Date calculated on the basis of a three hundred and sixty (360) day year of twelve (12) thirty (30) day months, and (b) as of any date other than a Compounding Date, the sum of (i) the Accreted Value on the preceding Compounding Date plus (ii) the product of (x) a fraction, the numerator of which is the number of days having elapsed from the preceding Compounding Date and the denominator of which is the number of days from such preceding Compounding Date to the next succeeding Compounding Date, multiplied by (y) the difference between the Accreted Values on such Compounding Dates, which amount represents the principal plus the amount of interest that has accrued to such date of determination. The Board may provide by Series Resolution that, with respect to any Series, the Accreted Value as of any date other than a Compounding Date shall be determined using a constant interest rate method rather than as provided in (b).

"Additional Bonds" means any Bonds issued at any time under the provisions of Section 208 of this Ordinance.

"Amortization Requirements" means such moneys required to be deposited in the Redemption Account for the purpose of paying when due or redeeming prior to maturity any Term Bonds issued pursuant to this Ordinance, or the specific amounts and times of such

deposits to be determined in accordance with or under the authority of a Series Resolution authorizing the issuance of such Term Bonds.

"Annual Budget" means the Annual Budget of Operating Expenses and Capital Expenditures adopted pursuant to Section 603 of this Ordinance.

"Board" means the Board of County Commissioners of Dade County, Florida, or any successor of the board or body in which the general legislative powers of the County shall be vested.

"Bond Year" means the period commencing the first day of October in each year and ending on the last day of September of the following year.

"Bonds" means, collectively, any bonds issued under the provisions this Ordinance.

"Bondholders" or "Holder" means the holders or registered owners of Bonds.

"Bond Service Account" means the Bond Service Account in the Debt Service Fund created and designated by Section 502 of this Ordinance, together with any subaccount therein designated by this Ordinance or any applicable Series Resolution.

"Book-Entry Bonds" and "Bonds in Book-Entry Form" means Bonds which are subject to a Book-Entry System.

"Book-Entry System" or "Book-Entry-Only-System" means a system under which either (a) bond certificates are not issued and the ownership of bonds is reflected solely by the Register, or (b) physical certificates in fully registered form are issued to a securities depository or to its nominee as Registered Owner, with the certificated bonds held by and "immobilized" in the custody of such securities depository, and under which records maintained by Persons, other than the Registrar, constitute the written record that identifies the ownership and transfer of the beneficial interests in those Bonds.

"Capital Appreciation Bond" means a Bond which is a Compounding Interest Bond throughout its entire term.

"Capital Facilities Charges" means all payments received by the County or the Department which are related to acquiring, constructing, expanding or equipping capacity and facilities of the Water and Sewer Utility, for the purpose of reserving capacity in either the Water System or the Sewer System, connecting to either System, or paying or reimbursing any capital cost relating to such acquisition, construction, expansion or equipping of excess and

unused capacity of either System or any expansion thereof, including connection charges and impact fees relative to the Utility, but shall not include: (i) amounts received for the acceptance, treatment or disposal of sewage; (ii) amounts received from the sale of water; (iii) meter installation fees; and (iv) other revenues constituting Operating Revenues.

"Chairman" means the Chairman of the Board or in the absence of the Chairman, the Vice Chairman or the officer or officers succeeding to that function.

"Clerk" means the Clerk or Deputy Clerk of the Board or his/her designee or the officer or officers succeeding to his/her principal functions.

"Code" means the Internal Revenue Code of 1986, as amended from time to time. Each reference to a section of the Code herein shall be deemed to include the United States Treasury Regulations proposed or in effect thereunder and applied to the Bonds or the use of proceeds thereof, and also includes all amendments and successor provisions unless the context clearly requires otherwise.

"Compounding Date" means, with respect to any Compounding Interest Bond, the date on which interest is compounded for purposes of determining its Accreted Value.

"Compounding Interest Bond" means a Bond, the interest on which (a) shall be compounded periodically, (b) shall be payable at maturity or redemption prior to maturity, and (c) shall be determined by reference to Accreted Value and includes, but is not limited to, Capital Appreciation Bonds and Convertible Capital Appreciation Bonds.

"Construction Fund" means the Dade County Water and Sewer Utility Construction Fund, a special fund created and designated by Section 401 of this Ordinance.

"Consultant" means such qualified and nationally recognized independent consulting firm retained by the County, having favorable repute or skill and experience with respect to the services to be provided by such Consultant, as herein required.

"Convertible Capital Appreciation Bond" means a Bond the interest on which from its issuance date or dated date until a conversion date specified therein is compounded periodically, and from and after such conversion date is payable not less often than annually, calculated on the basis of the Accreted Value thereof on such conversion date, and the Accreted Value of which as of said conversion date is treated as the principal amount thereof for purposes of payment or redemption after such conversion date.

"Depository" means any bank or trust company duly authorized by law to engage in the banking business and designated by the County as a depository of moneys under the provisions of this Ordinance.

"Director" means the director of the Department appointed by the County Manager.

"Finance Director" means the Finance Director of the County, his designee or the officer or officers succeeding to his principal functions.

"First Lien Obligations" means the Series 1993 Refunding Bonds, the Series 1993 A Bonds and any additional Series of Bonds issued pursuant to this Ordinance, and shall also include, where applicable, other obligations, in each case specified by the applicable Series Resolution to be First Lien Obligations.

"Fiscal Year" means the fiscal year of the County.

"Fixed Rate Bond" means a bond, the interest rate on which (i) is not, under any circumstances, subject to change during its remaining term, or (ii) is subject to change at specified times and in specified amounts so that the yield and annual debt service for each period during its remaining term is fixed (such as a stepped coupon bond); any bond which was not a fixed rate bond as of its date of issuance shall become a fixed rate bond as of any date after its issuance on which it meets the requirements of (i) or (ii), above.

"GAAP" means generally accepted accounting principles for municipal utilities.

"General Reserve Fund" means the Dade County Water and Sewer Utility General Reserve Fund created and designated by Section 502 of this Ordinance.

"Government Obligations" means (i) any obligations which as to both principal and interest constitute non-pre-payable and non-callable (except at the option of the Holder thereof) direct obligations of, or non-pre-payable and non-callable (except at the option of the Holder thereof) direct obligations, the timely payment of which is fully and unconditionally guaranteed as to full and timely payment by the full faith and credit of the United States of America, including bonds, U.S. Treasury Securities-State and Local Government Series ("SLGS"), (ii) other evidences of indebtedness issued or guaranteed by any agency or corporation which has been or may hereafter be created pursuant to an Act of Congress as an agency or instrumentality of the United States of America to the extent unconditionally guaranteed as to full and timely payment by the United States of America, (iii) any bonds or other obligations of any state of the United States of America or of any agency, instrumentality or local governmental unit of any such state (a) which are not callable for redemption prior to

"Cost" or "Costs" as applied to any Improvements, means and shall embrace the cost of acquisition and construction and all obligations for expenses and all items of cost which are set forth in Section 403 of this Ordinance.

"Counterparty" means a party, other than the County, to a Hedge Agreement.

"County" means Dade County, Florida, a political subdivision of the State of Florida.

"County Attorney" means the County Attorney of the County, his designee or the officer or officers succeeding to the principal functions of that office.

"County Manager" means the County Manager of the County or his designee or the officer or officers succeeding to his principal functions.

"Credit Agreement" means any contract, agreement, or other instrument executed by the County in connection with obtaining or administering any Credit Facility or Reserve Account Credit Facility for any Bonds, including, but not limited to, any reimbursement agreement, financial guaranty agreement, or standby bond purchase agreement.

"Credit Facility" means a policy of insurance, a letter of credit, surety bond or other financial product which guarantees the prompt payment of all or any portion of the principal of, premium, if any, or interest on any of the Bonds, or to provide funds for the purchase of any Bonds for retirement or remarketing.

"Credit Facility Charges" means (a) Initial Credit Facility Charges, and (b) Recurring Credit Facility Charges.

"Credit Facility Provider" means an insurance company, bank, or other organization which has provided a Credit Facility in connection with any Series of Bonds.

"Debt Service Fund" means the Dade County Water and Sewer Utility Revenue Bonds Debt Service Fund, a fund created and designated by Section 502 of this Ordinance.

"Defeasance Obligations" means those obligations eligible to refund and defease Bonds of a Series which are defined and described in any applicable Series Resolution.

"Department" means the Miami-Dade Water and Sewer Department, the administrative entity of Dade County that operates the Water and Sewer Utility, or any successor thereto.

maturity, or which have been duly called for redemption by the obligor on a date or dates specified and as to which irrevocable instructions have been given to a trustee in respect of such bonds or other obligations by the obligor to give due notice of such redemption on such date or dates, which date or dates shall be also specified in such instructions, (b) which are secured as to principal and interest and redemption premium, if any, by a fund consisting only of cash, bonds or other obligations of the character described in clauses (i) or (ii) above which fund may be applied only to the payment of such principal of and interest and redemption premium, if any, on such bonds or other obligations on the maturity date or dates thereof or the redemption date or dates specified in the irrevocable instructions referred to in subclause (a) of this clause (iii), as appropriate, and (c) as to which the principal of and interest on the bonds and obligations of the character described in clauses (i) or (ii) above on deposit in such fund along with any cash on deposit in such fund are sufficient to pay principal of and interest and redemption premium, if any, on the bonds or other obligations described in this clause (iii) on the maturity date or dates thereof or on the redemption date or dates specified in the irrevocable instructions referred to in subclause (a) of this clause (iii), as appropriate; and (iv) certifies that evidence ownership of the right to payments of principal and/or interest on obligations described in any of clauses (i), (ii) or (iii) of this definition, provided that such obligations shall be held in trust by a bank or trust company or a national banking association authorized to exercise corporate trust powers and subject to supervision or examination by federal, state, territorial or District of Columbia authority and having a combined capital, surplus and undivided profits of not less than \$25,000,000. The definition of Government Obligations does not include, nor does it permit, investment in mutual funds or unit investment trusts.

"Hedge Agreement" means and includes an interest rate exchange agreement, an Interest Swap Agreement, forward purchase contract, put option contract, call option contract or other financial product which is used by the County as a hedging device with respect to its obligation to pay debt service on any of the Bonds, entered into between the County and a Counterparty; provided that such Counterparty shall be an entity whose long-term debt obligations, or whose payment obligations under the Hedge Agreement are guaranteed by an entity, whose senior long-term debt obligations are rated (on the date the Hedge Agreement is entered into) by Moody's Investors Service and Standard and Poor's Corporation or their respective successors in a rating category not less than "A" by Moody's Investors Service and "A" by Standard and Poor's Corporation; and further provided that such arrangement shall be specifically designated in a certificate of the Finance Director as a "Hedge Agreement" for purposes of this Ordinance; and provided further that at the time of entering into such Hedge Agreement the County shall have obtained written evidence that entering into such Hedge Agreement will not, in and of itself, result in a withdrawal or reduction of any rating assigned to the Bonds by a rating agency.

"Hedge Charges" means charges payable by the County to a Counterparty upon the execution, renewal or termination of any Hedge Agreement and any periodic fee payable by

the County to keep such Hedge Agreement in effect and other payments required thereby, exclusive of Hedge Obligations.

"Hedge Obligations" means (i) net payments required to be made by the County under a Hedge Agreement from time to time as a result of fluctuation in hedged interest rates, or fluctuation in the value of any index of payment and (ii) termination charges with respect to a Hedge Agreement, provided that with respect to any such termination charge, such termination charge may be considered as a Hedge Obligation (and not a Hedge Charge) if, on or before the date of entering into such Hedge Agreement, the County shall have obtained written evidence from each Rating Agency that such Hedge Agreement will not, in and of itself, result in the withdrawal or reduction of the rating(s) then applicable to the Bonds.

"Hedge Receipts" means net payments received by the County from a Counterparty under a Hedge Agreement.

"Improvements" means such improvements, renewals and replacements of the Water and Sewer Utility or any part thereof and such extensions and additions including additional water and sewer systems thereto as may be necessary or desirable, in the judgment of the County, to keep the same in proper condition for the safe, efficient and economic operation thereof and to integrate into the Water and Sewer Utility any unit or part thereof, and shall include such land, structures and facilities as may be authorized to be acquired or constructed by the County under the provisions of Florida law and such improvements, renewals and replacements of such land, structures and facilities of the Water and Sewer Utility and such extensions and additions thereto as may be necessary or desirable for continuous and efficient service to the public.

"Initial Credit Facility Charges" means and includes any premium, commitment fee or other issuance charges payable by the County to any Provider for the issuance of any Credit Facility or Reserve Account Credit Facility relating to any Bonds, at the time of the initial issuance of such Bonds, together with any fees and expenses relating thereto, including, but not limited to, the legal fees and expenses of legal counsel to the Provider of any Credit Facility or Reserve Account Credit Facility, which the County is required to pay or for which it is required to make reimbursement, but shall not include any Payment Obligations or Recurring Credit Facility Charges.

"Interest" or "interest" means the interest on the specified obligations; in the case of Compounding Interest Bonds, the interest component included in the Maturity Amount (and in the Accreted Value thereof payable at redemption) shall be deemed to constitute principal; provided, however, that for purposes of any limitation contained herein or in any Series Resolution on the issuance of an aggregate principal amount of Bonds of any Series, the

principal amount of Compounding Interest Bonds shall be the initial principal amount thereof on the Issuance Date.

"Interest Payment Date" means, when used with reference to any Bonds, the dates on which interest is stated to be due thereon, and any date on which interest becomes due thereon on account of the early redemption thereof or on account of the happening of an event which, under the terms of such Bonds, requires a payment of interest to be made thereon.

"Interest Swap Agreement" means an agreement between the County and a Counterparty under which the County is obligated to make periodic payments on a "notional amount" to the Counterparty at a fixed rate of interest and the Counterparty is obligated to make periodic payments to the County on such "notional amount" at a variable rate of interest, or vice-versa, and under which the amounts so payable by the County and such Counterparty on any date are netted against each other with the party owing the larger amount making a net payment to the other party.

"Investment Obligations" means (i) Government Obligations, (ii) bonds, debentures or notes issued by any of the following Federal agencies: Banks for Cooperatives, Federal Intermediate Credit Banks, Federal Home Loan Banks, Export-Import Bank of the United States, Government National Mortgage Association, Federal Land Banks, or the Federal National Mortgage Association (including participation certificates issued by such Association), (iii) all other obligations issued or unconditionally guaranteed as to principal and interest by an agency or person controlled or supervised by and acting as an instrumentality of the United States Government pursuant to authority granted by the Congress, (iv) general obligations of any state of the United States (other than obligations rated lower than the three highest grades by two Rating Agencies), (v) repurchase agreements with any bank or trust company organized under the laws of any state of the United States of America or any national banking association or government bond dealer reporting to, trading with, and recognized as a primary dealer by the Federal Reserve Bank of New York, which agreement is fully secured by Government Obligations delivered to another bank or trust company organized under the laws of any state of the United States of America or any national banking association, as custodian, (vi) certificates of deposit or similar arrangements with any Federal or State of Florida bank, trust company or savings and loan association which is a member of the Federal Deposit Insurance Corporation, (vii) investment agreements or contracts which are rated or are issued or guaranteed by an entity whose long-term unsecured obligations are rated in one of the two highest rating categories by both Moody's Investors Service and Standard & Poor's Corporation or their respective successors, and which are not required to be registered under the Securities Act of 1933 but may be so registered, whereby under each such investment agreement or contract the party is absolutely and unconditionally obligated to repay the moneys invested by the County and interest thereon at a guaranteed rate, without any right of recoupment, counterclaim or set off; provided, however, that such party may have the right to assign its

obligations under any such agreements or contracts to any other entity if the investment agreements or contracts shall continue to be rated in one of the two highest rating categories by both Moody's Investors Service and Standard & Poor's Corporation or their respective successors and if such agreements or contracts shall not be registered, the agreements or contracts shall not be required to be registered under the Securities Act of 1933 by reason of such assignment; and (viii) any other investment which is a permitted investment for public funds under County ordinance or rule approved by each Rating Agency.

"Maturity Amount" means, with respect to any Compounding Interest Bond, the value of such Compounding Interest Bond which is due at the stated maturity thereof.

"Maturity Date" means the stated date on which principal matures on Bonds or on which the Maturity Amount becomes payable on Compounding Interest Bonds.

"Maximum Principal and Interest Requirements" means, as of any particular date of calculation, the greatest amount of Principal and Interest Requirements for the then current or any future Fiscal Year.

"Multimodal Bond" means a Bond which contains provisions allowing for the payment of interest at different rates during different interest periods and for the establishment of different interest periods and interest rates; the interest rate during any particular interest period may be a Variable Rate or a fixed rate.

"Net Operating Revenues" means the Operating Revenues reduced by Operating Expenses.

"Operating Expenses" means all current expenses, paid or accrued, and any Operating Expense reserve as described in Section 502, for the operation, maintenance and ordinary current repairs of the Utility and its components, as calculated in accordance with GAAP, including, without limitation, insurance premiums (or comparable payments under a self-insurance or risk management program), labor, cost of materials and supplies used for current operation, charges for the accumulation of appropriate reserves for current expenses not annually recurrent but which are such as may reasonably be expected to be incurred in accordance with GAAP and Credit Facility Charges, administrative expenses and professional fees and expenses, before depreciation, amortization and interest expense determined in accordance with GAAP, provided, however, there shall not be taken into account:

- (a) any gain or loss resulting from either the extinguishment or refinancing of indebtedness;

- (b) loss from the sale, exchange or other disposition of capital assets not made in the ordinary course of business; and
- (c) any capital expenditures for renewal, replacement, expansion or acquisition of capital assets of the Utility (including any deposits to reserves therefor).

"Operating Revenues" or "Revenues" means all operating income or earnings received or accrued by the County from the ownership, operation or use of the Water and Sewer Utility, or any part thereof, including, but not limited to, user charges for the provision of water service and sewer service, meter installation fees, and the like, delinquent charges and investment earnings, but shall exclude any income from the investment of the Construction Fund, proceeds from insurance (except business interruption insurance), condemnation or the disposition of property not in the ordinary course of business, Capital Facilities Charges, grants, and proceeds from the sale of any obligations of the County (exclusive of short-term obligations for Utility working capital), and payments on special assessments for water and sewer improvements.

"Ordinance" means this Ordinance as the same may be amended or supplemented from time to time in accordance with Article VIII hereof.

"Outstanding" means, when used with respect to the Bonds, all Bonds theretofore delivered except:

- (a) Bonds paid or redeemed or delivered to or acquired by the County for cancellation;
- (b) Bonds issued under a particular Series Resolution which, under the terms of such Series Resolution, are no longer deemed to be outstanding (such as Bonds that have been defeased); and for purposes of voting, giving directions and granting consents, Bonds held by the County or by an agent of the County shall not be deemed outstanding, except that when Bonds are held by any tender agent or remarketing agent, such tender agent or remarketing agent rather than the County shall be deemed the holder for purposes of voting the same for purposes of amending this Ordinance or the Series Resolution under which the same were issued or for the purpose of giving directions or granting consents under this Ordinance or such Series Resolution.

"Payment Obligation" means an obligation of the County arising under a Credit Agreement: (a) to reimburse any Provider for amounts advanced by such Provider under a

Credit Facility or Reserve Account Credit Facility which are used (i) to pay any principal, Maturity Amount or Accreted Value of, premium on, or interest on any Bond or Bonds, or (ii) to purchase any Bond or Bonds for cancellation, or (iii) to purchase any Bond or Bonds for remarketing, or (b) to pay interest on any such advances.

"Pledged Funds" means the Revenue Fund, the Debt Service Fund, the General Reserve Fund, the Renewal and Replacement Fund, the Rate Stabilization Fund and to the extent provided herein, the Construction Fund and the Plant Expansion Fund, in each case together with all accounts and subaccounts therein.

"Pledged Revenues" means Net Operating Revenues (whether or not on deposit in the funds and accounts established herein).

"Principal" or "principal" means the principal of the specified obligations; in the case of Compounding Interest Bonds, the interest component of the Maturity Value (or Accreted Value thereof payable upon redemption) shall be deemed to constitute principal; provided that for purposes of any limitation contained herein or in any Series Resolution on the aggregate principal amount of Bonds of any Series, the principal amount thereof shall be the initial principal amount on the date of issuance thereof.

"Principal and Interest Requirements" or "Debt Service Requirements" means the respective amounts which are required in each Fiscal Year to pay (a) principal and interest on all Bonds then Outstanding; and (b) the Amortization Requirements, if any, for all Term Bonds then Outstanding for such Fiscal Year, provided, however:

- (i) the amount of such Principal and Interest Requirements for any Fiscal Year may be reduced by the amount of any capitalized interest to be used to pay interest in such Fiscal Year and by the anticipated earnings on the money in the applicable Bond Service Account, and such earnings will be deposited to the credit of the applicable Bond Service Account; and
- (ii) the Principal and Interest Requirements for any Bonds bearing interest at a Variable Rate shall be determined as provided in the definition of "Variable Rate" herein.

"Project" means the acquisition, construction, addition, improvement, sizing, separating and equipping of various components of the Utility, identified as a Project by a Series Resolution providing for the issuance of any obligation to finance the cost thereof, in whole or in part.

"Registrar, Paying Agent or Transfer Agent" means as to any Series of Bonds, the County or a bank or trust company within or without the State, which has been designated by the County as the Registrar, Paying Agent or Transfer Agent, or any one or combination of these functions, for such Series; provided, however, that any bank or trust company designated as Registrar, Paying Agent or Transfer Agent for any Series of Bonds issued hereunder must have an aggregate unimpaired reported capital, surplus and retained earnings of not less than \$25,000,000; provided further, that "Paying Agent" when used with respect to Refunded Obligations means those respective Paying Agents to which principal and interest on the Refunded Obligations are payable.

"Regular Record Date" means that day in the month immediately preceding any scheduled Interest Payment Date, that is established as the Regular Record Date by the Series Resolution applicable to such Series of Bonds.

"Renewal and Replacement Fund" means the Dade County Water and Sewer Utility Renewal and Replacement Fund created and designated by Section 502 of this Ordinance.

"Reserve Account" means the Reserve Account in the Debt Service Fund created and designated by Section 502 of this Ordinance.

"Reserve Account Credit Facility" means a surety bond, a policy of insurance, a letter of credit, or other financial product obtained by the County with respect to any Bonds, from an entity that is rated in one of the two highest rating categories by Moody's and Standard & Poor's and which financial product provides for payment of Principal and Interest on such Bonds in amounts not greater than the Reserve Account Requirement for such Bonds in the event of an insufficiency of available moneys herein to pay when due principal of, premium, if any, and interest on such Bonds.

"Reserve Account Requirement" means the Maximum Principal and Interest Requirements in the then current or any subsequent Fiscal Year on all Outstanding Bonds or such lesser amount which is the greatest allowable under the Code.

"Revenue Fund" means the Dade County Water and Sewer Utility Revenue Fund created and designated by Section 502 of this Ordinance.

"Separate System" means any water and/or sewer system which may be acquired by the County subsequent to the date of this Ordinance and designated by the County as a Separate System on or prior to the date of acquisition.

"Serial Bonds" means the Bonds of a Series which shall be stated to mature in sequential years.

"Provider" means a Credit Facility Provider or Reserve Account Credit Facility Provider, as indicated by the context in which such term is used.

"Rate Stabilization Fund" means the Dade County Water and Sewer Utility Rate Stabilization Fund created and designated by Section 502 of this Ordinance.

"Rating Agency" means Moody's Investors Service, Standard & Poor's Corporation, and any other nationally recognized securities rating agency which has assigned a rating to any Series of Bonds.

"Rebate Amount" means the amount of any rebate or penalty in lieu of rebate which is payable under Section 148(f) of the Code.

"Recurring Credit Facility Charges" means and includes (a) all charges payable by the County to any Provider of a Credit Facility or Reserve Account Credit Facility under any Credit Agreement to renew or extend the term of any Credit Facility or Reserve Account Credit Facility, (b) all charges of the type described in the definition of "Initial Credit Facility Charges" relating to the replacement of any Credit Facility or Reserve Account Credit Facility for any Outstanding Bonds with a new Credit Facility or Reserve Account Credit Facility, and (c) any other fees, charges or amounts the County is required to pay to any Provider of a Credit Facility or Reserve Account Credit Facility (other than Initial Credit Facility Charges and Payment Obligations) under any Credit Agreement, including, but not limited to, draw fees, transaction fees, "gross-up charges" termination fees, annual fees, expenses of such Provider which the County is required to pay or for which it is required to reimburse such Provider, and any payments the County is required to make to indemnify any such Provider for any costs or expenses incurred by it or any loss suffered by it in connection with a Credit Facility or Reserve Account Credit Facility, but shall not include any Payment Obligations.

"Redemption Account" means the Redemption Account in the Debt Service Fund created and designated by Section 502 of this Ordinance.

"Refunded Obligations" means collectively or individually, as the context requires, (a) the Series A Bonds, (b) the Series 1992 Bonds, (c) the Series A G.O. Bonds, (d) the Series B G.O. Bonds, (e) the Series 1987 Bonds, (f) the Series T State Loan, the Series V State Loan, the Series X State Loan, the Series H State Loan and the Series W State Loan, all as further defined and described herein or in the Series Resolution relating to the refunding of said obligations.

"Refunding Bonds" means the Bonds issued at any time under the provisions of Section 209 of this Ordinance.

"Series" means the Bonds delivered at any one or more times under the provisions of this Ordinance which are designated by or pursuant to this Ordinance or any supplemental ordinance of the Board or applicable Series Resolution as constituting a single Series.

"Series A Bonds" means that portion of the Refunded Obligations consisting of the outstanding principal balance of the Dade County Water and Sewer System Revenue Bonds, Series A, originally issued pursuant to the authority of Ordinance No. 78-81 of the County, and after repeal of said ordinance following the consolidation of the Miami-Dade Water and Sewer Authority Department into Dade County, secured by and issued under Ordinance No. 78-82 of the County, enacted by the Board on November 21, 1978 as amended and supplemented.

"Series A G.O. Bonds" means that portion of the Refunded Obligations consisting of the Dade County Waterworks System Bonds, Series A, issued pursuant to Ordinance No. 76-6, enacted by the Board on January 20, 1976.

"Series B G.O. Bonds" means that portion of the Refunded Obligations consisting of the outstanding principal balance of the Dade County Waterworks System Bonds, Series B, issued pursuant to Resolution No. R-634-79, adopted by the Board on May 15, 1979.

"Series H, Series T, Series V, Series W and Series X State Loans" (individually or collectively) means those portions of the Refunded Obligations consisting of the respective outstanding principal balances of those State Loans under various loan agreements between the Department of Environmental Regulation of the State of Florida and the Division of Bond Finance of the State Board of Administration (collectively, the "State Agencies") and Dade County (the "Local Agency"), authorized as local governmental agency loans from the State of Florida under the provisions of Section 14, Article VII of the Florida Constitution and Section 403.1834, Florida Statutes, the funds for which loans were provided through the issuance of the respective corresponding series of State of Florida Full Faith and Credit Pollution Control Bonds.

"Series 1987 Bonds" means that portion of the Refunded Obligations consisting of the outstanding principal balance of the Dade County Waterworks System Refunding Bonds, Series 1987, issued pursuant to Resolution No. R-401-87, adopted by the Board on April 7, 1987.

"Series 1992 Bonds" means that portion of the Refunded Obligations consisting of the outstanding principal balance of the Dade County Water System Revenue Refunding Bonds, Series 1992, issued pursuant to Resolution No. R-942-92 of the County, adopted by the Board on July 21, 1992.

"Series 1993A Bonds" means those bonds authorized to be issued hereunder for the purpose of paying the costs of Series 1993A Projects.

"Series 1993A Projects" means additions, extensions and improvements to the Water and Sewer Utility, to be more particularly described in the Series Resolution relating to the issuance of the Series 1993A Bonds.

"Series 1993 Refunding Bonds" means those Bonds authorized to be issued hereunder for the purpose of refunding, on a current or advance basis, as applicable, the Refunded Obligations.

"Series Resolution" or "Resolution" means, as to any one or more Series of Bonds, the resolution or resolutions, including any award resolution, of the County providing for the authorization, sale and issuance of a Series of Bonds and includes any certificate of award, any trust indenture, the bond purchase agreement or other document or instrument that is approved by or required to be executed by any such Resolution, including any State Revolving Fund Loan Agreement or agreement relating to a State Loan.

"Sewer System" means and includes any plant, system, facility or property, and additions, extensions and improvements thereto at any future time constructed or acquired as part thereof, owned by the County and useful or necessary or having a present capacity for future use in connection with the collection, treatment, purification and disposal of sewage of any nature or originating from any source, and without limiting the generality of the foregoing definition, shall embrace treatment plants, pumping stations, lift stations, valves, force mains, intercepting sewers, laterals, pressure lines, mains and all necessary appurtenances and equipment, all wastewater mains and laterals for the reception and collection of sewage from premises connected therewith, and shall include all real and personal property and any interest therein, rights, easements and franchises of any nature whatsoever relating to any such system and necessary or convenient for the operation thereof. Sewer System shall not include, at the option of the County, Separate Systems.

"State Loan" means, generally (and in addition to the State Loans constituting part of the Refunded Obligations); (i) any loan from the State of Florida to the County for Improvements to the Water and Sewer Utility pursuant to any State of Florida Pollution Control Loan Agreement ("Loan Agreement") entered into pursuant to the authority granted by Article VII, Section 14 of the Florida Constitution and Section 403.1834, Florida Statutes, or any legislation continuing such authority, and (ii) any indebtedness (other than Bonds) issued for the purpose of providing funds for paying or prepaying all or any portion of a loan described in clause (i) of this definition.

shall be deemed to be the interest rate for such bonds for the purpose hereof. If a Hedge Agreement is in effect and the County's Hedge Obligation is a Variable Rate, then such rate shall be deemed to be the Assumed Interest Rate set forth in subparagraph (ii) below.

- (ii) For purposes of determining whether Additional Bonds may be issued under Sections 208 and 209 of this Ordinance, and for the purpose of compliance with the rate covenants set forth in Section 602, the rate of interest on any then outstanding Variable Rate Bonds shall be determined as set forth in (a)(i) above.
- (iii) For purposes of determining whether Additional Bonds may be issued, the interest rate on the proposed Variable Rate Bond shall be deemed to be the "Assumed Interest Rate" as defined below; or if a Hedge Agreement is in effect the interest rate shall be as set forth in (i) B above. If a Hedge Agreement is in effect and the County's Hedge obligation is a variable rate, then such rate shall be deemed to be the Assumed Interest Rate. As used herein the "Assumed Interest Rate" shall be deemed to be the greater of (A) the sum of the average of the actual interest rates on seven day obligations for the immediately preceding 52 weeks (or if not available for the 52 week period, then for the period for which available), as shown by the Public Securities Association Municipal Swap Index, published by Thompson Financial Services (or if such index is not published, a like 7 day index for high quality variable rate demand obligations selected by the County) for such period, plus 50 basis points, or (B) the average of the interest rates which would have been applicable to such Variable Rate Bonds pursuant to the index or formula specified for determination on the interest on such Variable Rate Bonds during the immediately preceding 52 weeks (or if not available for such 52 week period, for the period for which available).

- (b) A Multimodal Bond shall be deemed to be a Variable Rate Bond unless and until it has been irrevocably converted to bear a fixed interest rate for the entire balance of its term.

"Water and Sewer Utility" or "Utility" means, collectively, the water supply, treatment and distribution system and the sewage collection, transmission, treatment and disposal systems owned and operated by the County, together with any Improvements, extensions or

"State Revolving Fund Loan Agreement" means any and all agreements between the State of Florida Department of Environmental Regulation and the County; executed under and pursuant to the applicable laws of the State of Florida.

"Subordinate Obligations" means indebtedness or other payment obligation which, with respect to any issue thereof, by operation of law, contract, indenture or other document, is subordinated and subject in right to the prior payment in full, from Pledged Revenues, of the Bonds. Subordinate Obligations include, but are not limited to, all obligations of the County under any State Revolving Fund Loan Agreement.

"Term Bonds" means that portion of the Bonds of any Series which are stated to mature on one date in a calendar year and which shall be subject to mandatory redemption by operation of Amortization Requirements.

"Variable Rate" means, when used with respect to any Bonds or Hedge Obligation, Bonds or Hedge Obligations having (or determined by reference to) an interest rate which is subject to future change so that at the date any calculation of interest thereon is required to be made hereunder or under any Series Resolution, the interest payable at any future time or for any interest period (which is relevant to such calculation) is not known. For the following purposes, interest on Variable Rate Bonds shall be calculated as follows:

- (a) If, as of the date of any calculation, any Outstanding Bond is a Variable Rate Bond, or if any Additional Bond to be issued is a Variable Rate Bond, the following rules shall apply:
  - (i) At the time of establishing the Annual Budget for any Fiscal Year, the rate of interest on any outstanding Variable Rate Bond shall be deemed to be (A) if no Hedge Agreement relating to such Bond shall be in effect, the mean average interest rate borne by such Bond during the preceding twelve (12) months (or such shorter period as such Bond has been outstanding), or (B) if a Hedge Agreement relating to such Bond is in effect for any period during such Fiscal Year, the interest rate determined by taking into account the payments expected to be made or expected to be received by the County under such Hedge Agreement (other than Hedge Charges) shall be used for such period, such that if the Bonds and the Hedge Agreement taken together result in a net fixed rate payable by the County for such period, such net fixed rate shall be deemed to be the rate of interest on such Bonds for purposes hereof, or (C) if two Variable Rate Bonds taken together result in a net fixed rate payable by the County, such net fixed rate

enlargements, as same may exist from time to time; provided, however, the Water and Sewer Utility shall not include, at the option of the County, any Separate Systems.

"Water System" means and includes any plant, system, facility or property, and additions, extensions and improvements thereto at any future time constructed or acquired as part thereof, owned by the County and useful or necessary or having the present capacity or future use in connection with the development of sources, treatment or purification and distribution of water, and, without limiting the generality of the foregoing, shall include dams, reservoirs, storage tanks, mains, lines, valves, meters, pumping stations, laterals and pipes for the purpose of carrying water to the premises connected with such system, and shall include all real and personal property and any interest therein, rights, easements and franchises of any nature whatsoever relating to any such system and necessary or convenient for the operation thereof. Water System shall not include, at the option of the County, Separate Systems.

SECTION 103. Interpretations. Unless the context shall otherwise indicate, the words "Bond", "owner", "holder" and "person" shall include the plural as well as the singular number, the word "person" means any individual corporation, partnership, joint venture, association, joint-stock company, trust, unincorporated organization or government or any agency or political subdivision thereof, and the word "holder" or "bondholder" when used herein with respect to Bonds issued hereunder shall mean the Holder or registered owner, as the case may be, of Bonds at the time issued and outstanding hereunder.

## ARTICLE II

### Issuance of Bonds; Form, Execution, Delivery and Registration of Bonds.

**SECTION 201. Authority for Issuance of Bonds.** The Bonds authorized to be issued under this Ordinance are issued, and the Hedge Agreements authorized to be secured under the provisions hereof are entered into pursuant to the authority of the Constitution and laws of the State of Florida, including, but not limited to the Dade County Home Rule Amendment and Charter, as amended, Chapters 125, 159 and 166, Florida Statutes, and all other applicable laws.

(a) **The Series 1993 Refunding Bonds.** There is hereby authorized to be issued Bonds in an aggregate principal amount not exceeding \$500,000,000, for the purpose of refunding, on a current or advance basis, the Refunded Obligations, paying the cost of issuance of said Bonds, and paying such other costs as may be specified or provided for in the Series Resolution relating to the issuance of said Series 1993 Refunding Bonds.

The details of a plan of refunding, including providing for the creation of an escrow deposit agreement or agreements, the designation of an escrow agent or agents and providing for the purchase of Defaulted Obligations, will be as set forth in or provided for by the Series Resolution relating to the Series 1993 Refunding Bonds.

(b) **The Series 1993A Bonds.** There is hereby authorized to be issued Bonds in an aggregate principal amount not to exceed \$500,000,000 for the purpose of paying all or a portion of the cost of the Series 1993A Projects, providing for capitalized interest, the costs of credit enhancement, providing a reserve fund, and paying for such other costs incidental to the issuance of said Bonds, all as may be provided for in the Series Resolution relating to the Series 1993A Bonds.

(c) **Additional Bonds, Refunding Bonds and Completion Bonds.** There may be issued, from time to time, pursuant to the provisions of this Ordinance, Additional Bonds, Refunding Bonds and Completion Bonds, subject to the terms and provisions hereinafter provided in Sections 208, 209 and 210.

**SECTION 202. Details of Bonds.** The Series Resolution relating to any Series of Bonds shall provide for establishing the terms and provisions of the Bonds of each such Series, including, but not limited to the denomination of each Bond, the numbering sequence of the Bonds, interest rates, maturities, payment dates and redemption provisions. The Bonds of each Series shall bear an appropriate title, which shall include an identifying Series designation.

may be exchanged for Bonds of the same Series, interest rate, maturity date and tenor of any other authorized denominations.

The Registrar shall keep books for the registration of Bonds and for the registration of transfers of Bonds. The Bonds shall be transferable by the Holder thereof in person or by his attorney duly authorized in writing only upon the registration books of the County kept by the Registrar and only upon surrender thereof together with a written instrument of transfer satisfactory to the Registrar duly executed by the Holder or his duly authorized attorney. Upon the transfer of any such Bond, the County shall issue in the name of the transferee a new Bond or Bonds.

The County, the Paying Agent and the Registrar shall deem and treat the person in whose name any Bond shall be registered upon the books kept by the Registrar as the absolute owner of such Bond, whether such Bond shall be overdue or not, for the purpose of receiving payment of, or on account of, the principal of and interest on such Bond as the same become due and for all other purposes. All such payments so made to any such Holder or upon his order shall be valid and effectual to satisfy and discharge the liability upon such Bond to the extent of the sum or sums so paid, and neither the County, the Paying Agent nor the Registrar shall be affected by any notice to the contrary.

In all cases in which the privilege of exchanging Bonds or transferring Bonds is exercised, the County shall execute and the Registrar shall authenticate and deliver Bonds in accordance with the provisions of this Ordinance or any applicable Series Resolution. All Bonds surrendered in any such exchanges or transfers shall forthwith be delivered to the Registrar and canceled by the Registrar in the manner provided in this Section. There shall be no charge for any such exchange or transfer of Bonds, but the County or the Registrar may require the payment of a sum sufficient to pay any tax, fee or other governmental charge required to be paid with respect to such exchange or transfer. Neither the County nor the Registrar shall be required (a) to transfer or exchange Bonds for a period from a Regular Record Date to the next succeeding Interest Payment Date on such Bonds or 15 days next preceding any selection of Bonds to be redeemed or thereafter until after the mailing of any notice of redemption; or (b) to transfer or exchange any Bonds called for redemption. However, if less than all of a Term Bond is redeemed or defeased, the County shall execute and the Registrar shall authenticate and deliver, upon the surrender of such Term Bond, without charge to the Bondholder, for the unpaid balance of the principal amount of such Term Bond so surrendered, a registered Term Bond in the appropriate denomination and interest rate.

All Bonds paid or redeemed, either at or before maturity shall be delivered to the Registrar when such payment or redemption is made, and such Bonds, together with all Bonds purchased by the County, shall thereupon be promptly canceled. Bonds so canceled may at any time be destroyed by the Registrar, who shall execute a certificate of destruction in duplicate by

The County may issue all manner and forms of Bonds hereunder, including, but not limited to Fixed Rate Bonds, Variable Rate Bonds (including index, auction, inverse floater or other types of Variable Rate Bonds), Capital Appreciation Bonds, Convertible Capital Appreciation Bonds, Compounding Interest Bonds, Multimodal Bonds, Serial Bonds, Term Bonds, taxable or tax-exempt Bonds, and any one or combination of these.

The County may enter into Hedge Agreements, Interest Swap Agreements, agreements regarding Credit Facilities, and all other forms of contracts relating to the issuance of Bonds, whether or not related to a specific Series of Bonds.

Principal, interest or the Accreted Value thereof on the Bonds and premiums, if any, shall be paid in any coin or currency of the United States of America which, at the respective dates of payment thereof, is legal tender for the payment of public and private debts. The Bonds shall be payable at such places and in such other manner as shall be provided for in the Series Resolution under which such Bonds are issued.

### SECTION 203. Execution and Form of Bonds.

(a) Bonds shall be signed by, or bear the facsimile signature of the Chairman and shall be signed by or bear the facsimile signature of, the Clerk, and a facsimile of the official seal of the County shall be imprinted on the Bonds. When applicable, the Bonds shall be authenticated by manual signature of an authorized signer on behalf of an authenticating agent for such Bonds. The County may provide by Series Resolution any other uniform method for execution and authentication of Bonds.

(b) The form of any Bonds shall be specified in or provided for in the Series Resolution under which such Bonds are issued.

(c) Bonds issued pursuant to any Series Resolution may be issued in Book-Entry Form, or may be issued in fully certificated form.

**SECTION 204. No Necessity for Validation.** The Bonds issued under and pursuant to this Ordinance are not required to be validated; however, Bonds of any Series may be validated at the option of the County.

**SECTION 205. Negotiability, Registration and Transfer of Bonds.** At the option of the registered Holder thereof and upon surrender thereof at the designated corporate trust office of the Registrar with a written instrument of transfer satisfactory to the Registrar, duly executed by the registered Holder or his duly authorized attorney, and upon payment by such Holder of any charge which the Registrar may make as provided in this Section, the Bonds

the signature of one of its authorized officers describing the Bonds so destroyed, and one executed certificate shall be filed with the County and the other executed certificate shall be retained by the Registrar.

The County, by Series Resolution, may provide for the registration of the Bonds of any Series by adopting the Book-Entry System for such Series. Beneficial ownership of such Bonds shall be transferred in accordance with the procedures of the Securities Depository and its participants.

**SECTION 206. Bonds Mutilated, Destroyed, Stolen or Lost.** In case any Bond shall become mutilated, or be destroyed, stolen or lost, the County may in its discretion cause to be executed, and the Registrar shall authenticate and deliver, a new Bond of like date and tenor as the Bond so mutilated, destroyed, stolen or lost in exchange and substitution for such mutilated Bond upon surrender and cancellation of such mutilated Bond or in lieu of and substitution for the Bond destroyed, stolen or lost, and upon the Holder furnishing the County and the Registrar proof of his ownership thereof and satisfactory indemnity and complying with such other reasonable regulations and conditions as the County and the Registrar may prescribe and paying such expenses as the County and the Registrar may incur. All Bonds so surrendered shall be canceled by the Registrar or Paying Agent on behalf of the County. If any of the Bonds shall have matured or be about to mature, instead of issuing a substitute Bond, the County may pay the same, upon being indemnified as aforesaid, and if such Bond be lost, stolen or destroyed, without surrender thereof.

Any such duplicate Bonds issued pursuant to this Section 206 shall constitute original, additional contractual obligations on the part of the County whether or not the lost, stolen or destroyed Bonds be at any time found by anyone, and such duplicate Bonds shall be entitled to equal and proportionate benefits and rights as to lien on and source and security for payment from the funds, as hereinafter pledged, to the same extent as all other Bonds issued hereunder.

**SECTION 207. Preparation of Definitive Bonds; Temporary Bonds.** Until definitive Bonds are prepared, the Chairman and the Clerk may execute and the Registrar may authenticate, in the same manner as is provided in Section 203 of this Article II, and deliver, in lieu of definitive Bonds, but subject to the same provisions, limitations and conditions as the definitive Bonds, one or more printed, lithographed or typewritten temporary fully registered Bonds, substantially of the tenor of the definitive Bonds in lieu of which such temporary Bond or Bonds are issued, in authorized denominations or any whole multiples thereof, and with such omissions, insertions and variations as may be appropriate to such temporary Bonds. Upon the surrender at the corporate trust office of the Registrar of such temporary Bonds for which no payment or only partial payment has been provided, the Registrar shall authenticate and, without charge to the Holder thereof, deliver in exchange therefor, definitive Bonds of the same



aggregate principal amount and maturity as the temporary Bond surrendered. Until so exchanged, the temporary Bonds shall in all respects be entitled to the same benefits and security as definitive Bonds issued pursuant to this Ordinance.

**SECTION 208. Provisions for Issuance of Additional Bonds: Debt Service Coverage Requirements.** Additional Bonds of the County and any other obligations that are First Lien Obligations, which for the purposes of this Section are deemed Additional Bonds (other than Completion Bonds and Refunding Bonds), may be issued under and secured by this Ordinance, subject to the conditions hereinafter provided in this Section, from time to time. (i) for the purpose of paying all or any part of the cost of constructing or acquiring any improvements, (ii) or to refund any obligations of the County which financed or refinanced any improvements, or (iii) to finance termination payments relating to Hedge Agreements.

Before any Series of Additional Bonds shall be issued under the provisions of this Section 208, the Board shall adopt a Series Resolution authorizing the issuance of such Additional Bonds, providing for the amount and the details thereof, and describing in brief and general terms the Project to be constructed or acquired (or, if applicable, obligations to be refunded). The Additional Bonds of each Series issued under the provisions of this Section shall be dated, shall mature (subject to the right of prior redemption as hereinafter set forth) on such dates in such year or years not more than the number of years allowed by law after the date of such Additional Bonds, shall have such Paying Agents, and any Term Bonds of such Series shall have such Amortization Requirements, and may be made redeemable at such times and prices (subject to the provisions of Article III of this Ordinance), all as may be specified in or provided for by or pursuant to the Series Resolution authorizing the issuance of such Additional Bonds. Such Additional Bonds, if issued in certificated form, shall be executed substantially in the manner hereinabove set forth, with such changes as may be necessary or appropriate to conform to the provisions of the Series Resolution authorizing the issuance of such Additional Bonds. Prior to the delivery of each Series of Additional Bonds, there shall be filed with the Finance Director the following:

- (a) a copy, certified by the Clerk, of the Series Resolution mentioned above;
- (b) a copy, certified by the Clerk, of the Resolution adopted by the Board awarding such Additional Bonds and directing the delivery of such Additional Bonds to or upon the order of the purchasers therein named upon payment of the purchase price therein set forth, or if such Additional Bonds are sold by competitive bid, authorizing the receipt of bids and acceptance of the best qualifying bid received;
- (c) a certificate, signed by the Finance Director

proceeds of the Additional Bonds then sought to be delivered and shall have established rates and charges to be charged and collected from the users of such Improvements, by adding the amount of the Net Operating Revenues estimated to be realized during the first twelve (12) months after the date of completion, as estimated by the Consultant, of such Improvements, and

- (5) in case the County has made deposits of Net Operating Revenues to or withdrawals from the Rate Stabilization Fund during the Computation Period, by subtracting the amount of any such deposits and adding the amount of any such withdrawals;
- (ii) setting forth the respective amounts of the Principal and Interest Requirements for each Fiscal Year thereafter including the Additional Bonds then requested to be delivered; and stating that the adjusted Net Operating Revenues (as determined by subparagraph (i) above) for the Computation Period shall have equalled at least the sum of:

- (1) one hundred ten percent (110%) of the Maximum Principal and Interest Requirement on all Bonds to be Outstanding as of the date of such issuance, plus
- (2) one hundred percent (100%) of all required deposits to the Reserve Account during the Computation Period.

**Subordinate Obligations.** In addition to satisfying the debt service coverage requirements set forth above, the Adjusted Net Operating Revenues remaining after deduction of the Maximum Principal and Interest Requirements on all Bonds shall be at least equal to one hundred percent (100%) of all debt service and reserve requirements on Subordinate Obligations;

- (d) a certificate signed by the Consultant setting forth:
  - (i) the estimated date on which such Improvements will be placed in operation (if the improvements being financed or refinanced have not theretofore been placed in service);

- (i) setting forth the amount of the Net Operating Revenues for any four consecutive quarters (the "Computation Period") in the preceding six quarters. For purposes of this paragraph (c), the Net Operating Revenues, at the election of the County, may be adjusted as follows (provided that, each such adjustment shall be certified by the Consultant in a certificate or report which shall set forth the assumptions upon which it is based and shall state that such assumptions, in the opinion of the Consultant, form a reasonable basis for the conclusions expressed therein):

- (1) in case the rates and charges for the services furnished by the Water and Sewer Utility shall have been revised and such revised rates and charges shall have gone into effect prior to the delivery of the Additional Bonds, by adding the additional amount of Net Operating Revenues which would have been received during the Computation Period if such rates and charges had been in effect during the Computation Period, and
- (2) in case an existing water system, sewer system or water and sewer system is to be acquired with the proceeds of the Additional Bonds, by adding the additional amount of Net Operating Revenues which would have been realized during the Computation Period if such existing water system, sewer system or water and sewer system to be acquired had been a part of the Water and Sewer Utility during the Computation Period, and
- (3) in case the County shall enter into a contract with any governmental unit, the term of which shall be at least as long as the term of the Additional Bonds then sought to be delivered, in which the County agrees either to furnish services for the collection, treatment and disposal of sewage or other waste matter or to furnish services in connection with any water system, the additional amount of Net Operating Revenues which would have been realized during the Computation Period if such contract had been in effect during the Computation Period, and
- (4) in case the County shall construct or acquire any Improvements to the Water and Sewer Utility with the

- (ii) the Consultant's estimate of the Net Operating Revenues for each of the three Fiscal Years following the Fiscal Year in which the Improvements will be placed in operation as estimated in item (i) of said certificate, taking into account the rates and charges in effect on the date of delivery of such Additional Bonds and any revised rates and charges that shall become effective prior to or during such Fiscal Year; and
- (iii) that after taking into account (i) and (ii) above, the Adjusted Net Operating Revenues will satisfy the ratio set forth in Section 208(c)(ii) above, and that the Adjusted Net Operating Revenues remaining after deduction of the Maximum Principal and Interest Requirements on all Bonds shall be at least equal to one hundred percent (100%) of all debt service and reserve requirements on Subordinate Obligations;
- (e) an opinion of the County Attorney stating that the issuance of such Additional Bonds has been duly authorized.

**State Loans.** If the County enters into any Loan Agreement for a State Loan, the covenants and agreements herein shall be for the benefit of the Holder of such State Loan and the County shall further comply with all provisions of the instrument authorizing such State Loan.

**Series 1993A Bonds Not Additional Bonds.** Bonds authorized herein as Series 1993A Bonds shall not be deemed to be Additional Bonds, but prior to the delivery and issuance of such Series 1993A Bonds, the Finance Director shall deliver a certificate to the effect that the rate covenants contained in Section 602 are being complied with.

When the documents mentioned above in this Section shall have been filed with the Finance Director and when the Additional Bonds described in the Resolutions mentioned in clauses (a) and (b) of this Section shall have been executed as required by this Ordinance, the County shall deliver such Additional Bonds at one time to or upon the order of the purchasers named in the Resolution mentioned in said clause (b), but only upon payment to the County of the purchase price of such Additional Bonds.

The proceeds, excluding accrued interest, any premium of such Series of Additional Bonds and any proceeds to be deposited in the Reserve Account for the Bonds of such Series shall be deposited by the Finance Director with one or more Depositories to the credit of

a special account or accounts, which shall be created and appropriately designated in the Series Resolution, and shall be applied to the payment of the Cost of such Improvements and the cost of issuance of the Bonds. The amount received as accrued interest and any premium on such Bonds shall be deposited to the credit of the Bond Service Account for application to the interest due on such Bonds. Any proceeds which are required by the applicable Series Resolution to fund the Reserve Accounts for such Bonds or to purchase a Reserve Account Credit Facility for such Bonds shall be used for said purpose.

**SECTION 209. Refunding Bonds.** Refunding Bonds may be issued under and secured by this Ordinance, subject to the conditions hereinafter provided in this Section, from time to time for the purpose of providing funds for paying at maturity and redeeming all or any part of the outstanding Bonds of any one or more Series, including the payment of any redemption premium thereon and any interest which will accrue on such Bonds and any principal on Serial Bonds which will mature on the redemption date or stated maturity date or dates and any expenses in connection with such paying at maturity and redemption.

Before any Series of Refunding Bonds shall be issued under the provisions of this Section, the Board shall adopt a Series Resolution authorizing the issuance of such Refunding Bonds, fixing or providing for the fixing of the amount and details thereof, and describing the Bonds to be paid and redeemed. Such Refunding Bonds shall be dated, shall be stated to mature (subject to the right of prior redemption as hereinafter set forth) on such dates in such year or years not more than the number of years allowed by law after the date of such Refunding Bonds, shall have such Paying Agents, and any Term Bonds of such Series shall have such Amortization Requirements, and may be made redeemable at such times and prices (subject to the provisions of Article III of this Ordinance), all as may be specified in or provided for by the Series Resolution authorizing the issuance of such Refunding Bonds. Such Refunding Bonds, if issued in certificated form, shall be executed substantially in the manner hereinabove set forth, with such changes as may be necessary or appropriate to conform to the provisions of the Series Resolution authorizing the issuance of such Refunding Bonds. Prior to or simultaneously with the delivery of such Refunding Bonds by the Finance Director, there shall be filed with the Finance Director the following:

- (a) a copy, certified by the Clerk, of the Series Resolution authorizing the issuance of such Refunding Bonds;
- (b) a copy, certified by the Clerk, of the Resolution adopted by the Board, awarding such Refunding Bonds and directing the delivery of such Refunding Bonds to or upon the order of the purchasers therein named upon payment of the purchase price therein set forth;

Bonds, shall have such Paying Agents, and any Term Bonds of such Series shall have such Amortization Requirements, and may be made redeemable at such times and prices (subject to the provisions of Article III of this Ordinance), all as may be specified in or provided for by the Series Resolution authorizing the issuance of such Completion Bonds. Such Completion Bonds, if issued in certificated form, shall be executed substantially in the manner hereinabove set forth, with such changes as may be necessary or appropriate to conform to the provisions of the Series Resolution authorizing the issuance of such Completion Bonds. Prior to or simultaneously with the delivery of such Completion Bonds by the Finance Director, there shall be filed with the Finance Director the following:

- (a) a copy, certified by the Clerk, of the Series Resolution mentioned above authorizing the issuance of such Completion Bonds;
- (b) a copy, certified by the Clerk, of the resolution adopted by the Board, awarding or authorizing the award of such Completion Bonds and directing the delivery of such Completion Bonds to or upon the order of the purchasers therein named upon payment of the purchase price therein set forth;
- (c) an opinion of the County Attorney stating that the signer is of the opinion that the issuance of such Completion Bonds has been duly authorized and that all conditions precedent to the delivery of such Completion Bonds have been fulfilled;

When the documents mentioned above in this Section shall have been filed with the Finance Director and when the Completion Bonds described in the resolutions mentioned in clauses (a) and (b) of this Section shall have been executed as required by this Ordinance, the Finance Director shall deliver such Completion Bonds at one time to or upon the order of the purchasers named in the resolution mentioned in said clause (b), but only upon payment to the Finance Director of the purchase price of such Completion Bonds.

**SECTION 211. Moneys Held in Trust.** All moneys which the County shall have withdrawn from the Debt Service Fund or shall have received from any other source and deposited with the Paying Agents, for the purpose of paying any of the Bonds hereby secured, either at the maturity thereof or upon call for redemption, or for the purpose of paying any interest on the Bonds hereby secured, shall be held in trust for the respective Holders of such Bonds. But any moneys which shall be so set aside or deposited and which shall remain unclaimed by the Holders of such Bonds for the period of six (6) years after the date on which amount shall have become due and payable, upon the County's request in writing, shall be paid to the County or to such officer, board or body as may then be entitled by law to receive the same, and thereafter the Holders of such Bonds shall look only to the County or to such officer,

- (c) an opinion of the County Attorney to the effect that the issuance of such Refunding Bonds has been duly authorized and that all conditions precedent to the delivery of such Refunding Bonds have been fulfilled;

- (d) a certificate, signed by the Finance Director, either:

- (1) stating that the Principal and Interest Requirements for each Fiscal Year thereafter (except for years subsequent to the final maturity of all then Outstanding Bonds) on account of all Bonds to be Outstanding after the issuance of such Bonds and the payment and redemption of the Bonds to be paid and redeemed shall not exceed the Principal and Interest Requirements for each such Fiscal Year on account of all Bonds Outstanding immediately prior to the issuance of such Bonds, or
- (2) complying with Paragraph 208(c) hereof.

- (e) such documents as shall be required by the Finance Director to show that provision has been duly made in accordance with the provisions of this Ordinance for the payment or redemption of all of the Bonds to be paid or redeemed.

When the documents mentioned above in this Section shall have been filed with the Finance Director and when the Refunding Bonds described in the Resolutions mentioned in clauses (a) and (b) of this Section shall have been executed as required by this Ordinance, the Finance Director shall deliver such Refunding Bonds at one time to or upon the order of the purchasers named in the Resolution mentioned in said clause (b), but only upon payment to the Finance Director of the purchase price of such Refunding Bonds.

**SECTION 210. Completion Bonds.** Bonds may be issued under and secured by this Ordinance, subject to the conditions hereinafter provided in this Section, from time to time for the purpose of providing funds for paying the cost of completion of any Project for which one or more Series of Bonds have theretofore been issued, in a principal amount not greater than ten percent (10%) of the estimated cost of such Project.

Before any Series of Completion Bonds shall be issued under the provisions of this Section, the Board shall adopt a Series Resolution authorizing the issuance of such Completion Bonds, fixing or providing for the fixing of the amount and details thereof, and describing the Improvements. Such Completion Bonds shall be dated, shall be stated to mature (subject to the right of prior redemption as hereinafter set forth) on such dates in such year or years not more than the number of years allowed by law after the date of such Completion

board or body, as the case may be, for the payment and then only to the extent of the amounts so received without any interest thereon, and the Paying Agents shall have no responsibility with respect to such moneys.

**SECTION 212. Cancellation of Bonds.** All Bonds paid, redeemed or purchased, either at or before maturity, shall be canceled by the Paying Agent upon the payment, redemption or purchase of such Bonds. All Bonds canceled under any of the provisions of this Ordinance shall be destroyed by the Paying Agent and the person so destroying such Bonds shall execute a certificate in triplicate describing the Bonds, and one executed certificate shall be filed with the Clerk, one executed certificate shall be filed with the Finance Director and the other executed certificate shall be retained by the person making such certificate.

#### ARTICLE III

##### Redemption

**SECTION 301. Provisions for Redemption.** Each Series of Bonds shall be subject to redemption prior to their maturity upon the terms and conditions and at such times, in such manner and at such redemption price or premium as shall be provided for by the Series Resolution adopted with respect to such Series of Bonds.

**SECTION 302. Notice of Redemption.** In the event any Bonds are called for redemption, the Paying Agent shall give notice in the name of the County, of the redemption of such Bonds, which notice shall (i) specify the Bonds, including Series designations, to be redeemed, the CUSIP numbers, certificate numbers, the date of issue, interest rate, maturity date of the Bonds to be redeemed, the redemption date, the date of notice, the redemption price and the place or places where amounts due upon such redemption will be payable (which shall be the designated principal corporate trust office of the Paying Agent or of its agent) and, if less than all of the Bonds of any Series are to be redeemed, the numbers of the Bonds and the portion of Bonds so to be redeemed and (ii) state that on the redemption date, the Bonds to be redeemed shall cease to bear interest.

Notice of redemption shall be given by the Paying Agent in the name of the County by mailing a copy of an Official Redemption Notice to the registered owners of the Bonds not less than 30 days prior to the date fixed for redemption, by first class mail at their addresses appearing on the bond registration books of the County maintained by the Registrar, and, if applicable, to the securities depository. Provision may be made in any applicable Series Resolution for notice by certified mail, or other type of special mailing, to the Holders of Bonds having an aggregate principal amount of, or Accreted Value in the case of Capital Appreciation Bonds, \$1,000,000 or more.

A second notice of redemption shall be given (within 60 days after the redemption date) in the manner required above, to the registered Holders of redeemed Bonds which have not been presented for payment within 30 days after the redemption date. However, failure to give such notice shall not affect the validity of the redemption of the Bonds.

(A) Anything contained in this Ordinance to the contrary notwithstanding, failure to mail any such notice (or any defect in the notice) to one or more Holders of Bonds shall not affect the validity of any proceedings for such redemption with respect to Holders of Bonds to which notice was duly given.

(B) The giving of any notice of redemption described above, other than for mandatory sinking fund redemptions, shall be conditioned upon the actual issuance and sale by

the County of the Refunding Bonds utilized to make the redemption and receipt by the County of the redemption price of the Bonds out of such refunding, or the deposit by the County of the redemption price of the Bonds from other available resources.

(C) Any Bonds which have been duly selected for redemption, as well as any Bonds which are deemed to be paid in accordance with this Article III, shall cease to bear interest on the specified redemption date.

#### ARTICLE IV

##### Construction Fund

**SECTION 401. Construction Fund.** There is hereby created and established a special fund to be called the "Dade County Water and Sewer Utility Construction Fund" (the "Construction Fund"), which shall be held by the Department. A separate account shall be established in the Construction Fund for each Series of Bonds issued hereunder from time to time relating to a Project, which shall be provided for in the applicable Series Resolution.

The moneys in the Construction Fund shall be held in trust and applied to the payment of the Cost of any Improvements and, pending such application, shall be subject to a lien and charge in favor of the Holders of the Bonds issued and Outstanding under this Ordinance and for the further security of such Holders until paid out, as herein provided.

**SECTION 402. Payments from Construction Fund.** Payment of the Cost of any Improvements shall be made from the applicable Construction Account, as provided for in the Series Resolution relating to the applicable Project. Moneys in the respective Construction Accounts shall be disbursed subject to such controls and procedures as the County may from time to time institute in connection with the disbursement of funds for paying the Cost of Projects, and in accordance with, or as provided for by the applicable Series Resolution.

**SECTION 403. Cost of Improvements.** The Cost of any Improvements to be constructed or acquired shall include, without limitation, the following:

- (a) obligations incurred for labor and materials and to contractors, builders and materialmen in connection with the construction of enlargements, improvements, and extensions, for machinery and equipment, for the restoration of property damaged or destroyed in connection with such construction, for the relocation of water and sewer lines and for the demolition and disposal of structures necessary or desirable in connection with such construction or the operation of the Water and Sewer Utility;
- (b) interest accruing upon any Bonds prior to the commencement of and during construction or for any additional period as may be determined by the County, subject to any limitation in the applicable Series Resolution;
- (c) the cost of acquiring any Water System or Sewer System now serving any portion of the County and territory adjacent thereto, or any part of such system, either within or without or partly within and partly without the corporate limits of the County;

- (d) the cost of acquiring by purchase, and the amount of any award or final judgment in any proceeding to acquire by condemnation, such land, structures, facilities and improvements, interests in lands as necessary or convenient in connection with such construction or with the operation of the Water and Sewer Utility, and the amount of any damages incident thereto;
- (e) expenses of administration properly chargeable to such construction or acquisition, legal, architectural and engineering expenses and fees, cost of audits and of preparing and issuing the Bonds, fees and expenses of consultants, financing charges, taxes or other governmental charges lawfully assessed during construction, premiums on insurance in connection with construction, the cost of funding the Reserve Account, costs of Credit Facilities, Hedge Charges, costs of issuance and all other items of expense not elsewhere specified herein, incident to the financing, construction or acquisition of any Improvements and the placing of the same in operation; and
- (f) any obligation or expense advanced by the County for any of the foregoing purposes, which is legally reimbursable.

**SECTION 404. Disposition of Construction Fund Balance.** When the construction of any Improvements shall have been completed, which fact shall be determined by the County Manager or Finance Director in a manner approved by him, the balance in the Construction Fund not reserved by the County for the payment of any remaining part of the Cost of such Improvements (i) shall be deposited, at the option of the County, to the credit of the Renewal and Replacement Fund, (ii) to the credit of the Debt Service Fund, (iii) shall be applied to purchase or redeem outstanding Bonds, or (iv) may be applied to the Cost of other Improvements to the Utility.

## ARTICLE V

### Revenues and Funds

#### SECTION 501. Security for Bonds, Hedge Obligations and Hedge Charges.

The Bonds shall be a special and limited obligation of the County, payable solely from and secured by a prior lien upon and a pledge of the Pledged Revenues of the Water and Sewer Utility as herein provided. Until payment has been provided for as herein permitted, the payment of the principal of and interest on the Bonds and all Hedge Obligations shall be secured forthwith equally and ratably by an irrevocable lien on the Pledged Revenues, and the County does hereby irrevocably pledge and grant a lien upon such Pledged Revenues to the payment of the principal of and interest on the Bonds, the reserves therefor, Hedge Obligations, and for all other required payments hereunder including Hedge Charges, in the manner and with the priority of application as provided herein. Unless provided for by supplemental ordinance, no Holder of any Bonds issued hereunder nor any Counterparty shall have the right to require or compel the exercise of the ad valorem taxing power of the County or taxation in any form of any property therein for payment of the Bonds or any Hedge Obligation or Hedge Charges, or be entitled to payment of such amount from any other funds of the County, except from the Pledged Revenues in the manner provided herein.

The County does hereby irrevocably pledge and grant a lien upon the Pledged Revenues, subject and subordinate to the application of Pledged Revenues for the purposes and in the manner provided herein, to the payment of Hedge Charges.

#### SECTION 502. Creation of Funds and Accounts.

The following special funds and accounts are hereby created and established: the "Dade County Water and Sewer Utility Revenue Fund" (herein called the "Revenue Fund"); the "Dade County Water and Sewer Utility Bond Debt Service Fund" (herein called the "Debt Service Fund") together with three separate accounts therein, designated "Bond Service Account", "Redemption Account", and "Reserve Account", respectively; the "Dade County Water and Sewer Utility Renewal and Replacement Fund" (herein called the "Renewal and Replacement Fund"); the "Dade County Water and Sewer Utility Plant Expansion Fund" (herein called the "Plant Expansion Fund"); the "Dade County Water and Sewer Utility Rate Stabilization Fund" (herein called the "Rate Stabilization Fund"); and the "Dade County Water and Sewer Utility General Reserve Fund" (herein called the "General Reserve Fund").

A. Trust Funds. The moneys in each of said Funds and Accounts shall be held in trust by the County and applied as hereinafter provided with regard to each such Fund and Account and, pending such application, shall be subject to a lien and charge in favor of the Holders of the Bonds and Counterparties until paid out or transferred as herein provided.

B. Government Accounting Effect. The cash required to be accounted for in each of the Funds and Accounts established herein may be deposited in a single bank account, provided that adequate accounting records are maintained to reflect and control the allocation of the cash on deposit therein for the various purposes of such Funds and Accounts. The designation and establishment of the various Funds and Accounts in and by this Ordinance shall not be construed to require the establishment of any completely independent, self-balancing funds, as such term is commonly defined and used in governmental accounting, but rather is intended solely to constitute an earmarking of Operating Revenues, Capital Facilities Charges, if applicable, and certain other assets of the Water and Sewer Utility for certain purposes and to establish certain priorities for application of such Operating Revenues, Capital Facilities Charges and other assets as herein provided. The Plant Expansion Fund may be established as one or more accounting funds as necessary or desirable to account separately for water and wastewater Capital Facilities Charges or to reflect collection and expenditures, all in the manner required by law for the application of such Capital Facilities Charges.

C. Subaccounts. In each Series Resolution, the County may create subaccounts within the Funds and Accounts herein established with respect to one or more Series of Bonds and may provide that deposits to such Funds and Accounts shall be appropriately credited to such subaccounts, together with amounts received pursuant to any Credit Facility or Hedge Agreement. Amounts held in any such subaccount may be required to be held solely for the applicable Series of Bonds and applied to the payment thereof or to the payment of Payment Obligations and Hedge Obligations relating to such Series.

SECTION 503. Flow of Funds. For as long as any of the principal of and interest on any of the Bonds shall be outstanding and unpaid, or until payment has been provided for as herein permitted, or until there shall have been set apart in the Debt Service Fund, including the Reserve Account therein, a sum sufficient to pay when due the entire principal of the Bonds remaining unpaid, together with interest accrued or to accrue thereon, and all Hedge Obligations and Hedge Charges, the County covenants with the Holders of any and all Bonds as follows:

Application of Revenues. All Revenues shall be deposited in the Revenue Fund as received. Moneys in the Revenue Fund shall be applied to pay Operating Expenses and to create an Operating Expense reserve in an amount to be determined by the County (not to exceed 1/6th of the budgeted Operating Expenses for the then-current Fiscal Year). Thereafter, the County, on or before the 20th day of each month, commencing in the month immediately following the

first delivery of any Bonds, shall apply the remaining amount to the credit of the following Funds and Accounts in the following order:

- (i) to the credit of the Bond Service Account, an amount equal to one-sixth (1/6th) of the amount of interest payable on the Bonds of each Series on the interest payment date next succeeding (less any amount received as capitalized or accrued interest from the proceeds of any Bonds which is available for such interest payment) and an amount equal to one-twelfth (1/12th) of the next maturing installment of principal (or Accreted Value, as applicable) on all Serial Bonds then outstanding; provided, however, that:
- (1) in each month intervening between the date of delivery of a Series of Bonds, and the next succeeding interest payment date and the next succeeding principal payment date, respectively, the amount specified in this subparagraph (i) shall be that amount which when multiplied by the number of deposits to the credit of the Bond Service Account required to be made during such respective periods will equal the amounts required (in addition to any amounts received as accrued interest or capitalized interest from the proceeds of such Bonds) for such next succeeding interest payment and next maturing installment of principal, respectively;
- (2) the amount specified in this subparagraph (1) shall be reduced to take into account Hedge Receipts to be received on or before the succeeding interest payment date and shall be increased to provide for the payment of any Hedge Obligations to be paid on or before the succeeding interest payment date; and
- (3) with respect to any Bonds (or any Hedge Agreement) bearing interest at a Variable Rate and/or payable other than semiannually, the amount specified in this subparagraph (i) for the payment of interest (or Hedge Obligation) shall be that amount necessary to provide substantially equal monthly payments for the payment of such interest (or Hedge Obligation) on the payment dates therefor.

- (ii) to the credit of the Redemption Account an amount equal to one-twelfth (1/12th) of the principal amount (or Accreted Value, as applicable) of Term Bonds of each Series then Outstanding required to be retired in satisfaction of the Amortization Requirements for such Bond Year, plus the redemption premiums, if any, which would be payable in such Bond Year for such Term Bonds were to be redeemed prior to their respective maturities from moneys held for the credit of the Debt Service Fund; and
- (iii) to the credit of the Reserve Account the amount required under Section 507 for such month; provided, however, no deposit shall be required in any month in which the amount on deposit in the Reserve Account is at least equal to the Reserve Account Requirement. If a Reserve Account Credit Facility is utilized and the Provider thereof is required to advance any sums to meet Principal and Interest Requirements or other sums required to be funded from the Reserve Account, the County shall reimburse the Provider within 12 months from the date the County receives written notice of such advance by the Provider; and
- (iv) to the payment of principal (including amortization installment, if any) of, and premiums and interest on, and other required payments with respect to Subordinate Obligations; and
- (v) to the credit of the Renewal and Replacement Fund, an amount equal to one-twelfth (1/12th) of the amount to be deposited from Revenues, if any, recommended by the Consultant pursuant to the provisions of Section 607 of this Ordinance, to the credit of said fund during such Fiscal Year; and
- (vi) in the discretion of the County, to the credit of the Rate Stabilization Fund in such sums as shall be determined by the County; and
- (vii) to the credit of the General Reserve Fund, the balance, if any, remaining thereafter.

If the amount deposited in any month to the credit of any of the Accounts or Funds shall be less than the amount required to be deposited under the foregoing provisions of this Section, the requirement therefor shall nevertheless be cumulative and the amount of any

deficiency in any month shall be added to the amount otherwise required to be deposited in each month thereafter until such time as all such deficiencies have been made up.

**SECTION 504. Payment of Operating Expenses.** The Operating Expenses of the Water and Sewer Utility shall be paid from the Revenue Fund. Such Operating Expenses shall be paid as the same become due and payable, shall be made in accordance with standard practices and procedures of the County established from time to time, and the Annual Budget.

**SECTION 505. Application of Monies in Bond Service Account.** (a) Except as provided in subsection (b), all Hedge Receipts shall be deposited by the County directly into the Bond Service Account and applied as provided in this Section. The Finance Director, on or before each interest or principal payment date, shall withdraw from the Bond Service Account, and deposit in trust with the Paying Agents the amounts required for paying the interest on the Bonds as such interest becomes due and payable and the principal of all Serial Bonds as such principal becomes due and payable. In addition, on or before each payment date for any Hedge Obligation, the Finance Director shall withdraw from the Bond Service Account the amount payable with respect to such Hedge Obligation and pay such amount to the applicable Counterparty. Such payments may be made by wire transfer or other electronic means or as may be provided with respect to any Book-Entry System.

(b) Hedge receipts constituting termination payments may, at the option of the County, be applied to acquire a replacement Hedge Agreement on terms similar to the expired or terminated Hedge Agreement and, in such event, only the Hedge Receipts in excess of the cost of entering into such replacement Hedge Agreement shall be deposited into the Bond Service Account as required by subsection (a).

**SECTION 506. Application of Moneys in Redemption Account.** Moneys held for the credit of the Redemption Account shall be applied to the retirement of the Bonds issued under the provisions of this Ordinance as follows:

(a) Subject to the provisions of paragraph (c) of this Section, the Finance Director may purchase any Term Bonds secured hereby and then outstanding, whether or not such Term Bonds shall then be subject to redemption, on the most advantageous terms obtainable with reasonable diligence, such price not to exceed the principal of such Term Bonds plus the amount of the redemption premium, if any, which might on the next redemption date be paid to the Holders of such Term Bonds if such Term Bonds should be called for redemption on such date from moneys in the Debt Service Fund. The Finance Director shall pay the interest accrued on such Term Bonds to date of settlement therefor from the Bond Service Account and the purchase price from the Redemption Account, but no such purchase shall be made by the Finance Director within the period of forty-five (45) days next preceding any interest payment date on which such Term

Bonds are subject to call for redemption under the provisions of this Ordinance, except from moneys other than moneys set aside or deposited for the redemption of Term Bonds.

(b) Subject to the provisions of Article III of this Ordinance and paragraph (c) of this Section, the Finance Director may call for redemption on each interest payment date on which Term Bonds are subject to redemption that amount of such Term Bonds as, with the redemption premium, if any, will exhaust the moneys which will be held for the credit of the Redemption Account on said interest payment date as nearly as may be practicable; provided, however, that not less than Fifty Thousand Dollars (\$50,000) principal amount of Term Bonds shall be called for redemption at any one time unless a lesser amount shall be required to satisfy the Amortization Requirement for any Bond Year. Such redemption shall be made pursuant to the provisions of Article III of this Ordinance and the applicable Series Resolution. The Finance Director, on or before the redemption date, shall withdraw from the Bond Service Account and the Redemption Account and set aside in separate accounts or deposit with the Paying Agent the respective amounts required for paying the interest on, and the principal and redemption premium of, the Term Bonds so called for redemption.

(c) Moneys held by the Finance Director in the Redemption Account shall be applied by the Finance Director each Bond Year to the retirement of Bonds then outstanding in the following order:

**First:** to the retirement of Term Bonds to the extent of the Amortization Requirement, if any, for such Bond Year for such Term Bonds, plus the applicable premium, if any, and any deficiency in any preceding Bond Years in the purchase or redemption of such Term Bonds under the provisions of this subdivision and, if the amount available in such Bond Year shall not be sufficient therefor, then in proportion to the Amortization Requirement, if any, for such Bond Year for the Term Bonds of each such Series then outstanding, plus the applicable premium, if any, and any such deficiency.

**Second:** Term and Serial Bonds may be retired by optional redemption or by purchase as provided in or by the Series Resolution under which such Serial Bonds are issued.

Upon the retirement of any Bonds by purchase or redemption the Finance Director shall file with the Clerk and the Director a statement briefly describing such Bonds and setting forth the date of their purchase or redemption, the amount of the purchase price or the redemption price of such bonds and the amount paid as interest thereon. The expenses in

connection with the purchase or redemption of any Bonds shall be paid by the Department from the Revenue Fund.

**SECTION 507. Application of Moneys in Reserve Account.** Each Series of Bonds shall be secured by the Reserve Account. The Reserve Account should be funded with cash, investments or a Reserve Account Credit Facility or any combination thereof. Upon the initial issuance of any Bonds hereunder, the County shall deposit into the Reserve Account the amount necessary to make the balance in the Reserve Account equal to the Reserve Account Requirement; provided, however, that if the County shall have obtained written evidence from each Rating Agency that a withdrawal or reduction in the rating(s) then assigned to the Outstanding Bond will not result, the County may fund not less than fifty percent (50%) of the Reserve Account Requirement applicable to any Series of Bonds on the date of issuance of the applicable Bonds, and the remaining Reserve Requirement may be funded in substantially equal monthly installments over a period not to exceed 36 months, all as same may be provided for in the applicable Series Resolution. Moneys held for the credit of the Reserve Account shall first be used for the purpose of paying the interest on and the principal of the Bonds whenever and to the extent that the available moneys held for such purpose for the credit of the Bond Service Account and the General Reserve Fund shall be insufficient for such purpose, and thereafter for the purpose of making deposits to the credit of the Redemption Account of the Debt Service Fund pursuant to the requirements of clause (b) of Section 503 of this Ordinance whenever and to the extent that withdrawals from the Revenue Fund and the amount on deposit in the General Reserve Fund are insufficient for such purposes, and shall next be used to pay Payment Obligations with respect to the applicable Reserve Account Credit Facility, if any. Amounts withdrawn from the Reserve Account for the purpose of payment of debt service on any Bonds shall be replenished by substantially equal monthly deposits into the Reserve Account over a period not to exceed 60 months. If at any time the moneys held for the credit of any subaccount in the Reserve Account shall exceed the Reserve Account Requirement for those Bonds which are secured by such subaccount, such excess shall be withdrawn by the Finance Director and deposited to the credit of the Revenue Fund.

**SECTION 508. Application of Moneys in Renewal and Replacement Fund.** Except as hereinafter provided in this Section, or except in case of an emergency caused by some extraordinary occurrence, so characterized in a certificate signed by the Consultant and filed with the Finance Director, and an insufficiency of moneys held for the credit of the Revenue Fund to meet such emergency, moneys held for the credit of the Renewal and Replacement Fund shall be disbursed only for the purpose of paying the cost of unusual or extraordinary maintenance or repairs, the cost of renewals and replacements, the cost of acquiring, installing or replacing equipment and acquiring and constructing additions, extensions and improvements and engineering, legal and administrative expenses relating to the foregoing and the cost of providing a local share of moneys required to entitle the County to receive

federal or state grants or participate in federal or state assistance programs related to the Water and Sewer Utility.

If at any time the moneys held for the credit of the Bond Service Account, the General Reserve Fund and the applicable subaccounts of the Reserve Account shall be insufficient for the purpose of paying the interest on and the principal of the Bonds as such interest and principal become due and payable, then the Finance Director shall withdraw from any moneys held for the credit of the Renewal and Replacement Fund and deposit to the credit of the Bond Service Account an amount sufficient to make up any such deficiency. If at any time the moneys held for the credit of the General Reserve Fund and the applicable subaccounts of the Reserve Account shall be insufficient for making the deposits to the credit of the Redemption Account required by clause (b) of Section 506 of this Article, then the Finance Director shall withdraw from any moneys held for the credit of the Renewal and Replacement Fund and deposit to the credit of the Redemption Account an amount sufficient to make up any such deficiencies; provided, however, that no such transfer shall be made unless the moneys then held for the credit of the Bond Service Account are at least equal to the maximum requirement therefor under Section 505. For purposes of this Section, amounts in any subaccount of the Reserve Account which serves as security for particular Bonds, are available for the payment of debt service on those particular Bonds and are not available for the purpose of paying debt service on any other Bonds.

**SECTION 509. Application of Moneys in Rate Stabilization Fund.** Moneys held for the credit of the Rate Stabilization Fund may only be used for transfer to the credit of the Revenue Fund at the time and in the amounts determined by the County; provided that such moneys shall be deposited to the credit of the Revenue Fund to the extent necessary to avoid a deficiency in the required deposits and payments therefrom.

**SECTION 510. Application of Moneys in the General Reserve Fund.** Moneys held for the credit of the General Reserve Fund at the election of the County may be applied to one or more of the following purposes:

- (a) to make up deficiencies in any of the Accounts and Funds created by this Ordinance including, but not limited to, any deficiencies in the Revenue Fund required for the payment of Operating Expenses;
- (b) to pay the principal of and the interest on any obligations issued or indebtedness incurred by the County to finance or refinance the Cost of Improvements, which obligations are junior and subordinate with respect to lien on and pledge of Revenues to the Bonds issued under the provisions of this Ordinance;

- (c) to pay the Cost of Improvements;
- (d) to purchase or redeem Bonds;
- (e) to pay the Cost of any item qualifying as an authorized expenditure from the Renewal and Replacement Fund;
- (f) paying principal, interest and redemption premium, if any, on any general obligation bonds issued by the County for the purposes of the Water and Sewer Utility, if such amount is set forth in the Annual Budget, and
- (g) any other lawful purpose of the Water and Sewer Utility, including, but not limited to, the payment of rebate, Credit Facility Charges, Hedge Charges and Payment Obligations and to make contributions to other funds of the County in the amounts to be determined by the Board, to the extent legally permitted.

Provided, however, that in the event of any deficiencies in any Accounts or Funds created by this Ordinance the moneys in the General Reserve Fund shall be applied to make up all such deficiencies prior to applying any moneys in the Reserve Account or the Renewal and Replacement Fund for such purpose.

**SECTION 511. Investment of Moneys in Funds and Accounts.** All moneys in the funds and accounts created hereunder shall be invested and reinvested in Investment Obligations. Investment Obligations allocated to any fund or account shall mature not later than the respective dates, as estimated by the Department, that moneys held for the credit of such fund or account will be needed for the purposes thereof. In the case of the Reserve Account, Investment Obligations shall mature (or be subject to mandatory purchase at the option of the Holder) not later than seven (7) years, unless the Investment Obligation is of such a nature that it can be drawn upon or redeemed at par, in which event such Investment Obligation may mature not later than the final maturity on Bonds secured by the Reserve Account. Investment earnings may be retained in such accounts to the extent necessary to maintain the Reserve Account Requirements therein, or may be transferred to the Construction Fund, if any, if necessary or desirable in connection with any Series as determined by the County at or prior to the issuance of such Series. Except as otherwise provided herein with respect to any particular moneys, and except to the extent necessary to be deposited into the Rebate Fund in accordance with any Tax Compliance Certificate, all income received on Investment Obligations shall upon receipt be deposited into the Revenue Fund.

**SECTION 512. Security for Deposits.** Any and all moneys deposited under the provisions of this Ordinance shall, to the extent provided herein, be trust funds under the

terms hereof and shall not be subject to any lien or attachment by any creditor of the County or the Department other than as provided herein. Such moneys shall be held in trust and applied in accordance with the provisions of this Ordinance.

All money deposited in the funds and accounts created under this Ordinance in excess of the amount guaranteed by the Federal Deposit Insurance Corporation or other federal agency shall be continuously secured for the benefit of the County and the Holders in such manner as may then be required or permitted by applicable State or federal laws and regulations regarding the security for, or granting a preference in the case of, the deposit of trust or public funds; provided, however, that it shall not be necessary to give security for any money that shall be represented by obligations purchased under the provisions of this Ordinance as an investment of such money unless otherwise required by applicable law.

## ARTICLE VI

### Covenants

**SECTION 601. Water and Sewer Rates.** The County covenants that it will cause the schedules of rates for water and sewer service by the Water and Sewer Utility to be not less than the schedules fixed and prescribed by resolutions heretofore adopted by the County and now in effect as of the date of this Ordinance, and that neither such schedules nor the effective dates thereof will be revised except as hereinafter provided in this Article, except that there shall be no restriction on increasing rates at any time.

**SECTION 602. Rate Covenant.** The County further covenants that it will fix, charge and collect rates and charges for the use of the services and facilities furnished by the Water and Sewer Utility and that from time to time, and as often as it shall be necessary, it will adjust such rates and charges by increasing or decreasing the same or any selected categories of rates and charges, so as to provide Net Operating Revenues in each Fiscal Year, commencing with the Fiscal Year beginning October 1, 1993, equal to (a) one hundred ten percent (110%) of the Principal and Interest Requirements on the Bonds for such Fiscal Year, plus (b) one hundred percent (100%) of the required deposits into the Reserve Account (less any portion thereof to be deposited from proceeds of Bonds) together with any Reserve Account Credit Facility Costs payable in such Fiscal Year. In addition to satisfying the debt service coverage requirements set forth above, the Adjusted Net Operating Revenues remaining after deduction of the Maximum Principal and Interest Requirements on all Bonds shall be at least equal to one hundred percent (100%) of all debt service and reserve requirements on Subordinate Obligations;

In case the County has made deposits of Net Operating Revenues to or withdrawals from the Rate Stabilization Fund during such Fiscal Year Net Operating Revenues shall be adjusted by subtracting the amount of any such deposits and by adding the amount of any such withdrawal.

**SECTION 603. Annual Budget.** The County covenants that on or before the first day of each Fiscal Year the Board will cause the Department to adopt a budget of Operating Expenses and Capital Expenditures for such Fiscal Year (herein sometimes called the "Annual Budget"). Copies of the Annual Budget shall be filed with the Clerk and the Finance Director and mailed by the County to those Credit Facility Providers, Counterparties and Bondholders who shall have filed a request for the same and who have submitted their names and addresses with the Clerk for such purpose.

If for any reason the Board shall not have adopted the Annual Budget before the first day of any Fiscal Year, the Annual Budget for the preceding Fiscal Year, until the adoption

of the Annual Budget for such Fiscal Year shall be deemed to be in force and shall be treated as the Annual Budget under the provisions of this Article.

The Board may at any time adopt an amended or supplemental Annual Budget for the remainder of the then current Fiscal Year and the Annual Budget so amended or supplemented shall be treated as the Annual Budget under the provisions of this Article. Copies of any such amendment or supplemental Annual Budget shall be filed with the Clerk and the Finance Director and mailed by the County to all Bondholders who shall have filed their names and addresses with the Clerk for such purpose.

**SECTION 604. Payment of Principal, Interest and Premiums.** The County covenants that it will promptly pay (i) the principal of and the interest on each and every Bond issued under the provisions of this Ordinance at the places, on the dates and in the manner specified herein and in said Bonds and any premium required for the retirement of said Bonds by purchase or redemption according to the true intent and meaning thereof.

Bonds issued under the provisions of this Ordinance and Hedge Agreements secured hereunder shall not be deemed to constitute a debt of the County or a pledge of the faith and credit of the County but such Bonds shall be payable solely from the funds provided therefor from Revenues. The issuance of the Bonds shall not directly or indirectly or contingently obligate the County to levy or to pledge any form of taxation whatever therefor, nor shall any such Bonds constitute a charge, lien or encumbrance, legal or equitable, upon any property of the County.

**SECTION 605. Construction of Improvements; Operation of Water and Sewer Utility.** The County covenants that it will construct any Improvements for the construction of which Bonds shall be issued under the provisions of this Ordinance, or for which moneys repayable from the proceeds of Bonds issued under the provisions of this Ordinance shall have been or are to be expended, in accordance with plans theretofore approved by the Consultant and that upon the completion of such Improvements it will operate and maintain the same as a part of the Water and Sewer Utility.

**SECTION 606. Covenant as to Maintenance, Repair and Operation.** The County covenants that it will establish and enforce reasonable rules and regulations governing the use of the Water and Sewer Utility and the operations thereof, that it will operate the Water and Sewer Utility in an efficient and economical manner, that it will at all times maintain the Water and Sewer Utility in good repair and in sound operating condition and will make all necessary repairs, renewals and replacements, and that it will comply with all valid acts, rules, regulations, orders and directions of any legislative, executive, administrative or judicial body applicable to the Water and Sewer Utility.

**SECTION 607. Employment of Consultant.** The County covenants and agrees that so long as any Bonds are outstanding under this Ordinance, it will employ a Consultant whose duty shall be to prepare and file with the County on or before the 1st day of September in each year a report setting forth their recommendations as to any necessary or advisable revisions of rates and charges and such other advice and recommendations as they may deem desirable. The Consultant shall include in such report its recommendations as to the amount that should be deposited monthly during the next Fiscal Year to the credit of the Renewal and Replacement Fund for the purposes set forth in Section 508 of this Ordinance.

Anything in this Ordinance to the contrary notwithstanding, if the County shall comply with all recommendations of the Consultant in respect of rates and charges and is current on its deposits to the Renewal and Replacement Fund, it will not constitute an Event of Default under this Ordinance if the total amounts deposited to the credit of the Bond Service Account, the Redemption Account or the Reserve Account, as the case may be, in any Fiscal Year, shall be less than the amounts required in Section 602 herein; provided, however, that in any Fiscal Year the County shall have Net Operating Revenues of at least 100% of Maximum Principal and Interest Requirements and 100% of all required deposits to the Reserve Account.

The County shall employ a Consultant to make physical inspection of the Utility at least once every three years and render a written report as to the state of condition and repair of the Utility, including therein recommendations as to repairs, replacements and improvements required.

The County further covenants that the Consultant shall at all times have free access to all properties of the Water and Sewer Utility and every part thereof for the purposes of inspection and examination, and that the County's books, records and accounts relating to the Utility may be examined by the Consultant at all reasonable times.

**SECTION 608. Employment of Accountant.** For the purpose of performing and carrying out the duties imposed on the Accountant by this Ordinance, the County will employ an accountant of suitable experience and responsibility.

**SECTION 609. Insurance.** The County covenants that it will maintain a practical insurance program, with reasonable terms, conditions, provisions and costs, which the County determines will afford adequate protection against loss, caused by damage to or destruction of the Water and Sewer Utility or any part thereof and also such comprehensive public liability insurance on the Water and Sewer Utility for bodily injury and property damage.

All such insurance policies shall be carried by a responsible insurance company or companies satisfactory to the County Manager and authorized and qualified under the laws of the State of Florida to assume the risk thereof.

was designed for the purpose of testing such compliance. The cost of such audits shall be treated as a part of the cost of operation.

The County further covenants that it will cause any additional reports or audits relating to the Water and Sewer Utility to be made as required by law.

For the purposes of this Ordinance each fund, account or sub-account created or provided for hereunder shall be a series of accounts within the book of accounts of the Water and Sewer Utility and shall connote a segregation of accounts, which will support special purpose disclosure reports, not to be construed as a separate set of books of accounts.

**SECTION 611. Mandatory Connections.** The County, to the full extent permitted by law, will require all lands, buildings and structures within the service area of the Water and Sewer Utility, fronting or abutting on the lines of the Water and Sewer Utility, or any part thereof, or which can use the facilities of the Water and Sewer Utility to connect with and use such facilities within ninety (90) days after notification that service is available. The County may make charges for sewage disposal service effective as to each lot or parcel of land which may feasibly use the facilities of the sewer portion of the Water and Sewer Utility at the time when the construction of the sewer lines abutting upon such lot or parcel of land or sewer lines from which such lot or parcel of land may feasibly be served are completed and are ready for service.

The County may grant franchises for the operation of water systems or sewer systems or water and sewer systems if the Consultant shall certify that (a) the area to be covered by such franchise cannot be served feasibly by the Water and Sewer Utility in accordance with generally accepted engineering practices, (b) the customers in the area to be covered by such franchise would be better served by the proposed grantee of the franchise than by the Water and Sewer Utility and (c) the granting of such franchise will not require the County to raise the rates and charges for the services and facilities of the Water and Sewer Utility in order to comply with Section 602 of this Ordinance.

**SECTION 612. Supervisory Personnel.** The Director shall serve as the manager of the Water and Sewer Utility. The County shall require all employees who may have possession of money of the County derived from the operation of the Water and Sewer Utility to be covered by a fidelity bond, written by a responsible indemnity company in amounts fully adequate to protect the County from loss.

**SECTION 613. No Free Service.** The County will not render or cause to be rendered any free services of any nature by the facilities of the Water and Sewer Utility nor will any preferential rates be established for users of the same class; the County including its departments, agencies and instrumentalities in the service area, shall avail itself of the facilities

The proceeds of all such insurance covering damage to or destruction of the Water and Sewer Utility shall be deposited with the Finance Director and shall be available for and, to the extent necessary, shall be applied to the repair, replacement or reconstruction of the damaged or destroyed property, and shall be paid out in the manner hereinabove provided for payments from the Construction Fund. If such proceeds are more than sufficient for such purpose, the balance remaining shall be deposited to the credit of the General Reserve Fund. If such proceeds shall be insufficient for such purpose, the deficiency may be supplied out of any moneys in the General Reserve Fund or the Renewal and Replacement Fund. The proceeds of all insurance covering loss of Operating Revenues shall be deposited to the credit of the Revenue Fund.

Copies of all recommendations and approvals made by the Consultant under the provisions of this Section shall be filed with the Finance Director.

Notwithstanding the foregoing provisions of this Section, the County may institute and maintain self-insurance programs with regard to such risks as shall be consistent with the recommendations of the Dade County Insurance Department; provided, however, the Dade County Insurance Department shall determine the premiums on an actuarially sound basis, and the premiums so determined shall be paid annually.

**SECTION 610. Records, Accounts and Audits.** The County covenants that it will keep the accounts of the Water and Sewer Utility separate from all other accounts of the County or of any of its departments, and that it will keep accurate records and accounts of all items of cost and of all expenditures relating to the Water and Sewer Utility and of the Operating Revenues collected and the application of such Operating Revenues.

The County further covenants that, at the end of each Fiscal Year, it will prepare financial statements of the Water and Sewer Utility in accordance with GAAP and that it will cause an audit of the financial statements to be made by the Accountant. Such audit will be conducted in accordance with generally accepted auditing standards. The audit will be completed within sixty (60) days after the completed financial statements are submitted to the Accountant and such financial statements shall be submitted to the Accountant within sixty (60) days after the end of the Fiscal Year. The County will also cause an annual report of operations of the Water and Sewer Utility to be prepared, such annual report to cover the matters usually contained in annual reports for water and sewer systems. Within a reasonable time thereafter reports of each such audit and copies of each annual report shall be filed with the Finance Director and the Director and copies of such reports shall be mailed by the Director to the Consultant. The scope of the Accountant's audit will be sufficient to enable them to express an opinion that the County has complied with the conditions and covenants of its Ordinance or to the extent that such audit causes them to be of the opinion that compliance has not been met, to report events of non-compliance which came to their attention as a result of their audit which

of the Water and Sewer Utility, and the same rates, fees and charges applicable to other customers receiving like services under similar circumstances shall be charged to the County and any such department, agency or instrumentality. Such charges will be paid as they accrue, and the County shall transfer from its appropriate funds sufficient sums to pay such charges. The moneys so received shall be deemed to be Operating Revenues and shall be deposited and accounted for in the same manner as other Revenues.

**SECTION 614. Failure to Pay for Services.** To the extent permitted by law, upon failure of any user to pay for services rendered within ninety (90) days, the County shall shut off the connection of such user to the Water and Sewer Utility and shall not furnish him or permit him to receive further service until all obligations owed by him to the County on account of services shall have been paid in full. This covenant shall not, however, prevent the County from causing any connection to be shut off sooner. To the extent permitted by law, the County shall not provide any water or sewer service to any new property owner until such time as all delinquent charges owed for services rendered to such property are paid.

**SECTION 615. Enforcement of Collections.** The County will diligently enforce and collect the rates, fees and other charges for the services of the Water and Sewer Utility; will take all steps, actions and proceedings for the enforcement and collection of such rates, fees and charges that become delinquent, to the full extent permitted or authorized by law; and will maintain accurate records with respect thereto. All such rates, fees, charges and revenues herein pledged, as collected, shall be held in trust to be applied as provided in this Ordinance and not otherwise.

**SECTION 616. Right to Borrow and Pledge Federal Grants.** Notwithstanding anything contained in this Ordinance, the County shall have the right from time to time to incur indebtedness to any person for the purpose of paying all or any part of the Cost of Improvements for paying the cost of which the County has a grant agreement with the Federal government provided, that such indebtedness shall be payable as to principal, interest and premium solely from moneys to be received by the County pursuant to such grant agreement and such indebtedness may in no event be payable from Revenues.

**SECTION 617. Disposition of Assets.** Except for the sale of parts being replaced in the ordinary course of business, the County will not sell or otherwise dispose of any portion or component of the Utility, except under the following conditions:

- (1) If the original cost of the property in question, as determined by the Consultant, together with the original cost of all property previously sold or disposed of in such Fiscal Year, does not exceed two percent (2%) of the property, plant and equipment of the Utility as shown on the County's most recent audited financial statements, then such property may be sold.

if the Board (by affirmative vote at a meeting duly called and held), shall find that such property is no longer necessary, useful or profitable in the operations of the Utility, and the Board authorizes the sale of such property. The proceeds received from the sale of such property shall be deposited in the Renewal and Replacement Fund.

- (2) If the original cost of the property in question, together with the original cost of all property previously sold or disposed of in such Fiscal Year, exceeds two percent (2%) of the property, plans and equipment of the Utility as shown on the County's most recent audited financial statements, then such property may be sold if a Consultant shall first find in writing delivered to the Department that the sale or disposition of such property will not materially and adversely affect the Net Operating Revenues of the Utility in any of the five (5) Fiscal Years following the Fiscal Year in which such property is sold, and if the Board (by affirmative vote at a meeting duly called and held) shall find that such property is no longer necessary, useful or profitable in the operations of the Utility, and the Board authorizes the sale of such property. The proceeds derived from the sale of such property shall be deposited first into the Renewal and Replacement Fund in an amount which the Consultant shall certify is necessary to replenish the fund to the level recommended by the Consultant for such Fiscal Year, and the remainder of the proceeds shall be used to either (a) pay the cost of acquisitions, extensions or improvements to the Utility, or (b) retire Bonds, if callable, or to defease Bonds, to the maximum extent possible, pursuant to Section 901.

discharged within ninety (90) days from the entry thereof or an appeal shall not be taken therefrom or from the order, decree or process upon which or pursuant to which such judgment shall have been granted or entered, in such manner as to stay the execution of or levy under such judgment, order, decree or process or the enforcement thereof; or

(h) Any Event of Default under any Series Resolution which, by the terms of such Series Resolution, shall be deemed an Event of Default hereunder;

(i) The County shall default in the due and punctual performance of any other of the covenants, conditions, agreements and provisions contained in any of the Bonds, in this Resolution or in any Series Resolution on the part of the County to be performed, and such default shall continue for thirty (30) days after written notice specifying such default and requiring the same to be remedied shall have been given by the registered owners of not less than ten percent (10%) in aggregate principal amount (and Accreted Value, if applicable) of the one or more series of Bonds then Outstanding, with respect to which such default has occurred; or

(j) The County shall be in default on any payments which are due under any Credit Agreement relating to a Credit Facility or Reserve Account Credit Facility securing any Bonds and the Provider which issued such credit facility or reserve fund credit facility notifies the Finance Director in writing by registered mail that it elects to treat such default as an Event of Default hereunder; or

Notwithstanding the foregoing, but subject to limitations in any Series Resolution or Credit Agreement, with respect to the events described in clauses (d), (h) and (i), above, the County shall not be deemed in default hereunder if such default can be cured within a reasonable period of time and if the County in good faith institutes appropriate curative action and diligently pursues such action until the default has been corrected.

**SECTION 702. Notice of Default.** If any Event of Default shall occur, the Finance Director shall give, or cause to be given, within thirty (30) days after the Finance Director has knowledge of the Event of Default, unless such Event of Default shall have been cured, written notice of the Event of Default, by first class mail to the Holders of all Bonds and by registered or certified mail, to each Provider and Counterparty.

**SECTION 703. Remedies.** Any trustee, any Holder of Bonds issued under the provisions hereof acting for the Holders of all Bonds may by suit, action, mandamus or other proceedings in any court of competent jurisdiction, protect and enforce any and all rights, including the right to the appointment of a receiver, existing under the laws of the State of Florida, or granted and contained herein, and may enforce and compel the performance of all duties herein required or by any applicable statutes to be performed by the County or by any

## ARTICLE VII

### Events of Default; Remedies

**SECTION 701. Events of Default.** Each of the following events is hereby declared an "Event of Default":

(a) Payment of the principal of or any premium on any Bond shall not be made when the same shall become due and payable, either at maturity or on required payment dates by proceedings for redemption, purchase or otherwise; or

(b) Payment of any installment of interest on any Bond shall not be made when the same shall become due and payable; or

(c) The County shall fail to cause any Bond to be purchased at the time required by the Series Resolution under which such bond was issued; or

(d) The County shall admit that it has been rendered incapable of fulfilling its obligations hereunder or under any Series Resolution to such an extent that the payment of or security for any of the bonds will be materially adversely affected, and that such condition has continued unremedied for a period of thirty (30) days after the County first became aware of such condition; or

(e) An order or decree shall be entered, with the consent or acquiescence of the County, appointing a receiver or receivers of the County or of any of the Pledged Revenues or of any of the funds herein described, or any part thereof or the filing of a petition by the County or of relief under federal bankruptcy laws or any other applicable law or statute of the United States of America or the State, which shall not be dismissed, vacated or discharged within thirty (30) days after the filing thereof; or

(f) Any proceedings shall be instituted, with the consent or acquiescence of the County, for the purpose of effecting a composition between the County and its creditors or for the purpose of adjusting the claims of such creditors, pursuant to any federal or state statutes now or hereafter enacted, if the claims of such creditors are under any circumstances payable from the Pledged Funds or any of the funds; or

(g) The entry of a final judgment or judgments for the payment of money against the County which subjects the Pledged Revenues or any of the funds or any part thereof to a lien for the payment thereof in contravention of the provisions of this Resolution or of any Series Resolution for which there does not exist adequate insurance, reserves or appropriate surety or indemnity bonds for the timely payment thereof, and any such judgment shall not be

officer thereof. Nothing herein, however, shall be construed to grant to any Holder of such Bonds any lien on any property of or within the corporate boundaries of the County. No Holder of Bonds, however, shall have any right in any manner whatever to affect, disturb or prejudice the security of this Ordinance or to enforce any right hereunder except in the manner herein provided, and all proceedings at law or in equity shall be instituted and maintained for the benefit of all Holders of Bonds.

Nothing herein shall be construed to preclude any Counterparty from exercising any and all rights and remedies, including the right to the appointment of a receiver, available to it under the laws of the State of Florida as a pledgee to enforce the obligations of the County under the applicable Hedge Agreement.

If any payments of Principal and Interest Requirements are made by a Credit Facility Provider with respect to Bonds which have not been defeased in accordance with the provisions of Section 901 hereof, the lien upon and pledge of the money on deposit from time to time in the Funds and Accounts created and established herein and all covenants and other obligations of the Issuer to the Holders of such Bonds shall continue to exist and the Credit Facility Provider shall be subrogated to the rights of the Holders of such Bonds with respect to the Principal and Interest Requirements paid or insured by such Credit Facility Provider.

**SECTION 704. Pro Rata Application of Funds.** Anything in this Ordinance to the contrary notwithstanding, if at any time the available moneys in the Debt Service Fund shall not be sufficient to pay the principal of or the interest on the Bonds and Hedge Obligations as the same become due and payable, such moneys together with any moneys then available or thereafter becoming available for such purpose, whether through the exercise of the remedies provided for in this Article or otherwise, shall be applied as follows:

First: to the payment of the persons entitled thereto of all installments of interest then due and payable on the Bonds and all Hedge Obligations (other than termination payments), in the order in which such amounts become due and payable, and, if the amount available shall not be sufficient to make payment in full, then to the payment ratably, according to the amounts due, to the persons entitled thereto, without any discrimination or preference except as to any difference in the respective rates of interest specified in the Bonds or applicable Hedge Agreement;

Second: to the payment of the persons entitled thereto of the unpaid principal of any of the Bonds and Hedge Obligations which are termination payments that have become due (other than Bonds called for redemption for the payment of which sufficient moneys are held pursuant to the provisions of this Ordinance), in the order of their due dates, and, if the amount available shall not



be sufficient to pay in full the principal of Bonds due on any particular date and then to the payment of such principal, ratably according to the amount of such principal due on such date, to the persons entitled thereto without any discrimination or preference except as to any difference in the respective rates of interest specified in the Bonds; and

Third: to the payment of the interest on and the principal of the Bonds, Hedge Obligations and Hedge Charges, and to the purchase and retirement of Bonds and to the redemption of Bonds, all in accordance with the provisions of Article V of this Ordinance.

For purposes of the foregoing provisions of this Section, if any principal or interest on any particular Bond is paid with funds advanced under any Credit Facility, the Credit Facility Provider shall become subrogated to the Holder's right to payment from the County of such principal or interest and shall be entitled to receive payment from the County under the foregoing provisions.

Whenever moneys are to be applied by the County pursuant to the provisions of this Section, such moneys shall be applied by the County at such times, and from time to time, as the Finance Director in his sole discretion shall determine, having due regard to the amount of such moneys available for application and the likelihood of additional moneys becoming available for such application in the future; the deposit of such moneys with the Paying Agent, or otherwise setting aside such moneys, in trust for the proper purpose, shall constitute proper application by the County; and the County shall incur no liability whatsoever to any Bondholder or to any other person for any delay in applying any such funds, so long as the County acts with reasonable diligence, having due regard to the circumstances, and ultimately applies the same in accordance with such provisions of this Ordinance as may be applicable at the time of application. Whenever the Finance Director shall exercise such discretion in applying such funds, he shall fix the date upon which such application is to be made and upon such date interest on the amounts of principal to be paid on such date shall cease to accrue. The Finance Director shall give such notice as he may deem appropriate of the fixing of any such date, and shall not be required to make payment to the Holder of any Bond until such Bond shall be surrendered to him for appropriate endorsement.

The pro-rata application of moneys pursuant to this Section 702 shall be adjusted with respect to Variable Rate Bonds and any Bonds bearing interest payable other than semiannually on October 1 and April 1 so as to ensure that each person entitled to receive payment shall receive as nearly as practicable the same proportion of the total amount due to such person, taking into account any interest paid since the preceding October 1 or April 1.

## ARTICLE VIII Supplemental Ordinances

### SECTION 801. Supplemental Ordinance Without Bondholders' Consent.

The Board, from time to time and at any time may adopt such ordinances supplemental hereto as shall not be incompatible with the terms and provisions hereof (which supplemental ordinance shall thereafter form a part hereof), in order to:

- (a) cure any ambiguity or formal defect or omission or to correct any inconsistent provisions in this Ordinance or in any supplemental ordinance, or
- (b) grant to or confer upon the Bondholders any additional rights, remedies, powers, authority or security that may lawfully be granted to or conferred upon the Bondholders, or
- (c) add to the conditions, limitations and restrictions on the issuance of Bonds or the entering into of Hedge Agreements under the provisions of this Ordinance other conditions, limitations and restrictions thereafter to be observed, or
- (d) add to the covenants and agreements of the County in this Ordinance other covenants and agreements thereafter to be observed by the County or to surrender any right or power herein reserved to or conferred upon the County, or
- (e) to make other changes or modifications to the provisions of this Ordinance which are not adverse to the interests of the Bondholders, any Credit provider or any Counterparty.

### SECTION 802. Supplemental Ordinance With Bondholders' Consent.

Subject to the terms and provisions contained in this Section, and not otherwise, the Holders of not less than two-thirds (2/3) in aggregate principal amount of the Bonds then outstanding shall have the right, from time to time, anything contained in this Ordinance to the contrary notwithstanding, to consent to and approve the adoption of such ordinance or ordinances supplemental hereto as shall be deemed necessary or desirable by the County for the purpose of modifying, altering, amending, adding to or rescinding, in any particular, any of the terms or provisions contained in this Ordinance or in any supplemental ordinance; provided, however, that nothing herein contained shall permit, or be construed as permitting, (a) an extension of the

Notwithstanding the foregoing, moneys in each subaccount of the Reserve Account securing particular Bonds shall be used only to pay debt service on such particular Bonds (or to pay Payment Obligations to any Credit Facility Provider which has advanced moneys under a Credit Facility securing such Bonds) and moneys in any other subaccount in the Reserve Account shall not be used to pay debt service on said Bonds or to pay such Payment Obligations.

**SECTION 705. Effect of Discontinuance of Proceedings.** In case any proceeding taken by any Bondholder or Credit Facility Provider on account of any default shall have been discontinued or abandoned for any reason, then and in every such case the County and the Bondholder or Credit Facility Provider shall be restored to their former positions and rights hereunder, respectively, and all rights and remedies of the Bondholders and Credit Facility Providers shall continue as though no such proceeding had been taken.

**SECTION 706. Restriction on Individual Bondholder Actions.** No Holder of any of the Bonds hereby secured nor any Counterparty shall have any right in any manner whatever by his or their action to affect, disturb or prejudice the security of this Ordinance or to enforce any right hereunder except in the manner herein provided, and all proceedings at law or in equity shall be instituted, had and maintained for the benefit of all Holders of such Bonds, and all Credit Facility Providers, as their respective interests may appear.

Nothing herein shall be construed to preclude any Counterparty from exercising any and all rights and remedies, including the right to the appointment of a receiver, available to it under the laws of the State of Florida as a pledgee to enforce the obligations of the County under the applicable Hedge Agreement.

**SECTION 707. Right to Enforce Payment of Bonds.** Nothing in this Article shall affect or impair the right of any Holder of a Bond to enforce the payment of the principal of and interest on his/her Bond, or the obligation of the County to pay the principal of and interest on each Bond to the Holder thereof at the time and place stated in said Bond or the right of any Counterparty to enforce payment of amounts due under a Hedge Agreement or the obligation of the County to make such payments in accordance with such Hedge Agreement.

maturity of the principal of or the interest on any Bonds issued hereunder, or (b) a reduction in the principal amount of any Bonds or the redemption premium or the rate of interest thereon, or (c) the creation of a lien upon or a pledge of Revenues other than a lien and pledge created by this Ordinance, or (d) a preference or priority of any Bond or Bonds over any other Bond or Bonds, or (e) a reduction in the aggregate principal amount of the Bonds required for consent to such supplemental ordinance, or (f) a change in any State Loan which is adverse to the interests of the Bondholders. Nothing herein contained, however, shall be construed as making necessary the approval by Bondholders of the adoption of any supplemental ordinance as authorized in Section 801 of this Article.

If the Holders (and Providers who are entitled to act in lieu of Holders) of not less than two-thirds (2/3) in aggregate principal amount of the Bonds outstanding at the time of the adoption of such supplemental ordinance shall have consented to and approved the adoption thereof as herein provided, no Holder of any Bond or Credit Facility Provider shall have any right to object to the adoption of such supplemental ordinance, or to object to any of the terms and provisions contained therein or the operation thereof, or in any manner to question the propriety of the adoption thereof, or to enjoin or restrain the Board from adopting the same or from taking any action pursuant to the provisions thereof.

Upon the enactment of any supplemental ordinance pursuant to the provisions of this Section, this Ordinance shall be and be deemed to be modified and amended in accordance therewith, and the respective rights, duties and obligations under this Ordinance of the County and all Holders of Bonds then outstanding shall thereafter be determined, exercised and enforced in all respects under the provisions of this Ordinance as so modified and amended.

**SECTION 803. Rights of Credit Facility Provider.** In the event that a Credit Facility is in full force and effect as to a Series of Bonds and the Credit Facility Provider is not insolvent and no default of the Credit Facility exists on the part of the Credit Facility Provider, then the said Credit Facility Provider, in place of the Holders of that Series of Bonds, shall have the power and authority to give any consents and exercise any and all other rights which the Holders of that Series would otherwise have the power and authority to make, give or exercise, including, but not limited to, the exercise of remedies provided in Article VII, and the giving of consents to supplemental ordinances when required by Section 802 above, and such consent shall be deemed to constitute the consent of the Holders of all of those Bonds which are secured by such Credit Facility.

**SECTION 804. Supplemental Ordinances Part of Ordinance.** Any supplemental ordinance enacted in accordance with the provisions of this Article and approved as to legality by the County Attorney shall thereafter form a part of this Ordinance, and all of the terms and conditions contained in any such supplemental ordinance as to any provision authorized to be contained therein shall be and shall be deemed to be part of the terms and

conditions of this Ordinance for any and all purposes. In case of the enactment and approval of any supplemental ordinance, express reference may be made thereof in the text of any Bonds issued thereafter, if deemed necessary or desirable by the County.

**SECTION 805. Notice of Supplemental Ordinances.** The County shall give to the Rating Agencies advance notice of the proposed adoption of any supplemental ordinance, which notice shall include the substantial form of such supplemental ordinance.

## ARTICLE IX

### Defeasance

**SECTION 901. Cessation of Interest of Bondholders.** If, when any Bonds secured hereby shall have become due and payable in accordance with their terms or shall have been called for redemption on either instructions to call the Bonds for redemption or to pay the Bonds at their respective maturities and mandatory redemption dates or any combination of such payment and redemption, and, if applicable, provisions for redemption shall have been made by the County with an appropriate escrow agent, the whole amount of the principal and the interest and premium, if any, so payable upon such Bonds then Outstanding shall be paid or sufficient moneys or Defeasance Obligations shall be held by such escrow agent for such purpose, and provision shall also be made for paying all other sums payable by the County on said Bonds, then and in that case the right, title and interest of the Holders of said Bonds in this Ordinance and any applicable Series Resolution shall thereupon cease, determine and become void; otherwise this Ordinance shall be, continue and remain in full force and effect; provided, however, that in the event Defeasance Obligations shall be deposited with and held by an escrow agent as above provided, in addition to the requirements set forth in Article II of this Ordinance, the Finance Director, within thirty (30) days after such Defeasance Obligations shall have been deposited with such escrow agent, shall cause a notice to be mailed to all registered owners of such Bonds or published once in a daily newspaper of general circulation, or a financial journal, published in the Borough of Manhattan, City and State of New York, setting forth the date designated for the redemption of the Bonds and identifying the Bonds to be redeemed. Further, when all amounts due under any Hedge Agreement and any Credit Facility shall have been paid or provided for (in the manner permitted under such Hedge Agreement or Credit Facility), then and only in that case the right, title and interest of the Counterparty or the Credit Facility Provider in this Ordinance shall thereupon cease, determine and become void.

## ARTICLE X

### Miscellaneous Provisions

**SECTION 1001. Inconsistent Ordinances.** All ordinances and parts thereof, including Chapter 32A of the Code of Metropolitan Dade County, which are inconsistent with any of the provisions of this Ordinance are hereby declared to be inapplicable to the provisions of this Ordinance.

**SECTION 1002. Further Acts.** The officers and agents of the County are hereby authorized and directed to do all acts and things required of them by the Bonds and this Ordinance, for the full, punctual and complete performance of all of the terms, covenants, provisions and agreements contained in the Bonds and this Ordinance.


**SECTION 1003. Headings Not Part of Ordinance.** Any headings preceding the texts of the several Articles and Sections hereof and any table of contents, marginal notes or footnotes appended to copies hereof shall be solely for convenience of reference, and shall not constitute a part of this Ordinance, nor shall they affect its meaning, construction or effect.

**SECTION 1004. No Third Party Beneficiaries.** Except as herein otherwise expressly provided, nothing in this Ordinance, expressed or implied, is intended or shall be construed to confer upon any person, firm or corporation, other than the County, any applicable Credit Facility Provider, any Counterparty and the Holders of the Bonds issued under and secured by this Ordinance, any right, remedy or claim, legal or equitable, under or by reason of this Ordinance or any provision hereof, this Ordinance and all its provisions being intended to be and being for the sole and exclusive benefit of the County, each Credit Facility Provider, each Counterparty and the Holders from time to time of the Bonds issued hereunder.

**SECTION 1005. Severability.** In case any one or more of the provisions of this Ordinance or of any Bonds issued hereunder shall for any reason be held to be illegal or invalid, such illegality or invalidity shall not affect any other provision of this Ordinance or of the Bonds, but this Ordinance and the Bonds and coupons shall be construed and enforced as if such illegal or invalid provision had not been contained herein.

**SECTION 1006. Application of Florida Law.** The Bonds are issued and this Ordinance is adopted with the intent that the laws of the State of Florida shall govern their construction.

**SECTION 1007. Effective Date.** This Ordinance shall take effect ten (10) days after its adoption.

PASSED AND ENACTED ON this 16 day of November, 1993. 

Approved by County Attorney as  
to form and legal sufficiency: RRG

Prepared by R.L.P.

Co-Bond Counsel: Squire, Sanders & Dempsey  
Valdes-Fauli, Cobb, Bischoff & Kriss, P.A.

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STATE OF FLORIDA )  
DADE COUNTY ) SS:

I, HARVEY RUVIN, Clerk of the Circuit Court in and for Dade County, Florida, and Ex-Officio Clerk of the Board of County Commissioners of said County, DO HEREBY CERTIFY that the above foregoing is a true and correct

COPY OF ORDINANCE 93-134 PASSED AND ADOPTED NOVEMBER 16, 1993

as appears of record.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal on this 03rd day of MAY A.D. 1999.

HARVEY RUVIN, Clerk  
Board of County Commissioners  
Dade County, Florida

By *[Signature]*  
Deputy Clerk



Board of County Commissioners  
Dade County, Florida

**ORDINANCE NO. 13-47**

ORDINANCE AUTHORIZING ISSUANCE OF NOT TO EXCEED \$4,245,000,000.00 AGGREGATE PRINCIPAL AMOUNT OF MIAMI-DADE COUNTY, FLORIDA WATER AND SEWER SYSTEM REVENUE BONDS, IN MULTIPLE SERIES, AS ADDITIONAL BONDS UNDER SECTION 208 OF ORDINANCE NO. 93-134, TO PAY COSTS OF CERTAIN IMPROVEMENTS TO WATER AND SEWER UTILITY; PROVIDING THAT DETAILS, TERMS AND OTHER MATTERS RELATING TO ADDITIONAL BONDS BE DETERMINED IN SERIES RESOLUTIONS; AMENDING ORDINANCE NO. 93-134 TO INCREASE RATE COVENANT; AND PROVIDING FOR SEVERABILITY AND EFFECTIVE DATE

WHEREAS, the Board of County Commissioners (the "Board") of Miami Dade County, Florida (the "County"), acting pursuant to the authority recited in Section 1 of this Ordinance (the "2013 Ordinance"), owns and operates water and wastewater treatment plant facilities and a distribution and collection system and pursuant to such authority and Ordinance No. 93-134, enacted by the Board on November 16, 1993 (the "Original Ordinance" and as amended by this 2013 Ordinance, the "Master Ordinance"), is authorized to issue revenue bonds from time to time; and

WHEREAS, pursuant to Ordinance No. 09-67 enacted by the Board on July 23, 2009 (the "2009 Ordinance"), the Board authorized the issuance of not to exceed \$800,000,000 in aggregate principal amount of Additional Bonds under the provisions of Section 208 of the Master Ordinance for the purpose of paying Costs of the CIP Projects (as defined in the 2009 Ordinance), funding the Reserve Account established under the Master Ordinance and paying costs of issuance of such Additional Bonds, of which the County has issued \$594,330,000; and

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**Section 2. Incorporation of Recitals.** The matters set forth in the foregoing recitals to this 2013 Ordinance are incorporated as part of this 2013 Ordinance.

**Section 3. Definitions.** All terms used in capitalized form and not defined in this 2013 Ordinance have the meanings assigned to such terms in the Master Ordinance, unless the context otherwise clearly requires a different meaning.

**Section 4. Authorization to Issue Additional Bonds.** The Board authorizes the issuance, from time to time, of not to exceed \$4,245,000,000 aggregate principal amount of Miami-Dade County, Florida Water and Sewer System Revenue Bonds, in multiple Series, as Additional Bonds pursuant to Section 208 of the Master Ordinance and the authority of the Act, for the purpose of paying Costs of the CIP Projects, funding the Reserve Account, funding capitalized interest, if advisable, and paying costs of issuance of such Additional Bonds.

The Additional Bonds authorized under this 2013 Ordinance shall be special limited obligations of the County payable solely from and secured solely by Pledged Revenues. Such Additional Bonds do not constitute an indebtedness, liability, general or moral obligation, or a pledge of the faith, credit or power of the County, the State of Florida (the "State") or any political subdivision of the State, within the meaning of any constitutional, statutory or charter provision. Neither the State nor any political subdivision of the State nor the County shall be directly or indirectly or contingently obligated to levy any ad valorem taxes on any property to pay the principal of or the interest on such Additional Bonds or other related costs, or to pay the same from any other funds of the County except from the Pledged Revenues. The acceptance of such Additional Bonds by the registered owners from time to time shall be deemed an agreement between the County and such registered owners that such Additional Bonds and the indebtedness evidenced thereby shall not constitute a lien upon the Water and Sewer Utility, any part of the

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WHEREAS, the CIP Projects have been supplemented as more specifically described in Exhibit A to this 2013 Ordinance (as so supplemented, hereinafter referred to as the "CIP Projects"); and

WHEREAS, the Board has determined at this time that it is in the best interests of the County and its citizens to authorize the issuance, from time to time, of Additional Bonds in an aggregate principal amount not to exceed \$4,245,000,000, in multiple Series, under the provisions of Section 208 of the Master Ordinance for the purpose of paying Costs of the CIP Projects, funding the Reserve Account, funding capitalized interest, if advisable, and paying costs of issuance of such Additional Bonds; and

WHEREAS, the Board has further determined at this time that it is in the best interest of the County to amend the Original Ordinance in accordance with the provisions of Section 801 of the Original Ordinance in order to increase the rate covenant contained in Section 602 of the Original Ordinance as set forth in this 2013 Ordinance; and

WHEREAS, the Board desires to accomplish the purposes outlined in the accompanying memorandum, a copy of which is incorporated in this 2013 Ordinance by reference,

**NOW, THEREFORE, BE IT ORDAINED BY THE BOARD OF COUNTY COMMISSIONERS OF MIAMI-DADE COUNTY, FLORIDA that:**

**Section 1. Authority.** This 2013 Ordinance is enacted pursuant to the provisions of the Constitution of the State of Florida, the Home Rule Amendment and Charter of Miami-Dade County, Florida, as amended, Chapters 125 and 166, Florida Statutes, as amended, the Code of Miami-Dade County, Florida, as amended, and other applicable provisions of law (collectively, the "Act").

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Water and Sewer Utility, or any other property of the County, but shall constitute a lien only on the Pledged Revenues.

**Section 5. Details, Terms and Other Matters Relating to Additional Bonds.** In accordance with Section 202 of the Master Ordinance, all details, terms and other matters relating to the Additional Bonds authorized pursuant to this 2013 Ordinance shall be determined in the manner specified in the applicable Series Resolutions.

**Section 6. Amendment to Original Ordinance.** In accordance with the provisions of Section 801 of the Original Ordinance, Section 602 of the Original Ordinance is amended to read as follows:

**SECTION 602. Rate Covenant.** The County further covenants that it will fix, charge and collect rates and charges for the use of the services and facilities furnished by the Water and Sewer Utility and that from time to time, and as often as it shall be necessary, it will adjust such rates and charges by increasing or decreasing the same or any selected categories of rates and charges, so as to provide Net Operating Revenues in each Fiscal Year, >>(a) (i)<< commencing with the Fiscal Year beginning October 1, 1993, equal to [(a)] one hundred ten percent (110%) of the Principal and Interest Requirements on the Bonds for such Fiscal Year, >>and (ii) commencing with the Fiscal Year beginning October 1, 2012, equal to one hundred twenty five percent (125%) of the Principal and Interest Requirements on the Bonds for such Fiscal Year,<< plus (b) >>in each case,<< one hundred percent (100%) of the required deposits into the Reserve Account (less any portion thereof to be deposited from proceeds of Bonds) together with any Reserve Account Credit Facility Costs payable in such Fiscal Year. In addition to satisfying the debt service coverage requirements set forth above, the Adjusted Net Operating Revenues remaining after deduction of the Maximum Principal and Interest Requirements on all Bonds shall be at least equal to one hundred percent (100%) of all debt service and reserve requirements on Subordinate Obligations.

In case the County has made deposits of Net Operating Revenues to or withdrawals from the Rate Stabilization Fund during such Fiscal Year Net Operating Revenues shall be adjusted by subtracting the amount of any such deposits and by adding the amount of any such withdrawal.

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Section 7. Original Ordinance in Force. Except as amended by this 2013 Ordinance, the Original Ordinance and all terms and provisions of the Original Ordinance are and shall remain in full force and effect.

Section 8. Further Acts. The officers and agents of the County are authorized and directed to take all actions and do all things required of them by the Master Ordinance and this 2013 Ordinance for the full, punctual and complete performance of all of the terms, covenants, provisions and agreements contained in the Master Ordinance and this 2013 Ordinance.

Section 9. Headings Not Part of Ordinance. Any headings preceding the Sections of this 2013 Ordinance shall be solely for convenience of reference and shall not constitute a part of this 2013 Ordinance, nor shall they affect its meaning, construction or effect.

Section 10. Severability. In case any one or more of the provisions of this 2013 Ordinance shall for any reason be held to be illegal or invalid, such illegality or invalidity shall not affect the legality or enforceability of any other provision of this 2013 Ordinance.

Section 11. Effective Date. This 2013 Ordinance shall take effect ten (10) days after its enactment unless vetoed by the Mayor, and if vetoed, shall become effective only upon an override by this Board.

PASSED AND ADOPTED: June 4, 2013

Approved by County Attorney as  
to form and legal sufficiency:

Prepared by:

Gerald T. Heffernan  
Bond Counsel/Squire Sanders (US) LLP  
D. Seaton and Associates

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EXHIBIT A  
CIP Projects

**WASTEWATER PROJECTS**

NORTH DISTRICT UPGRADES - WASTEWATER TREATMENT PLANT  
CENTRAL DISTRICT UPGRADES - WASTEWATER TREATMENT PLANT  
SOUTH DISTRICT WASTEWATER TREATMENT PLANT EXPANSION - PHASE 3  
SOUTH DISTRICT UPGRADES - WASTEWATER TREATMENT PLANT  
NORTH MIAMI-DADE WASTEWATER TRANSMISSION MAINS AND PUMP STATION IMPROVEMENTS  
CENTRAL MIAMI-DADE WASTEWATER TRANSMISSION MAINS AND PUMP STATION IMPROVEMENTS  
SOUTH DISTRICT WASTEWATER TRANSMISSION MAINS AND PUMP STATIONS IMPROVEMENTS  
GRAVITY SEWER RENOVATIONS  
SANITARY SEWER SYSTEM IMPROVEMENTS  
WASTEWATER GENERAL MAINTENANCE AND OFFICE FACILITIES  
CORROSION CONTROL FACILITIES IMPROVEMENTS  
PUMP STATION IMPROVEMENTS PROGRAM  
PEAK FLOW MANAGEMENT FACILITIES  
SANITARY SEWER SYSTEM EXTENSION  
WASTEWATER ENGINEERING STUDIES  
PUMP STATION GENERATORS AND MISCELLANEOUS UPGRADES  
WASTEWATER TELEMETERING SYSTEM  
WASTEWATER SYSTEM MAINTENANCE AND UPGRADES  
LIFT STATION UPGRADES AND STRUCTURAL MAINTENANCE IMPROVEMENTS  
WASTEWATER EQUIPMENT AND VEHICLES  
WASTEWATER TREATMENT PLANTS REPLACEMENT AND RENOVATION  
WASTEWATER TREATMENT PLANT AUTOMATION ENHANCEMENTS  
WASTEWATER TREATMENT PLANTS MISCELLANEOUS UPGRADES  
WASTEWATER TREATMENT PLANTS EFFLUENT REUSE  
MIAMI SPRINGS CONSTRUCTION FUND - WASTEWATER  
OUTFALL LEGISLATION SUMMARY DESCRIPTION  
WASTEWATER - PIPES AND INFRASTRUCTURE PROJECTS  
**SUBTOTAL WASTEWATER PROJECTS: \$1,625,716,000**

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**WATER PROJECTS**

WATER TREATMENT PLANT - HIALEAH / PRESTON IMPROVEMENTS  
WATER TREATMENT PLANT - ALEXANDER ORR, JR EXPANSION  
WELLFIELD IMPROVEMENTS  
NORTH MIAMI-DADE WATER TRANSMISSION MAINS IMPROVEMENTS  
CENTRAL MIAMI-DADE WATER TRANSMISSION MAINS IMPROVEMENTS  
SOUTH MIAMI-DADE WATER TRANSMISSION MAINS IMPROVEMENTS  
WATER MAINS EXTENSION  
WATER GENERAL MAINTENANCE AND OFFICE FACILITIES  
WATER DISTRIBUTION SYSTEM EXTENSION ENHANCEMENTS  
WATER SYSTEM FIRE HYDRANT INSTALLATION  
WATER EQUIPMENT AND VEHICLES  
WATER TREATMENT PLANTS REPLACEMENT AND RENOVATIONS  
WATER SYSTEM MAINTENANCE AND UPGRADES  
WATER ENGINEERING STUDIES  
AUTOMATION OF WATER TREATMENT PLANTS  
WATER TREATMENT PLANTS MISCELLANEOUS UPGRADES  
SAFE DRINKING WATER ACT MODIFICATIONS - SWT RULE AND D-DBP  
SOUTH MIAMI HEIGHTS WATER TREATMENT PLANT AND WELLFIELD  
WATER TELEMETERING SYSTEM ENHANCEMENTS  
WATER TREATMENT PLANT - FLORIDIAN REVERSE OSMOSIS  
MIAMI SPRINGS CONSTRUCTION FUND - WATER  
WATER - PIPES AND INFRASTRUCTURE PROJECTS  
**SUBTOTAL WATER PROJECTS: \$1,945,256,000**  
**TOTAL WASTEWATER AND WATER PROJECTS: \$3,570,972,000**

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Approved \_\_\_\_\_ Mayor  
Veto \_\_\_\_\_  
Override \_\_\_\_\_

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12-4-18

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**RESOLUTION NO. R-1227-18**

RESOLUTION AUTHORIZING ISSUANCE OF NOT TO EXCEED \$275,000,000.00 AGGREGATE PRINCIPAL AMOUNT OF MIAMI-DADE COUNTY, FLORIDA WATER AND SEWER SYSTEM REVENUE BONDS, IN ONE OR MORE SERIES, PURSUANT TO SECTION 208 OF ORDINANCE NO. 93-134, AS AMENDED, TO REFUND ALL OR A PORTION OF OUTSTANDING TAX-EXEMPT CP NOTES; PROVIDING FOR CERTAIN DETAILS OF BONDS AND THEIR SALE BY NEGOTIATION; AUTHORIZING MAYOR OR MAYOR'S DESIGNEE, WITHIN CERTAIN LIMITATIONS AND RESTRICTIONS, TO FINALIZE DETAILS, TERMS AND OTHER PROVISIONS OF BONDS, THEIR NEGOTIATED SALE AND REFUNDING OF TAX-EXEMPT CP NOTES; APPROVING FORMS OF AND AUTHORIZING EXECUTION AND DELIVERY OF CERTAIN DOCUMENTS; PROVIDING CERTAIN COVENANTS; AUTHORIZING COUNTY OFFICIALS TO DO ALL THINGS DEEMED NECESSARY IN CONNECTION WITH ISSUANCE, SALE, EXECUTION AND DELIVERY OF BONDS AND REFUNDING OF TAX-EXEMPT CP NOTES; WAIVING PROVISIONS OF RESOLUTION NO. R-130-06; AND PROVIDING SEVERABILITY

WHEREAS, the Board of County Commissioners (the "Board") of Miami-Dade County, Florida (the "County"), acting pursuant to the authority recited in Section 1(c) of this Resolution (the "Series 2019 Resolution"), owns and operates water and wastewater treatment plant facilities and a distribution and collection system and pursuant to such authority and Ordinance No. 93-134, enacted by the Board on November 16, 1993 (the "Original Ordinance" and as amended by the 2013 Ordinance (defined below), the "Master Ordinance"), is authorized to issue revenue bonds from time to time (the Master Ordinance, the 2013 Ordinance and the Series 2019 Resolution are referred to herein as the "Bond Ordinance"); and

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WHEREAS, the Board desires to authorize the issuance of not to exceed \$275,000,000.00 aggregate principal amount of Miami-Dade County, Florida Water and Sewer System Revenue Bonds, in one or more Series, which constitute a portion of the New Money Bonds (the "Series 2019 Bonds"), as Additional Bonds under the provisions of Section 208 of the Master Ordinance, for the purpose of refunding, together with any other available moneys, the Refunded CP Notes, funding the Reserve Account established under the Master Ordinance (whether with proceeds of the Series 2019 Bonds or by deposit of one or more Reserve Account Credit Facilities), funding capitalized interest, if advisable, and paying costs of issuance of the Series 2019 Bonds, including the premiums on or fees for any Credit Facilities and/or Reserve Account Credit Facilities, if there is an economic benefit in accordance with Section 12 of this Series 2019 Resolution; and

WHEREAS, this Series 2019 Resolution constitutes a Series Resolution with respect to each Series of Series 2019 Bonds for all purposes of the Master Ordinance; and

WHEREAS, based upon the findings set forth in Section 2 of this Series 2019 Resolution, the Board deems it in the best financial interest of the County that the Series 2019 Bonds be sold at a public offering by negotiated sale to the Underwriters named in the Bond Purchase Agreement in accordance with the Bond Purchase Agreement and to authorize the distribution, use and delivery of the Preliminary Official Statement and the Official Statement (as all such terms are hereinafter defined), all relating to the negotiated sale of the Series 2019 Bonds; and

WHEREAS, the Board deems it appropriate, subject to the limitations contained in this Series 2019 Resolution, to authorize the Mayor or Mayor's designee (the "County Mayor"), to (i) finalize the terms of the Series 2019 Bonds and the refunding of the Refunded CP Notes to the

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WHEREAS, Section 208 of the Master Ordinance authorizes the County to issue Additional Bonds payable from Pledged Revenues; and

WHEREAS, pursuant to Ordinance No. 13-47, enacted by the Board on June 4, 2013 (the "2013 Ordinance"), the Board authorized the issuance of not to exceed \$4,245,000,000.00 in aggregate principal amount of Additional Bonds under the provisions of Section 208 of the Master Ordinance (the "New Money Bonds"), of which the County has issued \$721,420,000.00; and

WHEREAS, pursuant to the authority of Ordinance No. 09-67, enacted by the Board on July 23, 2009, and Resolution No. R-347-16 adopted by the Board on May 17, 2016 (collectively, the "CP Ordinance"), the County authorized the issuance from time to time of not to exceed \$400,000,000.00 aggregate principal outstanding at any one time of CP Notes (as defined in the CP Ordinance) for the principal purpose of providing temporary funding for a part of the Costs of the CIP Projects (as defined in the CP Ordinance and supplemented in the 2013 Ordinance) in anticipation of the issuance of Additional Bonds; and

WHEREAS, there are currently outstanding Tax-Exempt CP Notes (as defined in the CP Ordinance) and additional Tax-Exempt CP Notes are expected to be issued prior to the issuance of the Series 2019 Bonds (defined below); and

WHEREAS, the part of the CIP Projects funded by the Tax-Exempt CP Notes constitutes Improvements and a Project for all purposes of the Master Ordinance; and

WHEREAS, the Board has determined at this time that it is in the best interests of the County and its citizens to provide for the issuance of Additional Bonds under the provisions of Section 208 of the Master Ordinance, for the purpose of refunding, together with any other available moneys, all or a portion of the then outstanding Tax-Exempt CP Notes (the then outstanding Tax-Exempt CP Notes so refunded being referred to as the "Refunded CP Notes"); and

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extent not provided in the Master Ordinance, the CP Ordinance, the 2013 Ordinance or this Series 2019 Resolution, including the number of Series which will be issued; (ii) finalize the terms of the negotiated sale of the Series 2019 Bonds; (iii) secure one or more Credit Facilities and/or one or more Reserve Account Credit Facilities, if there is an economic benefit in accordance with Section 12 of this Series 2019 Resolution; (iv) determine whether it is advisable to fund capitalized interest on the Series 2019 Bonds; and (v) select and appoint a Registrar (the "Registrar") and a Paying Agent (the "Paying Agent"); and

WHEREAS, the Board desires to provide for a Book-Entry-Only System with respect to the Series 2019 Bonds, and to approve, ratify and confirm the Blanket Issuer Letter of Representations previously executed and delivered by the County to The Depository Trust Company, New York, New York ("DTC") relating to such Book-Entry-Only System; and

WHEREAS, the Board desires to accomplish the purposes outlined in the accompanying memorandum (the "County Mayor's Memorandum"), a copy of which is incorporated in this Series 2019 Resolution by reference,

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF COUNTY COMMISSIONERS OF MIAMI-DADE COUNTY, FLORIDA, that:

**Section 1. Recitals, Definitions, Authority and Construction.**

**Section 2. Findings.** The Board finds, determines and declares as follows:

(a) The County is authorized under the Act and the Bond Ordinance to issue the Series 2019 Bonds to provide funds to refund the Refunded CP Notes.

(b) In accordance with Section 218.385, Florida Statutes, as amended, and based upon the advice of Public Resources Advisory Group, which is serving as financial advisor to the County in connection with the issuance of the Series 2019 Bonds (the "Financial Advisor"), the negotiated

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sale of the Series 2019 Bonds is in the best interest of the County because of the need (i) for flexibility in size and structure, (ii) to update the market on credit and coverage, (iii) to premarket to investors, and (iv) to allow the County to enter the market at a time most advantageous to the County.

(c) The sale and issuance of the Series 2019 Bonds and the use of the proceeds of the Series 2019 Bonds, as provided in this Series 2019 Resolution, serve a valid public and County purpose.

(d) The Board has determined that it is in the best interest of the County to appoint the Underwriters from the County's pool of underwriters and sell the Series 2019 Bonds to them through a negotiated sale but only upon the terms and conditions set forth in this Series 2019 Resolution and as may be determined by the County Mayor, after consultation with the Financial Advisor, in accordance with the terms of this Series 2019 Resolution and set forth in the Bond Purchase Agreement and the Omnibus Certificate.

(e) The authority granted to the County Mayor in this Series 2019 Resolution is necessary for the proper and efficient implementation of the financing program contemplated by this Series 2019 Resolution, and such authorization is in the best interest of the County.

**Section 3. Authorization and Form of Series 2019 Bonds: Terms and Provisions of Series 2019 Bonds.**

(a) **Authorization and Form.** The Series 2019 Bonds, to be designated as "Miami-Dade County, Florida Water and Sewer System Revenue Bonds," are authorized to be issued in one or more Series, with such Series designations (including their year of issuance) as shall be set forth in the Omnibus Certificate, pursuant to Section 208 of the Master Ordinance, the 2013 Ordinance and this Series 2019 Resolution. The aggregate principal amount of the Series 2019 Bonds shall

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however, that in no event shall: (i) the aggregate principal amount of the Series 2019 Bonds exceed \$275,000,000.00; (ii) the purchase price (excluding original issue discount and original issue premium) be less than 99.00% of the aggregate principal amount of the Series 2019 Bonds (the "Minimum Purchase Price"); (iii) the true interest cost rate (the "TIC") on the Series 2019 Bonds exceed 6.00% (the "Maximum TIC"); and (iv) the final maturity of the Series 2019 Bonds be later than forty years from the dated date of the Series 2019 Bonds.

The Series 2019 Bonds shall be issuable only in fully registered form in denominations of \$5,000.00 or any integral multiple of \$5,000.00. Interest on Series 2019 Bonds shall be payable semiannually on April 1 and October 1 of each year (each an "Interest Payment Date"), commencing on the date determined by the County Mayor and set forth in the Omnibus Certificate.

Each Series of the Series 2019 Bonds shall be initially numbered consecutively from R-1 and upwards.

**Section 4. Execution and Authentication of Series 2019 Bonds.** The Series 2019 Bonds shall be executed as set forth in the Master Ordinance. A Certificate of Authentication of the Registrar shall appear on the Series 2019 Bonds, and no Series 2019 Bonds shall be valid or obligatory for any purpose or be entitled to any security or benefit under the Master Ordinance and this Series 2019 Resolution unless such certificate shall have been duly manually executed by the Registrar on such Series 2019 Bonds.

In case any one or more of the officers who shall have signed any of the Series 2019 Bonds shall cease to be such officer of the County before the Series 2019 Bonds so signed shall have been actually delivered, such Series 2019 Bonds may nevertheless be delivered as provided in this Series 2019 Resolution and may be issued as if the person who signed such Series 2019 Bonds had not ceased to hold such office. Any Series 2019 Bonds may be signed on behalf of the County by such

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not exceed \$275,000,000.00. The Series 2019 Bonds shall be issued as fixed rate bonds to refund, together with any other available moneys, the Refunded CP Notes, fund the Reserve Account (whether with proceeds of the Series 2019 Bonds or by the deposit of one or more Reserve Account Credit Facilities), fund capitalized interest, if advisable, and pay the costs of issuance of the Series 2019 Bonds, including the premiums on or fees for any Credit Facilities and/or Reserve Account Credit Facilities. Prior to the delivery of the Series 2019 Bonds, there shall be filed with the County Clerk the documents, certificates and opinion required under Section 208 of the Master Ordinance.

Each of the Series 2019 Bonds shall be in substantially the form attached as Exhibit A to this Series 2019 Resolution, which form of Series 2019 Bond is approved, with such variations, omissions and insertions and such filling in of blanks as may be necessary, and approved by the County Mayor, after consultation with the County Attorney and Squire Patton Boggs (US) LLP and D. Seaton and Associates, P.A. (collectively, "Bond Counsel"), and which are not inconsistent with the provisions of the Bond Ordinance.

(b) **Terms and Provisions of the Series 2019 Bonds.** The County Mayor is authorized, after consultation with the Financial Advisor, the County Attorney and Bond Counsel, to approve the terms of the Series 2019 Bonds not set forth in this Series 2019 Resolution, such approval to be evidenced by the terms and provisions set forth in the Omnibus Certificate, including, without limitation, the aggregate principal amount of the Series 2019 Bonds, the number of Series of Series 2019 Bonds to be issued and the Series designations, the dated date of the Series 2019 Bonds, the interest rates of the Series 2019 Bonds, the purchase price for the Series 2019 Bonds, the maturity dates of the Series 2019 Bonds, the optional and mandatory redemption terms of the Series 2019 Bonds, if any, whether the Series 2019 Bonds shall be Serial Bonds and/or Term Bonds, and the maturity amounts as to Serial Bonds and Amortization Requirements as to Term Bonds provided,

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person as at the actual time of the execution of such Series 2019 Bonds shall hold the proper office, although at the date of such Series 2019 Bonds such person may not have held such office or may not have been so authorized.

**Section 5. Special Obligations of County.** The Series 2019 Bonds shall be special limited obligations of the County payable solely from and secured solely by Pledged Revenues. The Series 2019 Bonds do not constitute an indebtedness, liability, general or moral obligation, or a pledge of the faith, credit or power of the County, the State of Florida (the "State") or any political subdivision of the State, within the meaning of any constitutional, statutory or charter provision. Neither the State nor any political subdivision of the State nor the County shall be directly or indirectly or contingently obligated to levy any ad valorem taxes on any property to pay the principal of or the interest on the Series 2019 Bonds or other related costs, or to pay the same from any other funds of the County except from the Pledged Revenues. The acceptance of the Series 2019 Bonds by the registered owners from time to time of the Series 2019 Bonds shall be deemed an agreement between the County and such registered owners that the Series 2019 Bonds and the indebtedness evidenced by the Series 2019 Bonds shall not constitute a lien upon the Water and Sewer Utility, any part of the Water and Sewer Utility, or any other property of the County, but shall constitute a lien only on the Pledged Revenues.

**Section 6. Payment and Ownership of Series 2019 Bonds.** The principal of or any premium on any Series 2019 Bond shall be payable when due to a Bondholder upon presentation and surrender of such Series 2019 Bond at the designated corporate trust office of the Paying Agent and interest on each Series 2019 Bond shall be paid on each Interest Payment Date by check or draft, mailed by the Paying Agent on that Interest Payment Date to the registered owner of the Series 2019 Bond as of the close of business on the Regular Record Date applicable to that Interest

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Payment Date and at the Bondholder's address as it appears on the registration books of the Registrar on that Regular Record Date, provided, however, that (i) so long as the ownership of such Series 2019 Bonds are maintained in a Book-Entry-Only-System by a securities depository, such payment shall be made by automatic funds transfer ("wire") to such securities depository or its nominee and (ii) if such Series 2019 Bonds are not maintained in a Book-Entry-Only-System by a securities depository, upon written request of the registered owner of \$1,000,000.00 or more in principal amount of Series 2019 Bonds delivered 15 days prior to an Interest Payment Date, interest may be paid when due by wire in immediately available funds. If and to the extent, however, the County fails to make payment or provision for payment on any Interest Payment Date of interest on any Series 2019 Bond, interest shall be payable to the person in whose name such bond is registered at the close of business on a special record date for the payment of such defaulted interest as established by notice mailed by the Registrar to the registered owners of the Series 2019 Bonds not less than fifteen days preceding such special record date. Such notice shall be mailed to the persons in whose name the Series 2019 Bonds are registered at the close of business on the fifth (5th) day preceding the date of mailing.

The registered owner of any Series 2019 Bond shall be deemed and regarded as the absolute owner of the Series 2019 Bonds for all purposes of this Series 2019 Resolution. Payment of or on account of the debt service on any Series 2019 Bond shall be made only to or upon the order of that registered owner or such registered owner's attorney-in-fact duly authorized in writing in the manner permitted by law, and neither the County nor the Paying Agent shall be affected by notice to the contrary. All payments made as described in the Series 2019 Resolution shall be valid and effective to satisfy and discharge the liability upon that Series 2019 Bond, including without limitation, the interest on that Series 2019 Bond, to the extent of the amount or amounts so paid.

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under this Series 2019 Resolution or the Master Ordinance, and the registered owners of such Series 2019 Bonds shall have no rights in respect of the Series 2019 Bonds except to receive payment of the redemption price of the Series 2019 Bonds, together with accrued interest, if any, to such date.

(c) Conditional Notice of Redemption. If the Series 2019 Bonds or any portion thereof are to be optionally redeemed pursuant to the terms authorized in this Series 2019 Resolution, the County may provide a conditional notice of redemption of such Series 2019 Bonds in accordance with the terms set forth below, and the County Mayor is authorized, in his discretion, to add to the form of Series 2019 Bonds a provision reflecting this right:

Conditional Notice of Redemption. In the case of an optional redemption, the notice of redemption may state that (1) it is conditioned upon the deposit of moneys with the Paying Agent or with an escrow agent under an escrow deposit agreement, in amounts necessary to effect the redemption, no later than the redemption date or (2) the County retains the right to rescind such notice on or prior to the scheduled redemption date (in either case, a "Conditional Redemption"), and such notice and optional redemption shall be of no effect if such moneys are not so deposited or if the notice is rescinded as described in this subsection. Any such notice of Conditional Redemption shall be captioned "Conditional Notice of Redemption." Any Conditional Redemption may be rescinded at any time prior to the redemption date if the County delivers a written direction to the Paying Agent directing the Paying Agent to rescind the redemption notice. The Paying Agent shall give prompt notice of such rescission to the affected Bondholders. Any Series 2019 Bonds subject to Conditional Redemption where redemption has been rescinded shall remain Outstanding, and neither the rescission nor the failure by the County to make such moneys

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Section 7. Redemption Provisions.

(a) General. The Board authorizes the County Mayor to determine in the Omnibus Certificate the redemption provisions with respect to the Series 2019 Bonds. The Series 2019 Bonds shall be subject to mandatory redemption from moneys in the Redemption Account and/or at the option of the County, as provided in the Omnibus Certificate and in the Series 2019 Bonds. The amount of Series 2019 Bonds constituting Term Bonds required to be redeemed in each Bond Year as set forth in the Omnibus Certificate shall constitute the Amortization Requirements for the Series 2019 Bonds in the preceding Bond Year. The execution and delivery of such Omnibus Certificate by the County Mayor shall be conclusive evidence of the approval of such redemption provisions by the Board.

Upon surrender of any Series 2019 Bond for redemption in part only, the County shall issue and the Registrar shall deliver to the registered owner of the Series 2019 Bond, without charge, a new Series 2019 Bond or Series 2019 Bonds of the same Series and maturity in authorized denominations in an aggregate principal amount equal to the unredeemed portion surrendered.

(b) Effect of Calling for Redemption. On the date so designated for redemption, notice having been mailed as provided in the Master Ordinance, the Series 2019 Bonds so called for redemption shall become and be due and payable at the redemption price provided for redemption of such Series 2019 Bonds on such date, together with accrued interest, if any, and moneys for payment of the redemption price, together with accrued interest, if any, being held in separate accounts by the Paying Agent in trust for the registered owners of the Series 2019 Bonds to be redeemed, interest on the Series 2019 Bonds so called for redemption shall cease to accrue, such Series 2019 Bonds shall not be deemed to be Outstanding for purposes of this Series 2019 Resolution and the Master Ordinance, and shall cease to be entitled to any lien, benefit or security

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available shall constitute an Event of Default. The County shall give immediate notice to each MSIR (as hereinafter defined) and the affected Bondholders that the redemption did not occur and that the Series 2019 Bonds called for redemption and not so paid remain Outstanding.

Section 8. System of Certificated and Uncertificated Registration. There is established a system of registration with respect to the Series 2019 Bonds as permitted by Chapter 279, Florida Statutes, as amended, pursuant to which both certificated and uncertificated registered Series 2019 Bonds may be issued. The system shall be as described in the Official Statement. The Series 2019 Bonds shall be initially issued as book-entry-only bonds through the Book-Entry-Only System maintained by DTC which will act as securities depository for the Series 2019 Bonds. The Board reserves the right to amend, discontinue or reinstitute the Book-Entry-Only System from time to time, subject to the rights of Bondholders contained in the Bond Ordinance.

Neither the County, the Registrar nor the Paying Agent shall be liable for the failure of the securities depository of the Series 2019 Bonds to perform its obligations as described in the Official Statement, nor for the failure of any participant in the Book-Entry-Only System maintained by the securities depository to perform any obligation such participant may have to a beneficial owner of any Series 2019 Bonds.

The Board approves, ratifies and confirms the Blanket Issuer Letter of Representations previously executed and delivered by the County to DTC. The County Mayor is authorized to execute any additional documentation required by DTC, as securities depository for the Series 2019 Bonds, in connection with the issuance of the Series 2019 Bonds through DTC's Book-Entry-Only System.

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**Section 9. Appointment of Paying Agent and Registrar.** The County Mayor is authorized to appoint a Paying Agent and a Registrar after a competitive process and consultation with the Financial Advisor and, after consultation with the County Attorney and Bond Counsel, to execute any necessary agreements with the Paying Agent and the Registrar.

**Section 10. Approval of Bond Purchase Agreement and Authorization to Award the Sale of the Series 2019 Bonds.** The Board approves the Bond Purchase Agreement in substantially the form on file with the Clerk's office as Exhibit B to this Series 2019 Resolution, with such additions, deletions and completions as may be necessary and approved by the County Mayor in accordance with the terms of this Series 2019 Resolution after consultation with the Financial Advisor, Bond Counsel and the County Attorney. Upon compliance by the Underwriters with the requirements of Section 218.385, Florida Statutes, as amended, the County Mayor, after consultation with the Financial Advisor, is authorized and directed to award the sale of the Series 2019 Bonds to the Underwriters upon the terms described in Section 3(b) of this Series 2019 Resolution and to finalize the terms of, and to execute the Bond Purchase Agreement between the County and the Underwriters and to deliver the Bond Purchase Agreement. The execution and delivery of the Bond Purchase Agreement by the County Mayor shall be conclusive evidence of the Board's approval of any such additions, deletions and completions and acceptance of the Underwriters' proposal to purchase the Series 2019 Bonds. The Board approves the negotiated sale of the Series 2019 Bonds to the Underwriters upon the final terms and conditions in this Series 2019 Resolution and as set forth in the Omnibus Certificate and the Bond Purchase Agreement.

**Section 11. Approval of the Preliminary Official Statement and Final Official Statement.** The use and distribution of the Preliminary Official Statement (the "Preliminary Official Statement") in connection with the offering and sale of the Series 2019 Bonds in

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may be necessary to secure such Credit Facilities and/or Reserve Account Credit Facilities, with the County Mayor's execution of any such agreements to be conclusive evidence of the Board's approval of such agreements. Any such agreements shall supplement and be in addition to the provisions of the Bond Ordinance.

**Section 13. Application of Series 2019 Bond Proceeds.** The proceeds received from the sale of the Series 2019 Bonds shall be deposited and applied as follows:

(i) To the extent not satisfied by the deposit of one or more Reserve Account Credit Facilities, proceeds of the Series 2019 Bonds in such amount as shall be set forth in the Omnibus Certificate shall be deposited in the Reserve Account.

(ii) Proceeds of the Series 2019 Bonds and any other available moneys in the amount necessary to pay the Refunded CP Notes and accrued interest thereon to their maturity date(s) shall be transferred to the Paying Agent (as defined in the CP Ordinance) to be applied to pay such principal and accrued interest or, if the Banks (as defined in the CP Ordinance) pay such principal and accrued interest, to the Banks in reimbursement for such payments.

(iii) If the County Mayor determines that it is advisable to fund capitalized interest on the Series 2019 Bonds, proceeds of the Series 2019 Bonds in such amount as shall be set forth in the Omnibus Certificate shall be deposited in a special account created in the Construction Fund with respect to the Series 2019 Bonds and designated the "Series 2019 Capitalized Interest Account" (inserting any additional Series designation if applicable) (the "Series 2019 Capitalized Interest Account") (inserting any additional Series designation if applicable), to be held by the County and applied to the payment of capitalized interest on the Series 2019 Bonds.

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substantially the form attached as Exhibit C to this Series 2019 Resolution is approved, with such variations, additions, deletions and completions as may be necessary and approved by the County Mayor, after consultation with the Financial Advisor, the County Attorney, Bond Counsel and Hunton Andrews Kurth LLP and DiFalen & Fernandez, LLP (collectively, "Disclosure Counsel"). The County Mayor is authorized to deem the Preliminary Official Statement "final" for the purposes of Rule 15c2-12 of the Securities and Exchange Commission (the "Rule"). The County Mayor is authorized and directed to deliver the final Official Statement (the "Official Statement") in connection with the offering and sale of the Series 2019 Bonds. The Official Statement shall be in substantially the form of the Preliminary Official Statement, with such variations, omissions and insertions and such filling in of blanks as may be necessary and approved by the County Mayor, after consultation with the Financial Advisor, the County Attorney, Bond Counsel and Disclosure Counsel, with the delivery of the Official Statement by the County Mayor being conclusive evidence of the Board's approval of any such variations, omissions and insertions and such filling in of blanks.

**Section 12. Credit Facilities and Reserve Account Credit Facilities.** If the County Mayor demonstrates, after consultation with the Financial Advisor, that there is an economic benefit to the County to obtain and pay for one or more Credit Facilities and/or Reserve Account Credit Facilities with respect to all or a portion of the Series 2019 Bonds, the County Mayor is authorized to secure one or more Credit Facilities and/or Reserve Account Credit Facilities with respect to all or a portion of the Series 2019 Bonds. The County Mayor is authorized to provide for the payment of any premiums on or fees for such Credit Facilities and/or Reserve Account Credit Facilities from the proceeds of the issuance of the Series 2019 Bonds and, after consultation with the County Attorney and Bond Counsel, to enter into, execute and deliver any agreements as

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(iv) The balance of the proceeds of the Series 2019 Bonds in an amount necessary to pay the costs of issuance of the Series 2019 Bonds shall be deposited in a special account created in the Construction Fund with respect to the Series 2019 Bonds and designated the "Miami-Dade County, Florida Water and Sewer System Revenue Bonds, Series 2019 Cost of Issuance Account" (inserting any additional Series designation if applicable) (the "Series 2019 Cost of Issuance Account") (inserting any additional Series designation if applicable), to be held by the County and applied to such costs of issuance of the Series 2019 Bonds; provided, however, that any premiums on or fees for Credit Facilities and/or a Reserve Account Credit Facilities payable by the County may be paid directly by the Underwriters from the proceeds of the Series 2019 Bonds.

If more than one Series of Series 2019 Bonds are issued, separate accounts shall be created and designated with respect to each Series of Series 2019 Bonds and the above deposits shall be made with respect to each Series of Series 2019 Bonds as set forth in the Omnibus Certificate.

**Section 14. Creation of Subaccounts.** The following two separate subaccounts are created and established for the benefit of the Series 2019 Bonds in the Debt Service Fund created pursuant to Section 502 of the Master Ordinance, "Series 2019 Bond Service Subaccount" (the "Series 2019 Bond Service Subaccount") and "Series 2019 Redemption Subaccount" (the "Series 2019 Redemption Subaccount"). The County is authorized to create or cause to be created such additional subaccounts as shall be necessary or advisable in connection with the issuance of the Series 2019 Bonds. Amounts held in any such subaccounts are to be held solely for the benefit of the Series 2019 Bonds.

**Section 15. Tax Covenants.** The County covenants to take the actions required of it for interest on the Series 2019 Bonds to be and to remain excluded from gross income of the holders

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of the Series 2019 Bonds for federal income tax purposes, and not to take any actions that would affect that exclusion. In furtherance of the foregoing covenant, the County agrees that it will comply with the provisions of a tax compliance certificate to be prepared by Bond Counsel and executed and delivered on the date of issuance of the Series 2019 Bonds. The County Mayor is authorized to execute and deliver, and the Director is authorized to acknowledge, such tax compliance certificate.

Notwithstanding anything in this Series 2019 Resolution to the contrary, the requirement of the County to rebate any amounts due to the United States pursuant to Section 148 of the Code shall survive the payment or provision for payment of the principal, interest and redemption premium, if any, with respect to all or any of the Series 2019 Bonds.

**Section 16. State Revolving Fund and WIFIA Obligations to Be Subordinate.** The County's obligations to (i) the State under the various State Revolving Fund Loan Agreements, and (ii) the United States Environmental Protection Agency under any loan agreements that the County may enter into pursuant to the Water Infrastructure Finance and Innovation Act (the "WIFIA Loan Agreements") shall be subordinate to the Outstanding Bonds, the Series 2019 Bonds and any Additional Bonds and Refunding Bonds issued and delivered pursuant to the Master Ordinance. The County Mayor is authorized and directed to deliver certificates, if necessary, upon the issuance and delivery of the Series 2019 Bonds, to confirm the annual debt service coverage required under the State Revolving Fund Loan Agreements and, if entered into, any WIFIA Loan Agreements.

**Section 17. Continuing Disclosure.**

(a) The County agrees, in accordance with the provisions of, and to the degree necessary to comply with, the continuing disclosure requirements of the Rule to provide or cause

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to be provided for the benefit of the beneficial owners of the Series 2019 Bonds (the "Beneficial Owners") to the Municipal Securities Rulemaking Board ("MSRB") in an electronic format prescribed by the MSRB and such other municipal securities information repository as may be required by law or applicable legislation, from time to time (each such information repository, a "MSIR"), the following annual financial information (the "Annual Information"), commencing with the Fiscal Year ending after the issuance of the Series 2019 Bonds:

(i) Operating Revenues and Pledged Revenues in a form which is generally consistent with the presentation of such information in the Official Statement; and

(ii) The Department's Comprehensive Annual Financial Report utilizing generally accepted accounting principles applicable to local governments.

The information in clauses (i) and (ii) above is expected to be available on or before June 1 of each year for the preceding Fiscal Year. The Department's Comprehensive Annual Financial Report referred to in clause (ii) above is expected to be available separately from the information in clause (i) above and shall be provided by the County as soon as practical after acceptance of the audited financial statements from the auditors by the Department. If not available within eight (8) months from the end of the Fiscal Year, unaudited information will be provided in accordance with the time frame set forth above and audited financial statements will be provided as soon after such time as they become available.

(b) The County agrees to provide or cause to be provided to each MSIR in the appropriate format required by law or applicable regulation, in a timely manner not in excess of ten business days after the occurrence of the event, notice of the occurrence of any of the following events with respect to the Series 2019 Bonds:

(i) principal and interest payment delinquencies;

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- (ii) non-payment related defaults, if material;
- (iii) unscheduled draws on debt service reserves reflecting financial difficulties;
- (iv) unscheduled draws on credit enhancements reflecting financial difficulties;
- (v) substitution of credit or liquidity providers, or their failure to perform;
- (vi) adverse tax opinions, the issuance by the Internal Revenue Service of proposed or final determinations of taxability, Notices of Proposed Issue (IRS Form 5701 TEB) or other material notices or determinations with respect to the tax status of the Series 2019 Bonds, or other material events affecting the tax status of the Series 2019 Bonds;
- (vii) modifications to rights of holders of the Series 2019 Bonds, if material;
- (viii) bond calls, if material, and tender offers;
- (ix) defeasances;
- (x) release, substitution, or sale of any property securing repayment of the Series 2019 Bonds, if material;
- (xi) rating changes;
- (xii) bankruptcy, insolvency, receivership or similar event of the County (which is considered to occur when any of the following occur: the appointment of a receiver, fiscal agent or similar officer for the County in a proceeding under the U.S. Bankruptcy Code or in any other proceeding under state or federal law in which a court or governmental authority has assumed jurisdiction over substantially all of the assets or business of the County, or if such jurisdiction has been assumed by leaving the existing governing body and officials or officers in possession but subject to the supervision and orders of a court or governmental authority, or the entry of an order confirming a plan of reorganization,

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arrangement or liquidation by a court or governmental authority having supervision or jurisdiction over substantially all of the assets or business of the County);

(xiii) the consummation of a merger, consolidation, or acquisition involving the County or the sale of all or substantially all of the assets of the County, other than in the ordinary course of business, the entry into a definitive agreement to undertake such an action or the termination of a definitive agreement relating to any such actions, other than pursuant to its terms, if material; and

(xiv) the appointment of a successor or additional trustee or the change of name of a trustee, if material.

(c) The County agrees to provide or cause to be provided, in a timely manner, to each MSIR, in the appropriate format required by law or applicable regulation, notice of its failure to provide the Annual Information with respect to itself on or prior to June 1 following the end of the preceding Fiscal Year.

(d) The obligations of the County under this Section 17 shall remain in effect only so long as the Series 2019 Bonds are Outstanding. The County reserves the right to terminate its obligations to provide the Annual Information and notices of the occurrence of the events specified in subsection (b) above if and when the County no longer remains an "obligated person" with respect to the Series 2019 Bonds within the meaning of the Rule.

(e) The County agrees that its undertaking pursuant to the Rule set forth in this Section 17 is intended to be for the benefit of the Beneficial Owners of the Series 2019 Bonds and shall be enforceable by the Beneficial Owners if the County fails to cure a breach within a reasonable time after receipt of written notice from a Beneficial Owner that a breach exists; provided, however, that any Beneficial Owner's right to enforce the provisions of this undertaking shall be on behalf

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of all Beneficial Owners and shall be limited to a right to obtain specific performance of the County's obligations under this Section 17 in a federal or state court located within the County and any failure by the County to comply with the provisions of this undertaking shall not be a default with respect to the Series 2019 Bonds.

(f) Notwithstanding the foregoing, each MSIR to which information shall be provided shall include each MSIR approved by the Securities and Exchange Commission prior to the issuance of the Series 2019 Bonds. In the event that the Securities and Exchange Commission approves any additional MSIRs after the date of issuance of the Series 2019 Bonds, the County shall, if the County is notified of such additional MSIRs, provide such information to the additional MSIRs. Failure to provide information to any new MSIR whose status as a MSIR is unknown to the County shall not constitute a breach of this covenant.

(g) The requirements of subsection (a) above do not necessitate the preparation of any separate annual report addressing only the Series 2019 Bonds. The requirements of subsection (a) may be met by the filing of an annual information statement or the County's Comprehensive Annual Financial Report, provided such report includes all of the required Annual Information and is available by June 1 of each year for the preceding Fiscal Year. Additionally, the County may incorporate any information in any prior filing with each MSIR or included in any final official statement of the County, provided such final official statement is filed with the MSIRs.

(h) The County reserves the right to modify from time to time the specific types of information provided or the format of the presentation of such information, to the extent necessary or appropriate in the judgment of the County, provided that the County agrees that any such modification will be done in a manner consistent with the Rule.

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**Section 18. Modification or Amendment.** This Series 2019 Resolution shall constitute a contract between the County and the Bondholders of the Series 2019 Bonds. Except as provided in this Series 2019 Resolution, no material amendment or modification of this Series 2019 Resolution or of any amendatory or supplemental resolution may be made without the consent of the registered owners of fifty-one percent (51%) or more in principal amount of the Series 2019 Bonds then Outstanding.

Notwithstanding anything in this Series 2019 Resolution to the contrary, (i) this Series 2019 Resolution may be amended without the consent of the Bondholders to provide clarification, correct omissions, make technical changes, comply with state laws, make such additions, deletions or modifications as may be necessary to assure compliance with Section 148 of the Code, as amended or otherwise as may be necessary to assure the exclusion of interest on the Series 2019 Bonds from gross income of the holders of the Series 2019 Bonds for federal income tax purposes, and such other amendments that do not materially adversely affect the interest of registered owners of the Series 2019 Bonds then Outstanding; and (ii) if a Credit Facility has been issued with respect to the Series 2019 Bonds, the Credit Facility Provider may give consents, on behalf of the registered owners of the Series 2019 Bonds insured or secured by it, to any of the foregoing amendments in accordance with the provisions of Section 803 of the Master Ordinance.

**Section 19. Authorization of Further Actions.** The County Mayor, the Finance Director, the County Attorney, the Clerk and other officers, employees and agents of the County are hereby authorized and directed to do all acts and things and to execute and deliver any and all documents and certificates which they deem necessary or advisable in order to consummate the issuance of the Series 2019 Bonds and the refunding of the Tax-Exempt CP Notes and otherwise to carry out, give effect to and comply with the terms and intent of this Series 2019 Resolution,

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(i) Except to cure any ambiguity, inconsistency or formal defect or omission in the provisions of this Section 17, the County's covenants as to continuing disclosure (the "Covenants") may only be amended if:

(i) the amendment is made in connection with a change in circumstances that arises from a change in legal requirements, a change in law or a change in the identity, nature or status of the County or type of business conducted; the Covenants, as amended, would have complied with the requirements of the Rule at the time of award of the Series 2019 Bonds, after taking into account any amendments or change in circumstances; and the amendment does not materially impair the interests of the Beneficial Owners, as determined by Disclosure Counsel or other independent counsel knowledgeable in the area of federal securities laws and regulations; or

(ii) all or any part of the Rule, as interpreted by the staff of the Securities and Exchange Commission at the date of adoption of this Series 2019 Resolution, ceases to be in effect for any reason, and the County elects that the Covenants shall be deemed amended accordingly.

(j) Any assertion of beneficial ownership must be filed with the County, along with full documentary support as part of the written request described above.

(k) The Board further authorizes and directs the County Mayor to cause all other agreements to be made or action to be taken as required in connection with meeting the County's obligations as to the Covenants. The County Mayor shall further be authorized to make such additions, deletions and modifications to the Covenants as he shall deem necessary or desirable in consultation with the County Attorney, Bond Counsel and Disclosure Counsel.

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the Series 2019 Bonds and the related documents. In the event that the County Mayor, the Finance Director, the Clerk or the County Attorney is unable to execute and deliver the contemplated documents, such documents shall be executed and delivered by the respective designee of such officer or official or any other duly authorized officer or official of the County.

**Section 20. Severability; Resolution Controlling.** In case any one or more of the provisions of this Series 2019 Resolution or any approved document shall for any reason be held to be illegal or invalid, such illegality or invalidity shall not affect any other provisions of this Series 2019 Resolution or such document, as the case may be, and such other provisions shall be construed and enforced as if such illegal or invalid provisions had not been contained. All or any part of resolutions or proceedings in conflict with the provisions of this Series 2019 Resolution are to the extent of such conflict repealed or amended to the extent of such inconsistency.

**Section 21. Governing Law; Venue.** The Series 2019 Bonds are to be issued and this Series 2019 Resolution is adopted and such other documents necessary for the issuance of the Series 2019 Bonds shall be executed and delivered with the intent that, except to the extent otherwise specifically provided in such documents, the laws of the State shall govern their construction. Except as otherwise specifically provided in any such documents, venue shall lie in Miami-Dade County, Florida.

**Section 22. No Recourse Against County's Officers.** No covenant, agreement or obligation contained in this Series 2019 Resolution shall be deemed to be a covenant, agreement or obligation of any present or future official, officer, employee or agent of the County in the individual capacity of such person, and no official, officer, employee or agent of the County executing the Series 2019 Bonds shall be liable personally on the Series 2019 Bonds or be subject to any personal liability or accountability by reason of the issuance of the Series 2019 Bonds. No

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official, officer, employee, agent or advisor of the County shall incur any personal liability with respect to any other action taken by such person pursuant to this Series 2019 Resolution, provided the official, officer, employee, agent or advisor acts in good faith, but this Section 22 shall not relieve any official, officer, employee, agent or advisor of the County from the performance of any official duty provided by law or this Series 2019 Resolution.

**Section 23. Waivers.** The provisions of Resolution No. R-130-06, as amended, requiring that any contracts of the County with third parties be executed and finalized prior to their placement on the committee agenda are waived at the request of the County Manager for the reasons set forth in the County Mayor's Memorandum.

The foregoing resolution was offered by Commissioner Daniella Levine Cava, who moved its adoption. The motion was seconded by Commissioner Sally A. Heyman and upon being put to a vote, the vote was as follows:

Esteban L. Bovo, Jr., Chairman	aye
Andrey M. Edmonson, Vice Chairwoman	aye
Daniella Levine Cava	aye
Sally A. Heyman	aye
Barbara J. Jordan	absent
Jean Munestime	aye
Rebecca Sosa	aye
Xavier L. Suarez	aye
Jose "Pepe" Diaz	aye
Eileen Higgins	aye
Joe A. Martinez	aye
Dennis C. Moss	aye
Sen. Javier D. Souto	aye

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The Chairperson thereupon declared this resolution duly passed and adopted this 4<sup>th</sup> day of December, 2018. This resolution shall become effective upon the earlier of (1) 10 days after the date of its adoption unless vetoed by the County Mayor, and if vetoed, shall become effective only upon an override by this Board, or (2) approval by the County Mayor of this resolution and the filing of this approval with the Clerk of the Board.



MIAMI-DADE COUNTY, FLORIDA  
BY ITS BOARD OF  
COUNTY COMMISSIONERS

HARVEY RUVIN, CLERK

Linda L. Cave

By: Deputy Clerk

Approved by County Attorney as  
to form and legal sufficiency.

JRA

Juliette R. Antoine

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**APPENDIX E**

**SCHEDULE OF WATER AND SEWER RATES  
MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF RATES**

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**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF RATES**

**RESIDENTIAL CUSTOMER**

**WATER**

**Effective  
October 1, 2018**

Meter Charge:

Monthly Charge

Meter Size

5/8"	\$3.20
1"	\$12.38
1.5"	\$24.76
2"	\$39.60
3"	\$79.21
4"	\$123.76
6"	\$247.50
8"	\$396.02
10"	\$569.28
12"	\$1,064.30
14"	\$1,980.07
16"	\$2,722.61

Flow Rate All Usage:

Monthly Charge

Usage per 100 cubic feet (ccf):

0 to 4 ccf	\$0.3740
5 to 9 ccf	\$3.3469
10 to 17 ccf	\$3.8568
18 ccf and over	\$6.3748

Usage per 1,000 gallons:

0 to 2,992 gallons	\$0.5000
2,993 to 6,732 gallons	\$4.4745
6,733 to 12,716 gallons	\$5.1562
12,717 gallons and over	\$8.5224

NOTE: 100 cubic feet (ccf) equals 748 gallons

Residential: a retail customer/account consisting of a single family residence or duplex being served by a common meter

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF RATES**

**RESIDENTIAL CUSTOMER**

**WATER**

**Effective  
October 1, 2018**

Meter Charge:

Quarterly Charge

Meter Size

5/8"	\$9.60
1"	\$37.14
1.5"	\$74.28
2"	\$118.80
3"	\$237.63
4"	\$371.28
6"	\$742.50
8"	\$1,188.06
10"	\$1,707.84
12"	\$3,192.90
14"	\$5,940.21
16"	\$8,167.83

Flow Rate All Usage:

Quarterly Charge

Usage per 100 cubic feet (ccf):

0 to 12 ccf	\$0.3740
13 to 27 ccf	\$3.3469
28 to 51 ccf	\$3.8568
52 ccf and over	\$6.3748

Usage per 1,000 gallons:

0 to 8,976 gallons	\$0.5000
8,977 to 20,196 gallons	\$4.4745
20,197 to 38,148 gallons	\$5.1562
38,149 gallons and over	\$8.5224

NOTE: 100 cubic feet (ccf) equals 748 gallons

Residential: a retail customer/account consisting of a single family residence or duplex being served by a common meter



**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF RATES**

**MULTI-FAMILY DWELLINGS (MFD)**

**WATER**

**Effective  
October 1, 2018**

Meter Charge: Monthly Charge

Meter Size

5/8" to 16"	\$3.04
<i>Meter charge will be applied per unit</i>	

Flow Rate All Usage Per Unit: Monthly Charge

Usage per 100 cubic feet (ccf):

0 to 4 ccf	\$0.3740
5 to 9 ccf	\$3.3469
10 to 17 ccf	\$3.8568
18 ccf and over	\$6.3748

Usage per 1,000 gallons:

0 to 2,992 gallons	\$0.5000
2,993 to 6,732 gallons	\$4.4745
6,733 to 12,716 gallons	\$5.1562
12,717 gallons and over	\$8.5224

NOTE: 100 cubic feet (ccf) equals 748 gallons

Multi-family: a retail customer/account consisting of more than two residential customers served by a common meter(s)

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF RATES**

**MULTI-FAMILY DWELLINGS (MFD)**

<b>WATER</b>	<b>Effective October 1, 2018</b>
Meter Charge:	Quarterly Charge
Meter Size	
5/8" to 16"	\$9.12
<i>Meter charge will be applied per unit</i>	
Flow Rate All Usage Per Unit:	Quarterly Charge
Usage per 100 cubic feet (ccf):	
0 to 12 ccf	\$0.3740
13 to 27 ccf	\$3.3469
28 to 51 ccf	\$3.8568
52 ccf and over	\$6.3748
Usage per 1,000 gallons:	
0 to 8,976 gallons	\$0.5000
8,977 to 20,196 gallons	\$4.4745
20,197 to 38,148 gallons	\$5.1562
38,149 gallons and over	\$8.5224

NOTE: 100 cubic feet (ccf) equals 748 gallons

Multi-family: a retail customer/account consisting of more than two residential customers served by a common meter(s)

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF RATES**

**MIXED-USE BUILDINGS**

**WATER**

**Effective  
October 1, 2018**

**Meter Charge:**

**Monthly Charge**

*Meter charge will be applied per billing unit*

5/8" to 1.5"	\$8.50
2"	\$10.63
3"	\$17.60
4" to 6"	\$19.20
8"	\$20.80
10"	\$21.60

**Flow Rate All Usage Per Billing Unit:**

**Monthly Charge**

**Usage per 100 cubic feet (ccf):**

0 to 4 ccf	\$0.3740
5 to 9 ccf	\$3.3469
10 to 17 ccf	\$3.8568
18 ccf and over	\$6.3748

**Usage per 1,000 gallons:**

0 to 2,992 gallons	\$0.5000
2,993 to 6,732 gallons	\$4.4745
6,733 to 12,716 gallons	\$5.1562
12,717 gallons and over	\$8.5224

NOTE: 100 cubic feet (ccf) equals 748 gallons

MIXED USE: a retail customer/account consisting of more than two residential dwellings and non-residential activities served by a common meter in which permit application was submitted prior to October 1, 2016 (Ordinance No. 16-107)

BILLING UNIT: each residential unit within a mixed-use building shall be treated as one billing unit. All non-residential units within a mixed-use building shall collectively be treated as one billing unit.

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF RATES**

**MIXED-USE BUILDINGS**

**WATER**

**Effective  
October 1, 2018**

**Meter Charge:**

Quarterly Charge

*Meter charge will be applied per billing unit*

5/8" to 1.5"	\$25.50
2"	\$31.89
3"	\$52.80
4" to 6"	\$57.60
8"	\$62.40
10"	\$64.80

**Flow Rate All Usage Per Billing Unit:**

Quarterly Charge

**Usage per 100 cubic feet (ccf):**

0 to 12 ccf	\$0.3740
13 to 27 ccf	\$3.3469
28 to 51 ccf	\$3.8568
52 ccf and over	\$6.3748

**Usage per 1,000 gallons:**

0 to 8,976 gallons	\$0.5000
8,977 to 20,196 gallons	\$4.4745
20,197 to 38,148 gallons	\$5.1562
38,149 gallons and over	\$8.5224

NOTE: 100 cubic feet (ccf) equals 748 gallons

**MIXED USE:** a retail customer/account consisting of more than two residential dwellings and non-residential activities served by a common meter in which permit application was submitted prior to October 1, 2016 (Ordinance No. 16-107)

**BILLING UNIT:** each residential unit within a mixed-use building shall be treated as one billing unit. All non-residential units within a mixed-use building shall collectively be treated as one billing unit.

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF RATES**

**NON-RESIDENTIAL CUSTOMERS**

<b>WATER</b>	<b><u>Effective</u> <u>October 1, 2018</u></b>
Meter Charge:	Monthly Charge
Meter Size 5/8"	\$3.20
Flow Rate All Usage:	Monthly Charge
Usage per 100 cubic feet (ccf):	
0 to 4 ccf	\$0.3740
5 to 9 ccf	\$3.3469
10 to 17 ccf	\$3.8568
18 ccf and over	\$6.3748
Usage per 1,000 gallons:	
0 to 2,992 gallons	\$0.5000
2,993 to 6,732 gallons	\$4.4745
6,733 to 12,716 gallons	\$5.1562
12,717 gallons and over	\$8.5224
Meter Charge:	Monthly Charge
Meter Size  1"	  \$12.38
Flow Rate All Usage:	Monthly Charge
Usage per 100 cubic feet (ccf):	
0 to 10 ccf	\$0.3740
11 to 23 ccf	\$3.3469
24 to 43 ccf	\$3.8568
44 ccf and over	\$6.3748
Usage per 1,000 gallons:	
0 to 7,480 gallons	\$0.5000
7,481 to 16,830 gallons	\$4.4745
16,831 to 31,790 gallons	\$5.1562
31,791 gallons and over	\$8.5224

NOTE: 100 cubic feet (ccf) equals 748 gallons

Non-Residential: a retail customer/account consisting of business, commercial, industrial use, or any combination thereof

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF RATES**

**NON-RESIDENTIAL CUSTOMERS**

**WATER**

**Effective  
October 1, 2018**

Meter Charge:	Monthly Charge
Meter Size	
1.5"	\$24.76
Flow Rate All Usage:	Monthly Charge
Usage per 100 cubic feet (ccf):	
0 to 20 ccf	\$0.3740
21 to 45 ccf	\$3.3469
46 to 85 ccf	\$3.8568
86 ccf and over	\$6.3748
Usage per 1,000 gallons:	
0 to 14,960 gallons	\$0.5000
14,961 to 33,660 gallons	\$4.4745
33,661 to 63,580 gallons	\$5.1562
63,581 gallons and over	\$8.5224
Meter Charge:	Monthly Charge
Meter Size	
2"	\$39.60
Flow Rate All Usage:	Monthly Charge
Usage per 100 cubic feet (ccf):	
0 to 32 ccf	\$0.3740
33 to 72 ccf	\$3.3469
73 to 136 ccf	\$3.8568
137 ccf and over	\$6.3748
Usage per 1,000 gallons:	
0 to 23,936 gallons	\$0.5000
23,937 to 53,856 gallons	\$4.4745
53,857 to 101,728 gallons	\$5.1562
101,729 gallons and over	\$8.5224

NOTE: 100 cubic feet (ccf) equals 748 gallons

Non-Residential: a retail customer/account consisting of business, commercial, industrial use, or any combination thereof

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF RATES**

**NON-RESIDENTIAL CUSTOMERS**

**WATER**

**Effective  
October 1, 2018**

Meter Charge: Monthly Charge

Meter Size

3" \$79.21

Flow Rate All Usage: Monthly Charge

Usage per 100 cubic feet (ccf):

0 to 64 ccf	\$0.3740
65 to 144 ccf	\$3.3469
145 to 272 ccf	\$3.8568
273 ccf and over	\$6.3748

Usage per 1,000 gallons:

0 to 47,872 gallons	\$0.5000
47,873 to 107,712 gallons	\$4.4745
107,713 to 203,456 gallons	\$5.1562
203,457 gallons and over	\$8.5224

Meter Charge: Monthly Charge

Meter Size

4" \$123.76

Flow Rate All Usage: Monthly Charge

Usage per 100 cubic feet (ccf):

0 to 100 ccf	\$0.3740
101 to 225 ccf	\$3.3469
226 to 425 ccf	\$3.8568
426 ccf and over	\$6.3748

Usage per 1,000 gallons:

0 to 74,800 gallons	\$0.5000
74,801 to 168,300 gallons	\$4.4745
168,301 to 317,900 gallons	\$5.1562
317,901 gallons and over	\$8.5224

NOTE: 100 cubic feet (ccf) equals 748 gallons

Non-Residential: a retail customer/account consisting of business, commercial, industrial use, or any combination thereof

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF RATES**

**NON-RESIDENTIAL CUSTOMERS**

<b>WATER</b>	<u><b>Effective</b></u> <u><b>October 1, 2018</b></u>
Meter Charge:	Monthly Charge
Meter Size	
6"	\$247.50
Flow Rate All Usage:	Monthly Charge
Usage per 100 cubic feet (ccf):	
0 to 200 ccf	\$0.3740
201 to 450 ccf	\$3.3469
451 to 850 ccf	\$3.8568
851 ccf and over	\$6.3748
Usage per 1,000 gallons:	
0 to 149,600 gallons	\$0.5000
149,601 to 336,600 gallons	\$4.4745
336,601 to 635,800 gallons	\$5.1562
635,801 gallons and over	\$8.5224
Meter Charge:	Monthly Charge
Meter Size	
8"	\$396.02
Flow Rate All Usage:	Monthly Charge
Usage per 100 cubic feet (ccf):	
0 to 320 ccf	\$0.3740
321 to 720 ccf	\$3.3469
721 ccf to 1,360	\$3.8568
1,361 ccf and over	\$6.3748
Usage per 1,000 gallons:	
0 to 239,360 gallons	\$0.5000
239,361 to 538,560 gallons	\$4.4745
538,561 to 1,017,280 gallons	\$5.1562
1,017,281 gallons and over	\$8.5224

NOTE: 100 cubic feet (ccf) equals 748 gallons

Non-Residential: a retail customer/account consisting of business, commercial, industrial use, or any combination thereof



**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF RATES**

**NON-RESIDENTIAL CUSTOMERS**

**WATER**

**Effective  
October 1, 2018**

Meter Charge:	Monthly Charge
Meter Size	
10"	\$569.28
Flow Rate All Usage:	Monthly Charge
Usage per 100 cubic feet (ccf):	
0 to 460 ccf	\$0.3740
461 to 1,035 ccf	\$3.3469
1,036 to 1,955 ccf	\$3.8568
1,956 ccf and over	\$6.3748
Usage per 1,000 gallons:	
0 to 344,080 gallons	\$0.5000
344,081 to 774,180 gallons	\$4.4745
774,181 to 1,462,340 gallons	\$5.1562
1,462,341 gallons and over	\$8.5224
Meter Charge:	Monthly Charge
Meter Size	
12"	\$1,064.30
Flow Rate All Usage:	Monthly Charge
Usage per 100 cubic feet (ccf):	
0 to 860 ccf	\$0.3740
861 to 1,935 ccf	\$3.3469
1936 to 3,655 ccf	\$3.8568
3,656 ccf and over	\$6.3748
Usage per 1,000 gallons:	
0 to 643,280 gallons	\$0.5000
643,281 to 1,447,380 gallons	\$4.4745
1,447,381 to 2,733,940 gallons	\$5.1562
2,733,941 gallons and over	\$8.5224

NOTE: 100 cubic feet (ccf) equals 748 gallons

Non-Residential: a retail customer/account consisting of business, commercial, industrial use, or any combination thereof

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF RATES**

**NON-RESIDENTIAL CUSTOMERS**

**WATER**

**Effective  
October 1, 2018**

Meter Charge:	Monthly Charge
Meter Size	
14"	\$1,980.07
Flow Rate All Usage:	Monthly Charge
Usage per 100 cubic feet (ccf):	
0 to 1,600 ccf	\$0.3740
1,601 to 3,600 ccf	\$3.3469
3,601 to 6,800 ccf	\$3.8568
6,801 ccf and over	\$6.3748
Usage per 1,000 gallons:	
0 to 1,196,800 gallons	\$0.5000
1,196,801 to 2,692,800 gallons	\$4.4745
2,692,801 to 5,086,400 gallons	\$5.1562
5,086,401 gallons and over	\$8.5224
Meter Charge:	Monthly Charge
Meter Size	
16"	\$2,722.61
Flow Rate All Usage:	Monthly Charge
Usage per 100 cubic feet (ccf):	
0 to 2,200 ccf	\$0.3740
2,201 to 4,950 ccf	\$3.3469
4,951 to 9,350 ccf	\$3.8568
9,351 ccf and over	\$6.3748
Usage per 1,000 gallons:	
0 to 1,645,600 gallons	\$0.5000
1,645,601 to 3,702,600 gallons	\$4.4745
3,702,601 to 6,993,800 gallons	\$5.1562
6,993,801 gallons and over	\$8.5224

NOTE: 100 cubic feet (ccf) equals 748 gallons

Non-Residential: a retail customer/account consisting of business, commercial, industrial use, or any combination thereof

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF RATES**

**NON-RESIDENTIAL CUSTOMERS**

**WATER**

**Effective  
October 1, 2018**

Meter Charge: Quarterly Charge

Meter Size

5/8" \$9.60

Flow Rate All Usage: Quarterly Charge

Usage per 100 cubic feet (ccf):

0 to 12 ccf	\$0.3740
13 to 27 ccf	\$3.3469
28 to 51 ccf	\$3.8568
52 ccf and over	\$6.3748

Usage per 1,000 gallons:

0 to 8,976 gallons	\$0.5000
8,977 to 20,196 gallons	\$4.4745
20,197 to 38,148 gallons	\$5.1562
38,149 gallons and over	\$8.5224

Meter Charge: Quarterly Charge

Meter Size

1" \$37.14

Flow Rate All Usage: Quarterly Charge

Usage per 100 cubic feet (ccf):

0 to 30 ccf	\$0.3740
31 to 68 ccf	\$3.3469
69 to 128 ccf	\$3.8568
129 ccf and over	\$6.3748

Usage per 1,000 gallons:

0 to 22,440 gallons	\$0.5000
22,441 to 50,490 gallons	\$4.4745
50,491 to 95,370 gallons	\$5.1562
95,371 gallons and over	\$8.5224

NOTE: 100 cubic feet (ccf) equals 748 gallons

Non-Residential: a retail customer/account consisting of business, commercial, industrial use, or any combination thereof

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF RATES**

**NON-RESIDENTIAL CUSTOMERS**

**WATER**

**Effective  
October 1, 2018**

Meter Charge: Quarterly Charge

Meter Size

1.5" \$74.28

Flow Rate All Usage: Quarterly Charge

Usage per 100 cubic feet (ccf):

0 to 60 ccf	\$0.3740
61 to 135 ccf	\$3.3469
136 to 255 ccf	\$3.8568
256 ccf and over	\$6.3748

Usage per 1,000 gallons:

0 to 44,880 gallons	\$0.5000
44,881 to 100,980 gallons	\$4.4745
100,981 to 190,740 gallons	\$5.1562
190,741 gallons and over	\$8.5224

Meter Charge: Quarterly Charge

Meter Size

2" \$118.80

Flow Rate All Usage: Quarterly Charge

Usage per 100 cubic feet (ccf):

0 to 96 ccf	\$0.3740
97 to 216 ccf	\$3.3469
217 to 408 ccf	\$3.8568
409 ccf and over	\$6.3748

Usage per 1,000 gallons:

0 to 71,808 gallons	\$0.5000
71,809 to 161,568 gallons	\$4.4745
161,569 to 305,184 gallons	\$5.1562
305,185 gallons and over	\$8.5224

NOTE: 100 cubic feet (ccf) equals 748 gallons

Non-Residential: a retail customer/account consisting of business, commercial, industrial use, or any combination thereof

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF RATES**

**NON-RESIDENTIAL CUSTOMERS**

**WATER**

**Effective  
October 1, 2018**

Meter Charge: Quarterly Charge

Meter Size

3" \$237.63

Flow Rate All Usage: Quarterly Charge

Usage per 100 cubic feet (ccf):

0 to 192 ccf	\$0.3740
193 to 432 ccf	\$3.3469
433 to 816 ccf	\$3.8568
817 ccf and over	\$6.3748

Usage per 1,000 gallons:

0 to 143,616 gallons	\$0.5000
143,617 to 323,136 gallons	\$4.4745
323,137 to 610,368 gallons	\$5.1562
610,369 gallons and over	\$8.5224

Meter Charge: Quarterly Charge

Meter Size

4" \$371.28

Flow Rate All Usage: Quarterly Charge

Usage per 100 cubic feet (ccf):

0 to 300 ccf	\$0.3740
301 to 675 ccf	\$3.3469
676 to 1,275 ccf	\$3.8568
1,276 ccf and over	\$6.3748

Usage per 1,000 gallons:

0 to 224,400 gallons	\$0.5000
224,401 to 504,900 gallons	\$4.4745
504,901 to 953,700 gallons	\$5.1562
953,701 gallons and over	\$8.5224

NOTE: 100 cubic feet (ccf) equals 748 gallons

Non-Residential: a retail customer/account consisting of business, commercial, industrial use, or any combination thereof

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF RATES**

**NON-RESIDENTIAL CUSTOMERS**

**WATER**

**Effective  
October 1, 2018**

Meter Charge: Quarterly Charge

Meter Size

6" \$742.50

Flow Rate All Usage: Quarterly Charge

Usage per 100 cubic feet (ccf):

0 to 600 ccf	\$0.3740
601 to 1,350 ccf	\$3.3469
1,351 to 2,550 ccf	\$3.8568
2,551 ccf and over	\$6.3748

Usage per 1,000 gallons:

0 to 448,800 gallons	\$0.5000
448,801 to 1,009,800 gallons	\$4.4745
1,009,801 to 1,907,400 gallons	\$5.1562
1,907,401 gallons and over	\$8.5224

Meter Charge: Quarterly Charge

Meter Size

8" \$1,188.06

Flow Rate All Usage: Quarterly Charge

Usage per 100 cubic feet (ccf):

0 to 960 ccf	\$0.3740
961 to 2,160 ccf	\$3.3469
2,161 to 4,080 ccf	\$3.8568
4,081 ccf and over	\$6.3748

Usage per 1,000 gallons:

0 to 718,080 gallons	\$0.5000
718,081 to 1,615,680 gallons	\$4.4745
1,615,681 to 3,051,840 gallons	\$5.1562
3,051,841 gallons and over	\$8.5224

NOTE: 100 cubic feet (ccf) equals 748 gallons

Non-Residential: a retail customer/account consisting of business, commercial, industrial use, or any combination thereof

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF RATES**

**NON-RESIDENTIAL CUSTOMERS**

**WATER**

**Effective  
October 1, 2018**

Meter Charge: Quarterly Charge

Meter Size

10" \$1,707.84

Flow Rate All Usage: Quarterly Charge

Usage per 100 cubic feet (ccf):

0 to 1,380 ccf	\$0.3740
1,381 to 3,105 ccf	\$3.3469
3,106 to 5,865 ccf	\$3.8568
5,866 ccf and over	\$6.3748

Usage per 1,000 gallons:

0 to 1,032,240 gallons	\$0.5000
1,032,241 to 2,322,540 gallons	\$4.4745
2,322,541 to 4,387,020 gallons	\$5.1562
4,387,021 gallons and over	\$8.5224

Meter Charge: Quarterly Charge

Meter Size

12" \$3,192.90

Flow Rate All Usage: Quarterly Charge

Usage per 100 cubic feet (ccf):

0 to 2,580 ccf	\$0.3740
2,581 to 5,805 ccf	\$3.3469
5,806 to 10,965 ccf	\$3.8568
10,966 ccf and over	\$6.3748

Usage per 1,000 gallons:

0 to 1,929,840 gallons	\$0.5000
1,929,841 to 4,342,140 gallons	\$4.4745
4,342,141 to 8,201,820 gallons	\$5.1562
8,201,821 gallons and over	\$8.5224

NOTE: 100 cubic feet (ccf) equals 748 gallons

Non-Residential: a retail customer/account consisting of business, commercial, industrial use, or any combination thereof

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF RATES**

**NON-RESIDENTIAL CUSTOMERS**

**WATER**

**Effective  
October 1, 2018**

Meter Charge: Quarterly Charge

Meter Size

14" \$5,940.21

Flow Rate All Usage: Quarterly Charge

Usage per 100 cubic feet (ccf):

0 to 4,800 ccf	\$0.3740
4,801 to 10,800 ccf	\$3.3469
10,801 to 20,400 ccf	\$3.8568
20,401 ccf and over	\$6.3748

Usage per 1,000 gallons:

0 to 3,590,400 gallons	\$0.5000
3,590,401 to 8,078,400 gallons	\$4.4745
8,078,401 to 15,259,200 gallons	\$5.1562
15,259,201 gallons and over	\$8.5224

Meter Charge: Quarterly Charge

Meter Size

16" \$8,167.83

Flow Rate All Usage: Quarterly Charge

Usage per 100 cubic feet (ccf):

0 to 6,600 ccf	\$0.3740
6,601 to 14,850 ccf	\$3.3469
14,851 to 28,050 ccf	\$3.8568
28,051 ccf and over	\$6.3748

Usage per 1,000 gallons:

0 to 4,936,800 gallons	\$0.5000
4,936,801 to 11,107,800 gallons	\$4.4745
11,107,801 to 20,981,400 gallons	\$5.1562
20,981,401 gallons and over	\$8.5224

NOTE: 100 cubic feet (ccf) equals 748 gallons

Non-Residential: a retail customer/account consisting of business, commercial, industrial use, or any combination thereof



**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF RATES**

**RESIDENTIAL CUSTOMERS**

**WASTEWATER DISPOSAL**

**Effective  
October 1, 2018**

Base Facility Charge:

Monthly Charge

*(Base Facility Charge is based on water meter size)*

5/8"	\$5.05
1"	\$17.07
1.5"	\$34.14
2"	\$54.63
3"	\$109.23
4"	\$170.68
6"	\$341.38
8"	\$546.20
10"	\$785.16
12"	\$1,467.92
14"	\$2,731.02
16"	\$3,755.15

Flow Rate All Usage:

Monthly Charge

Usage per 100 cubic feet (ccf):

0 to 4 ccf	\$1.3838
5 ccf and over	\$6.3376

Usage per 1,000 gallons:

0 to 2,992 gallons	\$1.8500
2,993 gallons and over	\$8.4727

NOTE: 100 cubic feet (ccf) equals 748 gallons

Residential: a retail customer/account consisting of a single family residence or duplex being served by a common meter

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF RATES**

**RESIDENTIAL CUSTOMERS**

**WASTEWATER DISPOSAL**

**Effective  
October 1, 2018**

Base Facility Charge:

Quarterly Charge

*(Base Facility Charge is based on water meter size)*

5/8"	\$15.15
1"	\$51.21
1.5"	\$102.42
2"	\$163.89
3"	\$327.69
4"	\$512.04
6"	\$1,024.14
8"	\$1,638.60
10"	\$2,355.48
12"	\$4,403.76
14"	\$8,193.06
16"	\$11,265.45

Flow Rate All Usage:

Quarterly Charge

Usage per 100 cubic feet (ccf):

0 to 12 ccf	\$1.3838
13 ccf and over	\$6.3376

Usage per 1,000 gallons:

0 to 8,976 gallons	\$1.8500
8,977 gallons	\$8.4727

NOTE: 100 cubic feet (ccf) equals 748 gallons

Residential: a retail customer/account consisting of a single family residence or duplex being served by a common meter

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF RATES**

**MULTI-FAMILY DWELLINGS (MFD)**

**WASTEWATER DISPOSAL**

**Effective  
October 1, 2018**

Base Facility Charge:  
*(Base Facility Charge is based on water meter size)*

Monthly Charge

5/8" to 16"  
*(Base Facility Charge will be applied per unit)*

\$4.80

Flow Rate All Usage Per Unit:

Monthly Charge

Usage per 100 cubic feet (ccf):

0 to 4 ccf  
5 ccf and over

\$1.3838  
\$6.3376

Usage per 1,000 gallons:

0 to 2,992 gallons  
2,993 gallons and over

\$1.8500  
\$8.4727

NOTE: 100 cubic feet (ccf) equals 748 gallons

Multi-family: a retail customer/account consisting of more than two residential customers served by a common meter(s)

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF RATES**

**MULTI-FAMILY DWELLINGS (MFD)**

**WASTEWATER DISPOSAL**

**Effective  
October 1, 2018**

Base Facility Charge:  
*(Base Facility Charge is based on water meter size)*

Quarterly Charge

5/8" to 16"  
*(Base Facility Charge will be applied per unit)*

\$14.40

Flow Rate All Usage Per Unit:

Quarterly Charge

Usage per 100 cubic feet (ccf):

0 to 12 ccf  
13 ccf and over

\$1.3838  
\$6.3376

Usage per 1,000 gallons:

0 to 8,976 gallons  
8,977 gallons and over

\$1.8500  
\$8.4727

NOTE: 100 cubic feet (ccf) equals 748 gallons

Multi-family: a retail customer/account consisting of more than two residential customers served by a common meter(s)

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF RATES**

**MIXED-USE BUILDINGS**

**WASTEWATER DISPOSAL**

**Effective  
October 1, 2018**

**Base Facility Charge:**

Monthly Charge

*(Base Facility Charge is based on water meter size)*

*Base Facility Charge will be applied per billing unit*

5/8" to 1.5"	\$8.75
2"	\$10.94
3"	\$17.88
4" to 6"	\$19.50
8"	\$21.13
10"	\$21.94

**Flow Rate All Usage Per Billing Unit:**

Monthly Charge

**Usage per 100 cubic feet (ccf):**

0 to 4 ccf	\$1.3838
5 ccf and over	\$6.3376

**Usage per 1,000 gallons:**

0 to 2,992 gallons	\$1.8500
2,993 gallons and over	\$8.4727

NOTE: 100 cubic feet (ccf) equals 748 gallons

MIXED USE: a retail customer/account consisting of more than two residential dwellings and non-residential activities served by a common meter in which permit application was submitted prior to October 1, 2016 (Ordinance No. 16-107)

BILLING UNIT: each residential unit within a mixed-use building shall be treated as one billing unit. All non-residential units within a mixed-use building shall collectively be treated as one billing unit.

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF RATES**

**MIXED-USE BUILDINGS**

**WASTEWATER DISPOSAL**

**Effective  
October 1, 2018**

**Base Facility Charge:**

Quarterly Charge

*(Base Facility Charge is based on water meter size)*

*Base Facility Charge will be applied per billing unit*

5/8" to 1.5"	\$26.25
2"	\$32.82
3"	\$53.64
4" to 6"	\$58.50
8"	\$63.39
10"	\$65.82

**Flow Rate All Usage Per Billing Unit:**

Quarterly Charge

**Usage per 100 cubic feet (ccf):**

0 to 12 ccf	\$1.3838
13 ccf and over	\$6.3376

**Usage per 1,000 gallons:**

0 to 8,976 gallons	\$1.8500
8,977 gallons and over	\$8.4727

NOTE: 100 cubic feet (ccf) equals 748 gallons

**MIXED USE:** a retail customer/account consisting of more than two residential dwellings and non-residential activities served by a common meter in which permit application was submitted prior to October 1, 2016 (Ordinance No. 16-107)

**BILLING UNIT:** each residential unit within a mixed-use building shall be treated as one billing unit. All non-residential units within a mixed-use building shall collectively be treated as one billing unit.

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF RATES**

**NON-RESIDENTIAL CUSTOMER**

**WASTEWATER DISPOSAL**

**Effective  
October 1, 2018**

Base Facility Charge:

Monthly Charge

*(Base Facility Charge is based on water meter size)*

5/8"	\$5.05
1"	\$17.07
1.5"	\$34.14
2"	\$54.63
3"	\$109.23
4"	\$170.68
6"	\$341.38
8"	\$546.20
10"	\$785.16
12"	\$1,467.92
14"	\$2,731.02
16"	\$3,755.15

Flow Rate All Usage:

Monthly Charge

Usage per 100 cubic feet (ccf):

0 to 4 ccf	\$1.3838
5 ccf and over	\$6.3376

Usage per 1,000 gallons:

0 to 2,992 gallons	\$1.8500
2,993 gallons and over	\$8.4727

NOTE: 100 cubic feet (ccf) equals 748 gallons

Non-Residential: a retail customer/account consisting of business, commercial, industrial use, or any combination thereof, including dewatering

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF RATES**

**NON-RESIDENTIAL CUSTOMER**

**WASTEWATER DISPOSAL**

**Effective  
October 1, 2018**

Base Facility Charge:

Quarterly Charge

*(Base Facility Charge is based on water meter size)*

5/8"	\$15.15
1"	\$51.21
1.5"	\$102.42
2"	\$163.89
3"	\$327.69
4"	\$512.04
6"	\$1,024.14
8"	\$1,638.60
10"	\$2,355.48
12"	\$4,403.76
14"	\$8,193.06
16"	\$11,265.45

Flow Rate All Usage:

Quarterly Charge

Usage per 100 cubic feet (ccf):

0 to 12 ccf	\$1.3838
13 ccf and over	\$6.3376

Usage per 1,000 gallons:

0 to 8,976 gallons	\$1.8500
8,977 gallons and over	\$8.4727

NOTE: 100 cubic feet (ccf) equals 748 gallons

Non-Residential: a retail customer/account consisting of business, commercial, industrial use, or any combination thereof, including dewatering



**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF RATES**

**WHOLESALE CUSTOMERS**

**Effective  
October 1, 2018**

**WATER**

Wholesale Customers:

Flow Rate Per 1,000 gallons	\$1.7628
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**WASTEWATER**

Rates for Wet Season (May 1 to October 31 Annually)

Flow Rate Per 1,000 gallons	\$3.4804
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Rates for Dry Season (November 1 to April 30 Annually)

Flow Rate Per 1,000 gallons	\$2.7070
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**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF RATES**

**RESIDENTIAL, MULTI-FAMILY DWELLINGS, MIXED-USE BUILDINGS, AND NON-RESIDENTIAL CUSTOMERS**

**WATER**

**Effective  
October 1, 2018**

Miami-Dade County (MDC) Water Conservation Surcharge:  
*(During South Florida Water Management District (SFWMD) water restrictions, flow usage rate of the fourth tier will be priced as follows):*

Usage Flows Starting on 4th Rate Block per 100 cubic feet (ccf):

Permanent or Phase I of Water Restrictions Imposed by (SFWMD)	\$6.3748
Phase II of Water Restrictions Imposed by (SFWMD)	\$7.6497
Phase III of Water Restrictions Imposed by (SFWMD)	\$8.9247
Phase IV of Water Restrictions Imposed by (SFWMD)	\$10.1996

Usage Flows Starting on 4th Rate Block per 1,000 gallons (gal):

Permanent or Phase I of Water Restrictions Imposed by (SFWMD)	\$8.5224
Phase II of Water Restrictions Imposed by (SFWMD)	\$10.2269
Phase III of Water Restrictions Imposed by (SFWMD)	\$11.9314
Phase IV of Water Restrictions Imposed by (SFWMD)	\$13.6358

Miami Springs System Improvement Surcharge	22.58%
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**WASTEWATER**

Miami Springs System Improvement Surcharge	45.27%
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**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF WATER FEES AND CHARGES**

**WATER**

**Effective  
October 1, 2018**

**1. Oversizing Credits**

Pipe Size	Credit Per Linear Foot	Credit Per Each Butterfly Valve
8" to 12"	(\$9.00)	(\$470.00)
8" to 16"	(\$19.00)	(\$3,197.00)
8" to 20"	(\$31.00)	(\$7,415.00)
8" to 24"	(\$44.00)	(\$8,256.00)
8" to 30"	(\$81.00)	(\$19,722.00)
8" to 36"	(\$93.00)	(\$24,742.00)
12" to 16"	(\$11.00)	(\$2,728.00)
12" to 20"	(\$23.00)	(\$6,946.00)
12" to 24"	(\$36.00)	(\$7,787.00)
12" to 30"	(\$61.00)	(\$19,253.00)
12" to 36"	(\$84.00)	(\$24,273.00)

**2. Developer Payment/Credit for New Water Service Installation for Existing Property Use**

Pipe Size	
1"	(\$1,800.00)
2"	(\$2,500.00)

**3. Water Allocation Certification**

Initial Certification	\$90.00
Re-Certification	\$30.00

**4. Construction Connection Charge**

Pipe Size	Rate Per Front Foot
8"	\$30.00
12" (12-inch base size only)	\$35.00
16" (16-inch base size only)	\$42.00

**5. Service Installation Fees**

Service Size	
1" (5/8" meter-twin off or second meter in existing dual box)	\$850.00
1" (single - 5/8" or 1" meter)	\$1,200.00
1" (dual - two 5/8" meters)	\$1,700.00
2" (single - 2" meter)	\$2,500.00
Greater than 2"	Actual Cost

**NOTE:** The above fees will apply for all typical service installations. However, the Department reserves the right to charge its actual costs for a typical service installation.

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF WATER FEES AND CHARGES**

**WATER**

**Effective  
October 1, 2018**

**6. Temporary Portable Meter Guarantee Deposit**

**Meter Size**

1"	\$1,500.00
2" and Above	\$2,500.00

**NOTE:** Resolution No. 3281 specifically excludes the above deposits from earning simple interest calculated on guarantee deposits for retail customers.

**7. Fire Protection Water Service Rates**

**Monthly**

**Quarterly**

**Size of Fire Line Connection**

2"	\$2.25	\$6.75
3"	\$4.00	\$12.00
4"	\$7.00	\$21.00
6"	\$11.50	\$34.50
8"	\$15.00	\$45.00
10"	\$23.00	\$69.00
12"	\$30.00	\$90.00

**8. Fire Hydrant Service Charge**

Per month	\$0.80
Per quarter	\$2.40

**9. Connection Charge Rate**

Per average daily gallon	\$1.39
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**10. Basic Customer Service Fees**

<b>A. Deposit</b>	
Residential-based on customer's credit analysis and payment history	\$0.00 to \$100.00
Commercial - monthly	Amount based on 2.5 times the anticipated monthly billing with a minimum charge of \$50.00
Commercial - quarterly	Amount based on 1.5 times the anticipated quarterly billing with a minimum charge of \$50.00
<b>B. Charge for opening or transferring an account on billing system</b>	
	\$10.00

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF WATER FEES AND CHARGES**

**WATER**

**Effective  
October 1, 2018**

- |  |         |
|--|---------|
| C. Additional charge if a field visit is required to connect the water meter or obtain a water meter reading | \$35.00 |
|--|---------|

**11. Other Service Fees**

- |   |  |
|---|--|
| A. Office investigation of a delinquent account resulting from:   |  |
| Active meter violation  | \$30.00  |
| Returned payment<br>(check, draft, or other order for the payment of money)<br>(F.S. 2005 - 125.0105, 832.08(5)):                                     |  |
| If face value of payment does not exceed \$50.00  | \$25.00  |
| If face value of payment exceeds \$50.00 but does not exceed \$300.00   | \$30.00  |
| If face value of payment exceeds \$300.00   | \$40.00  |
|   | (or 5% of the face amount of payment,<br>whichever is greater) |
| B. Field attempt to collect a payment or deposit or to discontinue water service by cutting or locking service or removing meter and plugging service | \$20.00  |
| C. Field attempt to reconnect a cut-off or locked service or to reinstall a meter   | \$35.00  |
| D. Field visits after initial attempt to read meter or to inspect backflow prevention device required due to denied access                            | \$50.00  |
| E. Customer requested check read  | \$12.50  |
| F. Penalty for failure to provide a meter reading or a meter for inspection as required for floating/ temporary portable meters (construction meters) | \$150.00   |
| G. Customer-requested high bill investigation, which does not meet established criteria   | \$20.00  |
| H. Charges the Department incurs on behalf of the customer, which shall be passed on to the customer  | \$5.00<br>(minimum charge)                                     |

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF WATER FEES AND CHARGES**

<b>WATER</b>	<b><u>Effective</u> <u>October 1, 2018</u></b>
I. Field visit to inspect/verify repairs related to underground leak credits when repairs were not done by a licensed plumber	\$30.00
J. Field visit to check a meter reading or pool credit reading	\$12.50
K. Administrative Hearing	\$75.00
<b>12. Customer Requested Submeter Installation</b>	
To cover cost of field inspections, approvals and clerical expenses for establishing future billings	\$50.00
<b>13. Pipe Tapping Charges</b>	
<b>Tap Size</b>	
4"	\$520.00
6"	\$530.00
8"	\$600.00
12"	\$785.00
16"	\$1,555.00
20"	\$1,885.00
Overtime Charge	\$105.00
<b>NOTE:</b> There will be a \$205.00 charge if Department personnel arrive on a job site and are unable to perform the tapping operation because the contractor has not fulfilled its obligations specified in the Rules and Regulations. No materials shall be furnished by the Department for installation under the prices listed above.	
<b>14. Tailpiece Charge</b>	
<b>Tailpiece Size</b>	
3/4"	\$40.00
1"	\$75.00
2"	\$180.00
<b>15. Certified Meter Test Charge</b>	
<b>In-House Testing</b>	
5/8" and 1" Meters	\$50.00
1 1/2" and 2" Meters	\$85.00
<b>On-Site Testing</b>	
3" through 10" Meters	\$200.00
<b>Third Party Vendor Testing</b>	
5/8" and 1" Meters	\$90.00
1 1/2" and 2" Meters	\$160.00

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF WATER FEES AND CHARGES**

**WATER**

**Effective  
October 1, 2018**

**16. Municipal Excise Tax on Water Bills**

As required by local ordinances, the Department will impose an excise tax on retail sales of water. Exempt from this tax are governmental agencies, houses of public worship and certain consulates.

**17. Permit Fee(s)**

As charged to the Department by various governmental agencies.

**18. Premise Location Certificate**

To obtain notification of any actual or potential lien amount attached to a premise location fee per premise address:

**Water & Sewer**

A. Regular premise location certificate	\$10.00
B. 24-hour premise location certificate	\$20.00

**19. Plans Review and Inspection Fees**

Plans Review Fees entitles the applicant to an initial plans review, the first rework review, and one final review.

A. Firelines/Services	\$55.00
B. Water Main Extensions	
Up to 500 ft.	\$300.00
501 ft. to 2,000 ft.	\$350.00
Greater than 2,000 ft.	\$350.00
	<small>plus \$0.18 per ft &gt;2,000 ft</small>
C. 2nd Rework and Thereafter of Plans Review Items above A and B	\$106.59

Renewal of expired approval and revisions  
(One year or more after original approval) Same as original fee

Special Request to Expedite Plans Review	
1st Hour	\$190.00
Each Additional Hour	\$65.00

Revised Plans Review Processing Fee of \$1.25 per each additional minutes for reviews that take longer than 5 minutes.

Single period, two-year extension of approval for qualifying projects pursuant to Ordinance # 11-60	\$79.00
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Processing fees for the review and approval of plans for code compliance regarding water extension projects, including firelines.

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF WATER FEES AND CHARGES**

**WATER**

**Effective  
October 1, 2018**

**20. Laboratory Fees for Drinking Water Tests**

*Per Sample (Excludes Sample Collection)*

Bacteriology (Membrane Filter)	\$15.00
Bacteriology (Membrane Filter) - <i>After Hours</i>	
<i>Charge to Wholesale Customers</i>	\$40.00
Color	\$10.00
Fluoride	\$20.00
Lead/Copper	\$50.00
Trihalomethanes	\$50.00
Water Quality Parameters	\$60.00
Volatile Organic Contaminants	\$75.00
Nitrate	\$10.00
Nitrite	\$10.00
Alkalinity	\$8.00
Chloride	\$8.00
Calcium	\$6.00
Hardness	\$8.00
Conductivity	\$4.00
Total Dissolved Solids (TDS)	\$6.00
Turbidity	\$8.00
Chlorine Residual	\$10.00
Ammonia - Nitrogen	\$10.00
Dissolved Oxygen	\$6.00
Total Phosphorous	\$10.00
Ortho Phosphate	\$10.00
pH	\$4.00
Sulfate	\$16.00
Total Organic Carbon	\$16.00
Marble	\$25.00
Sodium	\$18.00

**Sample Collection Fee**

Per water sample	\$25.00
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Fee charged for Department's laboratory sample collection services

**21. Payment for Collection of Lead/Copper Water Test at Customer Tap**

Payment for collection of sample	(\$50.00)
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Payment by Department to customers in established pool of homes who participate in sample collection for compliance with EPA Lead and Copper Rule (LCR).



**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF WATER FEES AND CHARGES**

**WATER**

**Effective  
October 1, 2018**

**22. Release of Easement Fees**

A. Release of platted easement rights	\$250.00
B. Conditional consent letter for permission to use easement until required by Department	\$50.00
C. All other release requests	\$500.00

**23. Completion of Water and Sewer Verification Form Fees\* (See Table 2)**

*(See Section 24-43.1(5) of the Miami-Dade County Code)*

**Water Only**

A. Residential (R-A)	\$30.00
B. Multi-family residential (R-B)	\$75.00
C. Non-residential (NR)	\$75.00

**Water & Sewer**

A. Residential (R-A)	\$60.00
B. Multi-family residential (R-B)	\$150.00
C. Non-residential (NR)	\$150.00

\* No additional process fee will apply to obtain "verification forms" after execution of agreement

\* Single period, two-year extension of approval for qualifying projects pursuant to Ordinance # 11-60 \$79.00

**24. Water and Sewer Ordinance Letter**

**Water Only**

A. Residential	\$30.00
B. Commercial	\$75.00

**Water & Sewer**

A. Residential	\$60.00
B. Commercial	\$150.00

**25. Review and Release of Recorded Document Fees (Other Than Easements)**

*(covenants, unities of title, service agreements, warranty deeds)*

A. Water only	\$100.00
B. Water & Sewer	\$150.00

**26. Completion of Service Feasibility Questionnaire Fee**

\$25.00

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF WATER FEES AND CHARGES**

**WATER**

**Effective  
October 1, 2018**

**27. Preparation of Service Agreement Fees \***

**Water Only**

Residential, multi-family and commercial use \$100.00

**Water & Sewer**

Residential, multi-family and commercial use \$200.00

\* No additional process fee will apply to obtain "verification forms" after execution of agreement

\* Single period, two-year extension of approval for qualifying projects pursuant to Ordinance # 11-60 \$79.00

**28. Preparation of Letter of Availability Fees**

- |    |               |          |
|----|---------------|----------|
| A. | Water only    | \$50.00  |
| B. | Water & Sewer | \$100.00 |

**29. Other Recordable Legal Document Fees**

- |    |                               |         |
|----|-------------------------------|---------|
| A. | Preparation of covenant       |         |
|    | 1. Water only                 | \$25.00 |
|    | 2. Water & Sewer              | \$50.00 |
| B. | Preparation of unity of title |         |
|    | 1. Water only                 | \$25.00 |
|    | 2. Water & Sewer              | \$50.00 |

**30. Environmental Quality Control Board (EQCB)**

**Letter Preparation Fees**

- |    |               |         |
|----|---------------|---------|
| A. | Water only    | \$35.00 |
| B. | Water & Sewer | \$70.00 |

**31. Review of Shop Drawings Fee**

Per shop drawing \$60.00

Fee charged for the review of shop drawings for Department compliance regarding water valve

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF WATER FEES AND CHARGES**

<b>WATER</b>	<b>Effective October 1, 2018</b>
<b>32. Blueline Prints Requested From As-Builts Fee</b>	
Fee per blueline print	\$5.00
<b>33. Design and Construction Standard Specifications and Details Publication Fee</b>	
Per publication	\$50.00
<b>34. Verification of Underground Water and Sewer Infrastructure Horizontal Location Fee</b>	
Per 100 Linear Feet	\$50.00
Additional Linear Foot (verification of horizontal location of underground infrastructure as shown on As-Builts)	\$0.50
<b>35. Safety and Rescue Training Course Fees</b>	
<b>Water &amp; Sewer</b>	
A. Confined space entry (24 hours)	\$450.00
B. Hazardous material technician and incident command class (40 hours)	\$550.00
C. Hazwoper training (40 hours)	\$550.00
D. Air monitoring (16 hours)	\$150.00
E. Excavation safety (Trenching & shoring, 16 hours)	\$250.00
F. Fall protection/scaffolding (16 hours)	\$250.00
G. Electrical safety (16 hours)	\$500.00
H. Respiratory protection (40 hours)	\$450.00
<b>NOTE:</b> The revenues from the above course fees are allocated to the water and wastewater funds.	
<b>36. Floating Meters/Temporary Portable Meters/ Damaged/Cleaning Fees</b>	
Meter Size	
1"	\$72.00
2"	\$125.00
3" and above	\$140.00
<b>37. Floating Meters/Temporary Portable Meters</b>	
Charge to read a floating meter in the field	\$50.00

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF WATER FEES AND CHARGES**

**WATER**

**Effective  
October 1, 2018**

**38. Preparation of GIS Adhoc Maps and/or Data Fees**

Per hour (minimum one hour)	\$65.00
Additional copies of the same map-per copy	\$25.00

**39. Detecto Meters**

Per 100 cubic feet	\$5.0998
Per 1,000 gallons	\$6.8179

**40. Security Fees**

A. Fee for Issuance of Initial Identification Card

Per person	\$60.00
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Fee charged for background check and processing costs for identification card and transponder issued to persons having access to Department facilities.  
(Consultants, Contractors, Non-Water and Sewer Department Staff)

B. Fee for Renewal of Expired Identification Card

(one year from date of issuance)

(Consultants, Contractors, Non-Water and Sewer Department Staff)

Per person	\$55.00
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C. Fee for Replacement of Identification Card

(card lost, stolen, etc.)

Per person	\$15.00
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**41. Subscription Fee to Access Customer Care and Billing System (CCB)**

Fee per user	\$6,300.00
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Annual fee charged to title and lien companies to provide access to the Department's Customer Care and Billing System (CCB) via the Internet for Premise Lien Certificates (PLC).

**42. Cut For Non-Payment (CONP)**

Third Attempt Water Meter Removal Charge	\$250.00
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Fee charged to customers who intentionally blocked access to water meter on two previous attempts to collect or lock service for non-payment.

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF WATER FEES AND CHARGES**

**WATER**

**Effective  
October 1, 2018**

**43. Developer Repayment Fee**

To cover administrative costs for collection and repayment of construction connection charges collected from connecting and/or abutting properties in behalf of developers who constructed the facilities.

2.5% of gross repayment

**44. Unauthorized Usage of Water on Fire Lines**

Daily penalty charge against fire line accounts for allowing unauthorized usage or waste of water.

\$100.00 per day

**45. General & Administrative (G&A) Overhead (OH) Rate**

Rate charged to offset general and administrative costs related to work performed by the Department due to request, damage (billable job orders) or contractual agreement.

10.6% of total cost

**46. Pipeline Installation Contributions**

Pipe Size

Rate Per Linear Foot

8"

\$42.00

12"

\$46.00

Contributory payments by developers of certain development projects as indicated by Section 2.04(2c) of the Rules and Regulations.

**47. After-Hours Construction Inspections Activity Fees**

Per hour rate charged for work outside the specified work hours - weekends, nights and holidays for contractors with special requirements or deadlines for construction.

\$90.00 per hour

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF WATER FEES AND CHARGES**

**WATER**

**Effective  
October 1, 2018**

**48. Water Meter Installation Fees**

These fees are for the installation of the water meter(s) only. All new water services must be installed in accordance with the appropriate Water & Sewer Department Standard Detail, prior to the installation of the water meters.

The Department reserves the right to install the appropriate sized meter, if a service is deemed to be oversized for a specific premise, as long as an adequate amount of flow is provided.

Fee for installing initial water meter for new customer

Service Size (Section 45) :

3/4" or 5/8"	\$145.00
1"	\$195.00
2"	\$1,350.00
4" (with 2 - 2" meters)	\$2,665.00
4" Turbo	\$4,075.00
6" Turbo	\$6,145.00
6" x 4" Turbo	\$7,475.00
8" Turbo	\$9,380.00
8" x 4" Turbo	\$10,740.00
10" Turbo	\$11,770.00
10" x 4" Turbo	\$13,130.00

**Note:** All other sizes and/or configurations will be charged at actual cost.

**49. Return Field Visit to Set Meter After Failed Meter Installation**

Fee for return field visit to set meter after initial installation was not up to Department standards.

**Service Size**

5/8" to 1"	\$35.00
2" to 10"	\$55.00

**50. Rental of Light Towers**

\$505.00 per tower per day

**51. Surcharge for After- Hours Initial Meter Installation**

**Service Size:**

3/4" to 1" Service	\$385.00
2" to 4" Service	\$675.00
6" to 10" Service	\$1,015.00

**52. Curb Stop Replacement for Initial Meter Installation**

\$165.00

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF WATER FEES AND CHARGES**

**WATER**

**Effective  
October 1, 2018**

<b>53. Backflow Preventer Test and Non-Compliant Certification Fee</b>	<b>\$250.00</b>
Charged to customers that fail to comply with the annually required backflow preventer testing; customer will receive two notices before a contractor is hired to perform testing and fee is charged.	
<b>54. Construction Contract Documents</b>	
A. Contract Documents on a CD or DVD (cost per CD/DVD)	\$20.00
B. Contract Documents without Full-Sized Plan Sheets	\$25.00
C. Contract Documents with Engineer's Estimate up to \$500,000	\$25.00
D. Contract Documents for Projects bidding via Miscellaneous Construction Contracts (MCC) with Engineer's Estimate greater than \$500,000 but less than \$5 million.	\$40.00
E. Contract Documents for Projects not bidding via Miscellaneous Construction Contracts (MCC) with Engineer's Estimate, as follows:	
1. Greater than \$500,000, but up to \$5 million	\$50.00
2. Greater than \$5 million, but up to \$10 million	\$75.00
3. Greater than \$10 million, but up to \$20 million	\$100.00
4. Greater than \$20 million, but up to \$50 million	\$150.00
5. Greater than \$50 million, but up to \$100 million	\$250.00
6. Greater than or equal to \$100 million	\$350.00

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF WASTEWATER FEES AND CHARGES**

**WASTEWATER**

**Effective  
October 1, 2018**

**1. Oversizing Credits**

<b>A. Force Mains</b>	<b>Credit Per Linear Foot</b>	<b>Credit Per Plug Valve</b>
8" to 12"	(\$10.00)	(\$790.00)
8" to 16"	(\$22.00)	(\$2,264.00)
8" to 20"	(\$42.00)	(\$4,006.00)
8" to 24"	(\$50.00)	(\$20,575.00)
8" to 30"	(\$81.00)	(\$40,210.00)
8" to 36"	(\$106.00)	(\$65,776.00)
12" to 16"	(\$13.00)	(\$1,512.00)
12" to 20"	(\$33.00)	(\$3,230.00)
12" to 24"	(\$41.00)	(\$20,664.00)
12" to 30"	(\$71.00)	(\$40,229.00)
12" to 36"	(\$96.00)	(\$65,865.00)

**Credit Per Inch Diameter  
Per Linear Foot**

<b>B. Gravity Sewer Mains</b>	
8" to 10"	(\$3.00)
8" to 12"	(\$7.00)

<b>2. Developer Payment/Credit for New Sanitary Sewer Lateral Installation for Existing Property Use</b>	(\$5,000.00)
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**3. Construction Connection Charge**

<b>Pipelines</b>	<b>Pipe Size</b>	<b>Rate Per Front Foot</b>
<b>Gravity Sewers</b>	8"	\$29.00
	10"	\$31.00
	12"	\$33.00
<b>Force Mains</b>	8"	\$32.00
	12"	\$38.00
	16"	\$49.00

**4. Connection Charge Rate**

Per average daily gallon	\$5.60
Per average daily gallon for customers utilizing a graywater disposal system	\$2.80



**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF WASTEWATER FEES AND CHARGES**

**WASTEWATER**

**Effective  
October 1, 2018**

**5. Basic Customer Service Fees**

A. Residential - based on customer's credit analysis and payment history	\$0.00 to \$100.00
Commercial - monthly	Amount based on 2.5 times the anticipated monthly billing with a minimum charge of \$50.00
Commercial - quarterly	Amount based on 1.5 times the anticipated quarterly billing with a minimum charge of \$50.00
B. Administrative Hearing	\$75.00

**6. Septic Tank Disposal Fee**

Charged to commercial tankers for unloading septic tank waste at wastewater treatment plants

0 - 1,000 gallons - per truck	\$32.50
1,001 - 1,500 gallons - per truck	\$48.75
1,501 - 2,000 gallons - per truck	\$65.00
Over 2,000 gallons - per hundred gallons	\$3.25

**7. Grease Trap Disposal Fee**

Charged to

0 - 1,000 gallons - per truck	\$70.00
1,001 - 1,500 gallons - per truck	\$105.00
1,501 - 2,000 gallons - per truck	\$140.00
Over 2,000 gallons - per hundred gallons	\$7.00

**8. Combined Septic Tank and Grease Trap Disposal Fee**

Charged to commercial tankers for unloading combined septic tank and grease trap waste at wastewater treatment plants

0 - 1,000 gallons - per truck	\$42.00
1,001 - 1,500 gallons - per truck	\$63.00
1,501 - 2,000 gallons - per truck	\$84.00
Over 2,000 gallons - per hundred gallons	\$4.20

**9. Septic Tank Disposal Deposit**

Per septic tank disposal account	\$2,000.00
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**10. High Strength Sewage Surcharge**

Per pound for portion of suspended solids in excess of a concentration of 200 milligrams per liter	\$0.14
Per pound for portion of biochemical oxygen demand in excess of a concentration of 200 milligrams per liter	\$0.19

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF WASTEWATER FEES AND CHARGES**

**WASTEWATER**

**Effective  
October 1, 2018**

**11. Pump Station Maintenance Fee**

Fee charged for maintenance of pump stations under contract with the Department  
Per month:

\$1,100.00

**12. Discharge Regulations Violations**

Fine for failure to comply with discharge regulations

\$500.00

**13. Removal of Clean-Out Plug**

\$150.00

**14. Permit Fee(s)**

As charged to the Department by various  
governmental agencies

**15. Premise Location Certificate**

To obtain notification of any actual or potential lien amount attached to a premise location  
Fee per service address:

**Water & Sewer**

- A. Regular premise location certificate
- B. 24-hour premise location certificate

\$10.00

\$20.00

**16. Plans Review and Inspection Fees**

Processing fees for the review and approval of plans for code compliance regarding sewer extension projects, including sewer laterals, connections and pump stations. Plans Review Fees entitles the applicant to an initial plans review, the first rework review, and one final review.

**A. Laterals/Connections**

\$55.00

**B. Sewer Main Extensions**

Up to 500 ft.

\$300.00

501 ft. to 2,000 ft.

\$350.00

Greater than 2,000 ft.

\$350.00

plus \$0.18 per ft >2,000 ft

**C. Pump Station**

\$800.00

**D. 2nd Rework and Thereafter of Plans Review**

\$106.59

Items above A. B. C. and D.

**Renewal of expired approval and revisions**

Same as original fee

(One year or more after approval)

**Special Request to Expedite Plans Review**

1st Hour

\$190.00

Each Additional Hour

\$65.00

Revised Plans Review Processing Fee of \$1.25 per each additional minute for reviews that take longer than 5 minutes.

Single period, two-year extension of approval for qualifying projects  
pursuant to Ordinance # 11-60

\$79.00

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF WASTEWATER FEES AND CHARGES**

**WASTEWATER**

**Effective  
October 1, 2018**

<b>17. Weed Control Fee</b>	
Per quarter	\$25.00
<b>18. Facilities with Excessive Infiltration Surcharge</b>	10%
<b>19. Discharge of Sludge Charge</b>	\$40.00/ton
<b>20. Telemetering Equipment Installation Fee</b>	
Fee	
Per pump station	\$7,550.00
<b>21. Marinas</b>	40% of retail rate
<b>22. Septage Truck Cleanout Charge</b>	
Per cleanout	\$50.00
<b>23. Release of Easement Fees</b>	
A. Release of platted easement rights	\$250.00
B. Conditional consent letter for permission to use easement until required by Department	\$50.00
C. All other release requests	\$500.00
<b>24. Completion of Application Form Fees</b>	
A. Utilities collection transmission capacity form	\$50.00
B. Industrial pre-treatment facility application form Sewer only	\$150.00
<b>25. Completion of Water and Sewer Verification Form Fees* (See Table 2)</b>	
<i>(See Section 24-43.1(5) of the Miami-Dade County Code)</i>	
<b>Sewer Only</b>	
A. Residential (R-A)	\$30.00
B. Multi-family residential (R-B)	\$75.00
C. Non-residential (NR)	\$75.00
<b>Water &amp; Sewer</b>	
A. Residential (R-A)	\$60.00
B. Multi-family residential (R-B)	\$150.00
C. Non-residential (NR)	\$150.00
* No additional process fee will apply to obtain "verification forms" after execution of agreement	
* Single period, two-year extension of approval for qualifying projects pursuant to Ordinance # 11-60	\$79.00

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF WASTEWATER FEES AND CHARGES**

**WASTEWATER**

**Effective  
October 1, 2018**

**26. Ordinance Letter**

Wastewater Only

A. Residential	\$30.00
B. Commercial	\$75.00

Water & Sewer

A. Residential	\$60.00
B. Commercial	\$150.00

**27. Review and Release of Recorded Document Fees (Other Than Easements)**

*(Covenants, unities of title, service agreements, warranty deeds)*

A. Sewer only	\$100.00
B. Water & Sewer	\$150.00

**28. Preparation of Service Agreement Fees \***

Sewer Only

Residential, multi-family and commercial use	\$100.00
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Water & Sewer

Residential, multi-family and commercial use	\$200.00
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\* No additional process fee will apply to obtain "verification forms" after execution of agreement

\* Single period, two-year extension of approval for qualifying projects pursuant to Ordinance # 11-60 \$79.00

**29. Preparation of Letter of Availability Fees**

A. Sewer only	\$50.00
B. Water & Sewer	\$100.00

**30. Other Recordable Legal Document Fees**

A. Preparation of covenant

1. Sewer only	\$25.00
2. Water & Sewer	\$50.00

B. Preparation of unity of title

1. Sewer only	\$25.00
2. Water & Sewer	\$50.00

**31. Completion of Groundwater Discharge Form Fee**

\$50.00

**32. Environmental Quality Control Board**

*(EQCB) Letter Preparation Fees*

A. Sewer only	\$35.00
B. Water & Sewer	\$70.00

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF WASTEWATER FEES AND CHARGES**

**WASTEWATER**

**Effective  
October 1, 2018**

**33. Customer Call-Out Fees**

Fee for investigation and/or emergency response to sewer collection complaints (call-outs), fee charged only if Department is not responsible to correct complaint

**Fee per call-out:**

A. Regular working hours	\$125.00
B. Non-regular working hours	\$175.00

**34. Customer Initiated Closed Circuit Television Lateral Inspection Fee**

Per inspection	\$250.00
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**35. Review of Shop Drawings Fee**

Per shop drawing	\$100.00
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Fee charged for the review of shop drawings for Department compliance regarding sewer manholes, fittings, taps and pump stations

**36. Blueline Prints Requested From As-Builts Fee**

Fee per blueline print	\$5.00
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**37. Design and Construction Standard Specifications and Details Publication Fee**

Per publication	\$50.00
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**38. Verification of Underground Water and Sewer Infrastructure Horizontal Location Fee**

Per 100 Linear Feet	\$50.00
Additional Linear Foot (verification of horizontal location of underground infrastructure as shown on As-Builts)	\$0.50

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF WASTEWATER FEES AND CHARGES**

**WASTEWATER**

**Effective  
October 1, 2018**

**39. Safety and Rescue Training Course Fees**

Water & Sewer

A. Confined space entry (24 hours)	\$450.00
B. Hazardous material technician and incident command class (40 hours)	\$550.00
C. Hazwoper training (40 hours)	\$550.00
D. Air monitoring (16 hours)	\$150.00
E. Excavation safety (Trenching & shoring, 16 hours)	\$250.00
F. Fall protection/scaffolding (16 hours)	\$250.00
G. Electrical safety (16 hours)	\$500.00
H. Respiratory protection (40 hours)	\$450.00

**NOTE:** The revenues from the above course fees are allocated to the water and wastewater funds.

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF WASTEWATER FEES AND CHARGES**

**WASTEWATER**

**Effective  
October 1, 2018**

**40. Laboratory Fees for Wastewater Tests**

***Per Sample (Excludes Sample Collection)***

Bacteriology (Membrane Filter)	\$15.00
Bacteriology (Membrane Filter) - <i>After Hours Charge to Wholesale Customers</i>	\$40.00
Nitrate	\$10.00
Nitrite	\$10.00
Alkalinity	\$8.00
Chloride	\$8.00
Conductivity	\$4.00
Total Dissolved Solids (TDS)	\$6.00
Chlorine Residual	\$10.00
Ammonia - Nitrogen	\$10.00
Dissolved Oxygen	\$6.00
Total Phosphorous	\$10.00
Ortho Phosphate	\$10.00
Biochemical Oxygen Demand	\$12.00
pH	\$4.00
Sulfate	\$16.00
Total Kjeldahl Nitrogen	\$14.00
Total Organic Carbon	\$16.00
Total Suspended Solids	\$6.00
Sodium	\$18.00

**41. Preparation of GIS Adhoc Maps and/or Data Fees**

Per hour	\$65.00
(minimum one hour)	
Additional copies of the same map	
Per copy	\$25.00

**42. Billing Service Fee for Processing Stormwater Utility  
Fee for Municipalities**

Fee Determined by Agreement

**43. Billing Service Fee for Processing Sewer Billings for  
Coral Gables**

Fee Determined by Agreement

**44. Graywater Disposal System**

Customers who utilize an approved graywater disposal system and install a sub-meter to measure water entering the property which utilizes the graywater disposal system will not be charged wastewater disposal for usage measured on the sub-meter.

**45. Temporary Portable Meter Guarantee Deposit**

2" Meter and Above	\$2,500.00
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*NOTE: Resolution No. 3281 specifically excludes the above deposits from earning simple interest calculated on guarantee deposits for retail customers.*

**46. Floating Meters/Temporary Portable Meters**

Charge to read a floating meter in the field	\$50.00
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**47. Floating Meters/Temporary Portable Meters/ Damaged/Cleaning Fees**

3" Meter and Above	\$140.00
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**48. Penalty for failure to provide a meter reading or a meter for inspection as required for  
floating/temporary portable meters (construction meters)**

\$150.00

**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF WASTEWATER FEES AND CHARGES**

**WASTEWATER**

**Effective  
October 1, 2018**

**49. Security Fees**

A. Fee for Issuance of Initial Identification Card

Per person \$60.00

Fee charged for background check and processing costs for identification card issued to persons having access to Department facilities.

(Consultants, Contractors, Non-Water and Sewer Department staff)

B. Fee for Renewal of Expired Identification Card

(one year from date of issuance)

(Consultants, Contractors, Non-Water and Sewer Department staff)

Per person \$55.00

C. Fee for Replacement of Identification Card

(card lost, stolen, etc.)

Per person \$15.00

**50. Subscription Fee to Access Customer Care and Billing System (CCB)**

Fee per user \$6,300.00

Annual fee charged to title and lien companies to provide access to the Department's Customer Care and Billing System (CCB) via the Internet for Premise Lien Certificates (PLC).

**51. Cut For Non-Payment (CONP)**

Third Attempt Water Meter Removal Charge \$250.00

Fee charged to customers who intentionally blocked access to water meter on two previous attempts to collect or lock service for non-payment.

**52. After-Hours Construction Inspections Activity Fees**

Per hour rate charged for work outside the specified work hours - weekends, nights and holidays for contractors with special requirements or deadlines for construction.

\$90.00 per hour

**53. Developer Repayment Fee**

To cover administrative costs for collection and repayment of construction connection charges collected from connecting and/or abutting properties in behalf of developers who constructed the facilities.

2.5% of gross repayment

**54. General & Administrative (G&A) Overhead (OH) Rate**

Rate charged to offset general and administrative costs related to work performed by the Department due to request, damage (billable job orders) or contractual agreement.

10.6% of total cost



**MIAMI-DADE WATER AND SEWER DEPARTMENT  
SCHEDULE OF WASTEWATER FEES AND CHARGES**

**WASTEWATER**

**Effective  
October 1, 2018**

**55. Rental of Light Towers** \$505.00 per tower per day

**56. Sewer Force Main Pipe Tapping Charges**

Tap Size:	
4"	\$650.00
6"	\$660.00
8"	\$730.00
12"	\$980.00
16"	\$1,750.00
20"	\$2,080.00
Overtime Charge	\$105.00

**NOTE:** There will be a \$205.00 charge if Department personnel arrive on a job site and are unable to perform the tapping operation because the contractor has not fulfilled its obligations specified in the Rules and Regulations. No materials shall be furnished by the Department for installation under the prices listed above.

**57. Construction Contract Documents**

A. Contract Documents on a CD or DVD (cost per CD/DVD)	\$20.00
B. Contract Documents without Full-Sized Plan Sheets	\$25.00
C. Contract Documents with Engineer's Estimate up to \$500,000	\$25.00
D. Contract Documents for Projects bidding via Miscellaneous Construction Contracts (MCC) with Engineer's Estimate greater than \$500,000 but less than \$5 million	\$40.00
E. Contract Documents for Projects not bidding via Miscellaneous Construction Contracts (MCC) with Engineer's Estimate, as follows:	
1. Greater than \$500,000, but up to \$5 million	\$50.00
2. Greater than \$5 million, but up to \$10 million	\$75.00
3. Greater than \$10 million, but up to \$20 million	\$100.00
4. Greater than \$20 million, but up to \$50 million	\$150.00
5. Greater than \$50 million, but up to \$100 million	\$250.00
6. Greater than or equal to \$100 million	\$350.00

**MIAMI-DADE WATER AND SEWER DEPARTMENT**

**Table 2**

No.	Types of Building Usages		Verification Form Fee Listing
<b>Residential Land Uses:</b>			
<b>1</b>	Single Family Residences		R-A
<b>2</b>	Townhouse Residences		R-B
<b>3</b>	Apartments		R-B
<b>4</b>	Mobile Home Residences/Parks		R-A
<b>5</b>	Duplexes or Twin Home Residences		R-A
<b>Commercial Land Uses:</b>			
<b>6</b>	<u>Airport:</u> (a) Common Area/Concourse (b) Retail (c) Food Service		NR
<b>7</b>	Banquet Halls with kitchen		NR
<b>8</b>	Bars or Cocktail Lounges		NR
<b>9</b>	Barber Shops		NR
<b>10</b>	Beauty Shops		NR
<b>11</b>	Bowling Alleys		NR
<b>12</b>	<u>Car Washes:</u> (a) Manual Washing (b) Automated Washing with recycle system		NR
<b>13</b>	Coin Laundries		NR
<b>14</b>	Country Clubs with kitchen		NR
<b>15</b>	Dentist Offices		NR
<b>16</b>	Fitness Centers or Gyms		NR
<b>17</b>	Food Preparation Outlets (Bakeries, Meat Markets, Commissaries, etc.)		NR
<b>18</b>	Funeral Homes		NR
<b>19</b>	Gas Station / Convenience Store/ Mini-Mart (a) without Car Wash (b) with Single Automated Car Wash		NR
<b>20</b>	Hospitals		NR
<b>21</b>	Hotels and Motels		NR
<b>22</b>	House of Worship		NR
<b>23</b>	<u>Industrial:</u> (a) Warehouse/ Spec. Bldg. (b) Self-Service Storage Units (c) Industrial - Wet (d) Industrial - Dry		NR

**\*The basis of calculation for average daily rated gallonage is found in Section 24-43.1(5) of the Code of Miami-Dade County as currently in effect and as may be amended in the future. For usages not shown, the Department shall estimate daily gallonage.**

**MIAMI-DADE WATER AND SEWER DEPARTMENT**

**Table 2**

No.	Types of Building Usages				Verification Form Fee Listing
24	Kennels				NR
25	Marinas				NR
26	Motor Vehicle Service Stations				NR
27	Nursing or Convalescent Homes				NR
28	Office Buildings				NR
29	Other Residential Facility/ Institution: (a) Congregate Living Facility (CLF) (b) Jail (c) Other				NR
30	Pet Grooming				NR
31	Physician Offices				NR
32	Public Park: (a) With toilets only (b) With toilets and showers				NR
33	Public Swimming Facilities				NR
34	Restaurants: (a) full service (b) fast food service (c) take-out service				NR
35	Retail				NR
36	Schools a) day care/nursery b) regular schools				NR DADE COUNTY SCHOOL BOARD IS EXEMPT
37	Shopping Center/ Mall: (Shell/ Common Area)				NR
38	Stadiums, Ballparks, Racetracks, Frontons, Auditoriums, Etc.				NR
39	Theaters a) Indoor b) Outdoor c) Drive-in				NR
40	Trailer or Tourist Park				NR
41	Veterinarian Offices				NR

**\*The basis of calculation for average daily rated gallonage is found in Section 24-43.1(5) of the Code of Miami-Dade County as currently in effect and as may be amended in the future. For usages not shown, the Department shall estimate daily gallonage.**

<b>Note:</b>	gpd =	gallons per day	gpcd =	gallons per capita per day
	R-A =	Residential	R-B =	Multi-family Residential
	NR =	Non-residential		

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**APPENDIX F**

**PROPOSED FORM OF OPINION OF BOND COUNSEL**

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*On the date of issuance of the Series 2019 Bonds in definitive form, Squire Patton Boggs (US) LLP, and D. Seaton and Associates, P.A., Bond Counsel, propose to deliver their opinions in substantially the following form, which is subject to change:*

\_\_\_\_\_, 2019

To: Board of County Commissioners of  
Miami-Dade County, Florida  
Miami, Florida

We have served as bond counsel to our client Miami-Dade County, Florida (the “County”) in connection with the issuance by the County of its \$233,305,000 aggregate principal amount of Miami-Dade County, Florida Water and Sewer System Revenue Bonds, Series 2019 (the “Series 2019 Bonds”), dated the date of this letter.

The Series 2019 Bonds are issued pursuant to Ordinance No. 93-134 enacted by the Board of County Commissioners of the County (the “Board”) on November 16, 1993, as amended by Ordinance No. 13-47 enacted by the Board on June 4, 2013 (the “2013 Ordinance”), the 2013 Ordinance and Resolution No. R-1227-18 adopted by the Board on December 4, 2018 (collectively, the “Bond Ordinance”). Capitalized terms not otherwise defined in this letter are used as defined in the Bond Ordinance.

In our capacity as bond counsel, we have examined the transcript of proceedings relating to the issuance of the Series 2019 Bonds, a copy of the signed and authenticated Series 2019 Bond of the first maturity, the Bond Ordinance and such other documents, matters and law as we deem necessary to render the opinions set forth in this letter.

Based on that examination and subject to the limitations stated below, we are of the opinion that under existing law:

1. The Series 2019 Bonds and the Bond Ordinance are valid and binding obligations of the County, enforceable in accordance with their respective terms.
2. The Series 2019 Bonds constitute special, limited obligations of the County, and the principal of and interest on (collectively, “debt service”) the Series 2019 Bonds, together with debt service on any other obligations issued and outstanding on a parity with the Series 2019 Bonds as provided in the Bond Ordinance, are payable from and secured solely by the Pledged Revenues. The payment of debt service on the Series 2019 Bonds is not secured by an obligation or pledge of any money raised by taxation, and the Series 2019 Bonds do not represent or constitute a general obligation or a pledge of the faith and credit of the County, the State of Florida or any of its political subdivisions.
3. Interest on the Series 2019 Bonds is excluded from gross income for federal income tax purposes under Section 103 of the Internal Revenue Code of 1986, as amended and is not an item of tax preference for purposes of the federal alternative minimum tax. The Series 2019 Bonds and the income thereon are exempt from taxation under the laws of the State of Florida, except estate taxes imposed by Chapter 198, Florida Statutes, as amended, and net income and franchise taxes imposed by Chapter 220, Florida Statutes, as amended. We express no opinion as to any other tax consequences regarding the Series 2019 Bonds.

The opinions stated above are based on an analysis of existing laws, regulations, rulings and court decisions and cover certain matters not directly addressed by such authorities. In rendering all such opinions, we assume, without independent verification, and rely upon (i) the accuracy of the factual matters represented, warranted or certified in the proceedings and documents we have examined and (ii) the due and legal authorization, execution and delivery of those documents by, and the valid, binding and enforceable nature of those documents upon, any parties other than the County.

We express no opinion herein regarding the priority of the lien on Pledged Revenues or other funds created by the Bond Ordinance.

In rendering those opinions with respect to treatment of the interest on the Series 2019 Bonds under the federal tax laws, we further assume and rely upon compliance with the covenants in the proceedings and documents we have examined, including those of the County. Failure to comply with certain of those covenants subsequent to issuance of the Series 2019 Bonds may cause interest on the Series 2019 Bonds to be included in gross income for federal income tax purposes retroactively to their date of issuance.

The rights of the owners of the Series 2019 Bonds and the enforceability of the Series 2019 Bonds and the Bond Ordinance are subject to bankruptcy, insolvency, reorganization, moratorium, fraudulent conveyance or transfer, and other laws relating to or affecting the rights and remedies of creditors generally; to the application of equitable principles, whether considered in a proceeding at law or in equity; to the exercise of judicial discretion; and to limitations on legal remedies against public entities.

No opinions other than those expressly stated herein are implied or shall be inferred as a result of anything contained in or omitted from this letter. The opinions expressed in this letter are stated only as of the time of its delivery and we disclaim any obligation to revise or supplement this letter thereafter. Our engagement as bond counsel in connection with the original issuance and delivery of the Series 2019 Bonds is concluded upon delivery of this letter.

Respectfully submitted,



## **APPENDIX G**

### **PROPOSED FORM OF OPINION OF DISCLOSURE COUNSEL**

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*On the date of issuance of the Series 2019 Bonds in definitive form, Hunton Andrews Kurth LLP, and DiFalco & Fernandez LLLP, Disclosure Counsel, propose to deliver their opinions in substantially the following form, which is subject to change:*

\_\_\_\_\_, 2019

Board of County Commissioners  
of Miami-Dade County, Florida  
Miami, Florida

**\$233,305,000**  
**MIAMI-DADE COUNTY, FLORIDA**  
**Water and Sewer System Revenue Bonds,**  
**Series 2019**

Ladies and Gentlemen:

We have served as Disclosure Counsel to Miami-Dade County, Florida (the “County”), in connection with the issuance by the County of its \$233,305,000 Water and Sewer System Revenue Bonds, Series 2019 (the “Series 2019 Bonds”).

In this capacity, we have examined an executed copy of the Official Statement of the County, dated January 16, 2019 (the “Official Statement”), relating to the Series 2019 Bonds. We have reviewed the Official Statement generally and have discussed certain information and statements therein with representatives of the County from the Finance Department, the Water and Sewer Department (the “Department”), and the County Attorney’s Office; Public Resources Advisory Group, Financial Advisors to the Department; and Squire Patton Boggs (US) LLP and D. Seaton and Associates, P.A., Bond Counsel.

In connection with the issuance of the Series 2019 Bonds, and pursuant to Resolution No. R-1227-18, adopted by the Board of County Commissioners of the County, on December 4, 2018, the County covenanted to comply with the continuing disclosure requirements of the Securities and Exchange Commission Rule 15c2-12.

We also have examined certain proceedings of the County, and originals or copies identified to our satisfaction of such agreements, instruments, opinions, certificates and other documents as we have deemed necessary for purposes of the advice contained in this letter. We have assumed the genuineness of signatures on documents submitted to us as originals, the authenticity thereof and the conformity with the originals of any documents submitted to us as copies or specimens. We also have assumed the accuracy of the opinion of Bond Counsel.

On the basis of the foregoing and subject to the limitations stated herein, and in accordance with customary legal opinion practice, we advise you as follows:

1. We have not verified and are not passing upon, and we do not assume any responsibility for, the accuracy or completeness of the statements contained in the Official Statement. Nothing, however, has come to our attention during the course of our review and discussion of the Official Statement that would cause us to believe that the Official Statement, on the date thereof or on this date, contains any untrue statement of a material fact or omits to state any material fact necessary to make the statements therein, in light of the circumstances under which they were made, not misleading.

2. Our advice in paragraph 1 does not apply to the financial statements and financial or statistical data contained or incorporated by reference in the Official Statement, including the Appendices.

3. In our opinion, with respect to the issuance of the Bonds, the continuing disclosure undertaking of the County complies as to form in all material respects with the requirements for such an agreement in paragraph (b)(5) of Securities and Exchange Commission Rule 15c2-12.

Very truly yours,

**APPENDIX H**  
**CONTINUING DISCLOSURE UNDERTAKING**

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Continuing Disclosure.

(a) The County agrees, in accordance with the provisions of, and to the degree necessary to comply with, the continuing disclosure requirements of the Rule to provide or cause to be provided for the benefit of the beneficial owners of the Series 2019 Bonds (the “Beneficial Owners”) to the Municipal Securities Rulemaking Board (“MSRB”) in an electronic format prescribed by the MSRB and such other municipal securities information repository as may be required by law or applicable legislation, from time to time (each such information repository, a “MSIR”), the following annual financial information (the “Annual Information”), commencing with the Fiscal Year ending after the issuance of the Series 2019 Bonds:

- (i) Operating Revenues and Pledged Revenues in a form which is generally consistent with the presentation of such information in the Official Statement; and
- (ii) The Department’s Comprehensive Annual Financial Report utilizing generally accepted accounting principles applicable to local governments.

The information in clauses (i) and (ii) above is expected to be available on or before June 1 of each year for the preceding Fiscal Year. The Department’s Comprehensive Annual Financial Report referred to in clause (ii) above is expected to be available separately from the information in clause (i) above and shall be provided by the County as soon as practical after acceptance of the audited financial statements from the auditors by the Department. If not available within eight (8) months from the end of the Fiscal Year, unaudited information will be provided in accordance with the time frame set forth above and audited financial statements will be provided as soon after such time as they become available.

(b) The County agrees to provide or cause to be provided to each MSIR in the appropriate format required by law or applicable regulation, in a timely manner not in excess of ten business days after the occurrence of the event, notice of the occurrence of any of the following events with respect to the Series 2019 Bonds:

- (i) principal and interest payment delinquencies;
- (ii) non-payment related defaults, if material;
- (iii) unscheduled draws on debt service reserves reflecting financial difficulties;
- (iv) unscheduled draws on credit enhancements reflecting financial difficulties;
- (v) substitution of credit or liquidity providers, or their failure to perform;

(vi) adverse tax opinions, the issuance by the Internal Revenue Service of proposed or final determinations of taxability, Notices of Proposed Issue (IRS Form 5701 TEB) or other material notices or determinations with respect to the tax status of the Series 2019 Bonds, or other material events affecting the tax status of the Series 2019 Bonds;

(vii) modifications to rights of holders of the Series 2019 Bonds, if material;

(viii) bond calls, if material, and tender offers;

(ix) defeasances;

(x) release, substitution, or sale of any property securing repayment of the Series 2019 Bonds, if material;

(xi) rating changes;

(xii) bankruptcy, insolvency, receivership or similar event of the County (which is considered to occur when any of the following occur: the appointment of a receiver, fiscal agent or similar officer for the County in a proceeding under the U.S. Bankruptcy Code or in any other proceeding under state or federal law in which a court or governmental authority has assumed jurisdiction over substantially all of the assets or business of the County, or if such jurisdiction has been assumed by leaving the existing governing body and officials or officers in possession but subject to the supervision and orders of a court or governmental authority, or the entry of an order confirming a plan of reorganization, arrangement or liquidation by a court or governmental authority having supervision or jurisdiction over substantially all of the assets or business of the County);

(xiii) the consummation of a merger, consolidation, or acquisition involving the County or the sale of all or substantially all of the assets of the County, other than in the ordinary course of business, the entry into a definitive agreement to undertake such an action or the termination of a definitive agreement relating to any such actions, other than pursuant to its terms, if material; and

(xiv) the appointment of a successor or additional trustee or the change of name of a trustee, if material.

(c) The County agrees to provide or cause to be provided, in a timely manner, to each MSIR, in the appropriate format required by law or applicable regulation, notice of its failure to provide the Annual Information with respect to itself on or prior to June 1 following the end of the preceding Fiscal Year.



(d) The obligations of the County under this Section 17 shall remain in effect only so long as the Series 2019 Bonds are Outstanding. The County reserves the right to terminate its obligations to provide the Annual Information and notices of the occurrence of the events specified in subsection (b) above if and when the County no longer remains an “obligated person” with respect to the Series 2019 Bonds within the meaning of the Rule.

(e) The County agrees that its undertaking pursuant to the Rule set forth in this Section 17 is intended to be for the benefit of the Beneficial Owners of the Series 2019 Bonds and shall be enforceable by the Beneficial Owners if the County fails to cure a breach within a reasonable time after receipt of written notice from a Beneficial Owner that a breach exists; provided, however, that any Beneficial Owner’s right to enforce the provisions of this undertaking shall be on behalf of all Beneficial Owners and shall be limited to a right to obtain specific performance of the County’s obligations under this Section 17 in a federal or state court located within the County and any failure by the County to comply with the provisions of this undertaking shall not be a default with respect to the Series 2019 Bonds.

(f) Notwithstanding the foregoing, each MSIR to which information shall be provided shall include each MSIR approved by the Securities and Exchange Commission prior to the issuance of the Series 2019 Bonds. In the event that the Securities and Exchange Commission approves any additional MSIRs after the date of issuance of the Series 2019 Bonds, the County shall, if the County is notified of such additional MSIRs, provide such information to the additional MSIRs. Failure to provide information to any new MSIR whose status as a MSIR is unknown to the County shall not constitute a breach of this covenant.

(g) The requirements of subsection (a) above do not necessitate the preparation of any separate annual report addressing only the Series 2019 Bonds. The requirements of subsection (a) may be met by the filing of an annual information statement or the County’s Comprehensive Annual Financial Report, provided such report includes all of the required Annual Information and is available by June 1 of each year for the preceding Fiscal Year. Additionally, the County may incorporate any information in any prior filing with each MSIR or included in any final official statement of the County, provided such final official statement is filed with the MSRB.

(h) The County reserves the right to modify from time to time the specific types of information provided or the format of the presentation of such information, to the extent necessary or appropriate in the judgment of the County, provided that the County agrees that any such modification will be done in a manner consistent with the Rule.

(i) Except to cure any ambiguity, inconsistency or formal defect or omission in the provisions of this Section 17, the County's covenants as to continuing disclosure (the "Covenants") may only be amended if:

(i) the amendment is made in connection with a change in circumstances that arises from a change in legal requirements, a change in law or a change in the identity, nature or status of the County or type of business conducted; the Covenants, as amended, would have complied with the requirements of the Rule at the time of award of the Series 2019 Bonds, after taking into account any amendments or change in circumstances; and the amendment does not materially impair the interests of the Beneficial Owners, as determined by Disclosure Counsel or other independent counsel knowledgeable in the area of federal securities laws and regulations; or

(ii) all or any part of the Rule, as interpreted by the staff of the Securities and Exchange Commission at the date of adoption of this Series 2019 Resolution, ceases to be in effect for any reason, and the County elects that the Covenants shall be deemed amended accordingly.

(j) Any assertion of beneficial ownership must be filed with the County, along with full documentary support as part of the written request described above.

(k) The Board further authorizes and directs the County Mayor to cause all other agreements to be made or action to be taken as required in connection with meeting the County's obligations as to the Covenants. The County Mayor shall further be authorized to make such additions, deletions and modifications to the Covenants as he shall deem necessary or desirable in consultation with the County Attorney, Bond Counsel and Disclosure Counsel.

## **APPENDIX I**

### **BOOK-ENTRY ONLY SYSTEM**

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## **BOOK-ENTRY ONLY SYSTEM**

The following description of the procedures and record keeping with respect to beneficial ownership interests in the Series 2019 Bonds, payment of interest and principal on the Series 2019 Bonds to Participants or Beneficial Owners of the Series 2019 Bonds, confirmation and transfer of beneficial ownership interest in the Series 2019 Bonds and other related transactions by and between DTC, the Participants and the Beneficial Owners of the Series 2019 Bonds is based solely on information furnished by DTC on its website. Accordingly, the County can make no representations concerning these matters or take any responsibility for the accuracy or completeness of such information.

DTC will act as securities depository for the Series 2019 Bonds. The Series 2019 Bonds will be issued as fully-registered securities registered in the name of Cede & Co. (DTC's partnership nominee) or such other name as may be requested by an authorized representative of DTC. One fully-registered bond will be issued for each maturity of the Series 2019 Bonds, each in the aggregate principal amount of such maturity to be issued, as set forth on the inside cover page of this Official Statement, and will be deposited with DTC.

DTC, the world's largest depository, is a limited-purpose trust company organized under the New York Banking Law, a "banking organization" within the meaning of the New York Banking Law, a member of the Federal Reserve System, a "clearing corporation" within the meaning of the New York Uniform Commercial Code, and a "clearing agency" registered pursuant to the provisions of Section 17A of the Securities Exchange Act of 1934, as amended. DTC holds and provides asset servicing for over 3.5 million issues of U.S. and non-U.S. equity, corporate and municipal debt issues, and money market instruments (from over 100 countries) that DTC's participants ("Direct Participants") deposit with DTC. DTC also facilitates the post-trade settlement among Direct Participants of sales and other securities transactions in deposited securities, through electronic computerized book-entry transfers and pledges between Direct Participants' accounts. This eliminates the need for physical movement of securities certificates. Direct Participants include both U.S. and non-U.S. securities brokers and dealers, banks, trust companies, clearing corporations, and certain other organizations. DTC is a wholly-owned subsidiary of The Depository Trust & Clearing Corporation ("DTCC"). DTCC is the holding company for DTC, National Securities Clearing Corporation and Fixed Income Clearing Corporation, all of which are registered clearing agencies. DTCC is owned by the users of its regulated subsidiaries. Access to the DTC system is also available to others such as both U.S. and non-U.S. securities brokers and dealers, banks, trust companies, and clearing corporations that clear through or maintain a custodial relationship with a Direct Participant, either directly or indirectly ("Indirect Participants"). DTC has an S&P Global Ratings, a division of S&P Global Inc., rating of AA+. The DTC Rules applicable to its Direct and Indirect Participants are on file with the Securities and Exchange Commission. More information about DTC can be found at [www.dtcc.com](http://www.dtcc.com).

Purchases of Series 2019 Bonds under the DTC system must be made by or through Direct Participants, which will receive a credit for the Series 2019 Bonds on DTC's records. The ownership interest of each Beneficial Owner is in turn to be recorded on the Direct and Indirect Participants' records. Beneficial Owners will not receive written confirmation from DTC of their purchase. Beneficial Owners are, however, expected to receive written confirmations providing details of the transaction, as well as periodic statements of their holdings, from the Direct or Indirect Participant through which the Beneficial Owner entered into the transaction. Transfers of ownership interests in the Series 2019 Bonds are to be accomplished by entries made on the books of Direct and Indirect Participants acting on behalf of Beneficial Owners. Beneficial Owners will not receive bond certificates representing their ownership interests in the Series 2019 Bonds, except in the event that use of the book-entry system for the Series 2019 Bonds is discontinued.

To facilitate subsequent transfers, all Series 2019 Bonds deposited by Direct Participants with DTC are registered in the name of DTC's partnership nominee, Cede & Co., or such other name as may be requested by an authorized representative of DTC. The deposit of the Series 2019 Bonds with DTC and their registration in the name of Cede & Co. or such other DTC nominee do not effect any change in beneficial ownership. DTC has no knowledge of the actual Beneficial Owners of the Series 2019 Bonds; DTC's records reflect only the identity of the Direct Participants to whose accounts such Series 2019 Bonds are credited, which may or may not be the Beneficial Owners. The Direct and Indirect Participants will remain responsible for keeping account of their holdings on behalf of their customers.

Conveyance of notices and other communications by DTC to Direct Participants, by Direct Participants to Indirect Participants, and by Direct Participants and Indirect Participants to Beneficial Owners will be governed by arrangements among them, subject to any statutory or regulatory requirements as may be in effect from time to time. Beneficial Owners of Series 2019 Bonds may wish to take certain steps to augment the transmission to them of notices of significant events with respect to the Series 2019 Bonds, such as redemptions, defaults, and proposed amendments to the Bond Resolution. For example, Beneficial Owners of the Series 2019 Bonds may wish to ascertain that the nominee holding the Series 2019 Bonds for their benefit has agreed to obtain and transmit notices to Beneficial Owners. In the alternative, Beneficial Owners may wish to provide their names and addresses to the Registrar and Paying Agent and request that copies of notices be provided directly to them.

Redemption notices shall be sent by the Registrar and Paying Agent to DTC. If less than all of the Series 2019 Bonds within a particular maturity are being redeemed, DTC's practice is to determine by lot the amount of the interest of each Direct Participant in such maturity to be redeemed.

Neither DTC nor Cede & Co. (nor any other DTC nominee) will consent or vote with respect to the Series 2019 Bonds unless authorized by a Direct Participant in accordance with DTC's Money Market Instrument (MMI) Procedures. Under its usual procedures, DTC mails an Omnibus Proxy to the County as soon as possible after the record date. The Omnibus Proxy assigns Cede & Co.'s consenting or voting rights to those Direct Participants to whose accounts the Series 2019 Bonds are credited on the record date (identified in a listing attached to the Omnibus Proxy).

Principal, redemption premium, if any, and interest payments on the Series 2019 Bonds will be made to Cede & Co., or to such other nominee as may be requested by an authorized representative of DTC. DTC's practice is to credit Direct Participants' accounts upon DTC's receipt of funds and corresponding detail information from the County or the Registrar and Paying Agent on the payable date in accordance with their respective holdings shown on DTC's records. Payments by Direct Participants or Indirect Participants to Beneficial Owners will be governed by standing instructions and customary practices, as is the case with securities held for the accounts of customers in bearer form or registered in "street name," and will be the responsibility of such Participant and not of DTC, nor its nominee, the Registrar and Paying Agent, or the County, subject to any statutory or regulatory requirements as may be in effect from time to time. Payment of principal, redemption premium and interest to Cede & Co. (or such other nominee as may be requested by an authorized representative of DTC) is the responsibility of the County or the Registrar and Paying Agent, disbursement of such payments to Direct Participants will be the responsibility of DTC, and disbursement of such payments to the Beneficial Owners will be the responsibility of Direct and Indirect Participants.

**NEITHER THE COUNTY NOR THE REGISTRAR AND PAYING AGENT WILL HAVE ANY RESPONSIBILITY OR OBLIGATION TO ANY DIRECT OR INDIRECT PARTICIPANT OR THE PERSONS FOR WHOM THEY ACT AS NOMINEES WITH RESPECT TO THE SERIES 2019 BONDS IN RESPECT OF THE ACCURACY OF ANY RECORDS MAINTAINED BY DTC OR ANY DIRECT OR INDIRECT PARTICIPANT, THE PAYMENT BY DTC OR ANY DIRECT OR INDIRECT PARTICIPANT OF ANY AMOUNT IN RESPECT OF THE PRINCIPAL OR INTEREST ON THE SERIES 2019 BONDS, ANY NOTICE WHICH IS PERMITTED OR REQUIRED TO BE GIVEN TO BONDHOLDERS UNDER THE BOND RESOLUTION OR ANY CONSENT GIVEN OR ACTION TAKEN BY DTC, AS BONDHOLDER. SO LONG AS CEDE & CO. IS THE REGISTERED OWNER OF SUCH SERIES 2019 BONDS, AS NOMINEE OF DTC, THE BENEFICIAL OWNERS WILL NOT RECEIVE PHYSICAL CERTIFICATES REPRESENTING THEIR INTERESTS IN THE SERIES 2019 BONDS, AND REFERENCES HEREIN TO BONDHOLDERS OR REGISTERED HOLDERS OF SUCH SERIES 2019 BONDS SHALL MEAN CEDE & CO. AND SHALL NOT MEAN THE BENEFICIAL OWNERS OF SUCH SERIES 2019 BONDS.**

#### **Discontinuance of Book-Entry Only System**

In the event the County determines that it is in the best interest of the Beneficial Owners to obtain Series 2019 Bond certificates, the County may notify DTC and the Registrar and Paying Agent, whereupon DTC will notify the DTC Participants, of the availability through DTC of Series 2019 Bond certificates. In such event, the County shall prepare and execute, and the Registrar and Paying Agent shall authenticate, transfer and exchange, Series 2019 Bond certificates as requested by DTC in appropriate amounts and within the guidelines set forth in the

Bond Resolution. DTC may also determine to discontinue providing its services with respect to the Series 2019 Bonds at any time by giving written notice to the County and the Registrar and Paying Agent and discharging its responsibilities with respect thereto under applicable law. Under such circumstances (if there is no successor securities depository), the County and the Registrar and Paying Agent shall be obligated to deliver Series 2019 Bond certificates as described herein. In the event Series 2019 Bond certificates are issued, the provisions of the Bond Resolution shall apply to, among other things, the transfer and exchange of such certificates and the method of payment of principal of and interest on such certificates. Whenever DTC requests the County and the Registrar and Paying Agent to do so, the County will direct the Registrar and Paying Agent to cooperate with DTC in taking appropriate action after reasonable notice (i) to make available one or more separate certificates evidencing the Series 2019 Bonds to any DTC Participant having Series 2019 Bonds credited to its DTC account; or (ii) to arrange for another securities depository to maintain custody of certificates evidencing the Series 2019 Bonds.

### **Registration, Transfer and Exchange**

In the event of discontinuance of the book-entry only system, the Series 2019 Bonds will be subject to transfer and exchange as described below. The County shall cause the Registrar and Paying Agent to be kept at the designated corporate trust office of the Registrar and Paying Agent. Upon surrender for transfer of any Series 2019 Bonds at the designated corporate trust office of the Registrar and Paying Agent, duly endorsed by, or accompanied by a written instrument of transfer in form satisfactory to the Registrar and Paying Agent and duly executed by, the registered owner or the attorney of such owner duly authorized in writing with signature guaranteed by a member firm of STAMP, SEMP or MSP signature guaranty medallion program, the County shall execute and the Registrar and Paying Agent shall authenticate, date and deliver in the name of the transferees a new Series 2019 Bond or Series 2019 Bonds of the same series and maturity, of Authorized Denominations, for the same aggregate principal amount and of like tenor. Any Series 2019 Bond may be exchanged at the designated corporate trust office of the Registrar and Paying Agent for the same aggregate principal amount of such Series 2019 Bonds and of like tenor. The execution by the County of any Series 2019 Bonds shall constitute full and due authorization of such Series 2019 Bonds and the Registrar and Paying Agent shall thereby be authorized to authenticate, deliver and date such Series 2019 Bonds.

The County and the Registrar and Paying Agent shall deem and treat the registered owner of any Series 2019 Bond as the absolute owner of such Series 2019 Bond for the purpose of receiving payment of or on account of principal of such Series 2019 Bond and premium, if any, thereon and interest due thereon and for all other purposes.

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