



\$1,370,075,000
PUERTO RICO AQUEDUCT AND SEWER AUTHORITY
\$1,351,300,000 Revenue Refunding Bonds, Series 2020A (Senior Lien)
\$18,775,000 Federally Taxable Revenue Refunding Bonds, Series 2020B (Senior Lien)

Dated: Date of Delivery

Due: July 1, as set forth on inside cover page

The Revenue Refunding Bonds, Series 2020A (Senior Lien) (the “**2020A Senior Bonds**”), and the Federally Taxable Revenue Refunding Bonds, Series 2020B (Senior Lien) (the “**2020B Senior Bonds**”) and together with the 2020A Senior Bonds, the “**2020 Senior Bonds**”), of Puerto Rico Aqueduct and Sewer Authority (the “**Authority**”), the sole provider of public water and wastewater service in Puerto Rico, are being issued pursuant to an Amended and Restated Master Agreement of Trust, dated as of March 1, 2008, and amended and restated as of February 15, 2012, and as further amended to the date of this Limited Offering Memorandum (the “**Master Trust Agreement**”), and the Eighth Supplemental Agreement of Trust, dated December 9, 2020 (the “**Eighth Supplemental Agreement**,” and together with the Master Trust Agreement the “**Trust Agreement**”), each by and between the Authority and Banco Popular de Puerto Rico, trustee (the “**Trustee**”). The proceeds of the 2020 Senior Bonds will be used by the Authority to (i) refinance a portion of the Authority’s currently outstanding Revenue Bonds, Series A, and Series B (Senior Lien) issued under the Trust Agreement, (ii) refinance all of the Authority’s currently outstanding Revenue Refunding Bonds, 2008 Series A and 2008 Series B, each guaranteed by the Commonwealth of Puerto Rico, and (iii) pay costs of issuance of the 2020 Senior Bonds. Capitalized terms not otherwise defined in this Limited Offering Memorandum are used herein as defined in the Trust Agreement, a conformed copy of which is included as Appendix II.

Under the Trust Agreement the Authority has pledged Authority Revenues (as therein defined) as security for payment of debt service on Bonds (including Senior Bonds, each, as defined herein) and other Indebtedness (as defined herein). The 2020 Senior Bonds will be secured on a parity in payment priority with the Authority’s outstanding Senior Indebtedness (including Senior Bonds) and any additional Senior Indebtedness (including Senior Bonds) that may be incurred in accordance with the Trust Agreement. The Trust Agreement also allows the Authority to issue Bonds and incur Other System Indebtedness payable from such Authority Revenues but with a claim thereon subordinate to the claim of the Senior Indebtedness. **In connection with the issuance of the 2020 Senior Bonds, the Authority has proposed to execute a supplemental agreement, with the consent, among others, of the holders of the Authority’s Bonds, to amend and restate the Trust Agreement (the “Second Amended and Restated Trust Agreement”) to, among other things, change the priority of payments under the Trust Agreement with respect to Authority Revenues such that Current Expenses would be paid prior to debt service on Bonds and Other System Indebtedness. Each purchaser of 2020 Senior Bonds will have consented by its purchase and execution of an investor letter (the form of which is set forth in Appendix IV) to the terms and execution of the Trustee of the Second Amended and Restated Trust Agreement. The Second Amended and Restated Trust Agreement will be executed and become effective upon the receipt of the written consent of (1) the holders of all outstanding Bonds of each lien priority under the Trust Agreement and (2) the Federal Lenders (as herein defined). The Oversight Board (as herein defined) has approved the issuance of the 2020 Senior Bonds and the amendment of the Trust Agreement as set forth in the Second Amended and Restated Trust Agreement. See PROPOSED AMENDMENTS TO TRUST AGREEMENT AND CERTAIN RISK FACTORS AND INVESTMENT CONSIDERATIONS herein.**

THIS COVER PAGE CONTAINS CERTAIN INFORMATION FOR GENERAL REFERENCE ONLY. IT IS NOT INTENDED TO BE A SUMMARY OF ALL FACTORS RELATING TO AN INVESTMENT IN THE 2020 SENIOR BONDS. INVESTORS SHOULD REVIEW THIS ENTIRE LIMITED OFFERING MEMORANDUM, INCLUDING IN PARTICULAR THE SECTION ENTITLED “CERTAIN RISK FACTORS AND INVESTMENT CONSIDERATIONS” BEFORE MAKING ANY INVESTMENT DECISIONS.

THIS LIMITED OFFERING MEMORANDUM IS FURNISHED SOLELY FOR CONSIDERATION BY SOPHISTICATED, PROSPECTIVE PURCHASERS OF THE 2020 SENIOR BONDS WITH SUBSTANTIAL FINANCIAL RESOURCES AND THE EXPERIENCE AND FINANCIAL EXPERTISE TO UNDERSTAND AND EVALUATE THE HIGH DEGREE OF RISK INHERENT IN THIS INVESTMENT. EACH PROSPECTIVE INVESTOR SHOULD CONSIDER ITS FINANCIAL CONDITION AND THE RISKS INVOLVED TO DETERMINE THE SUITABILITY OF INVESTING IN THE 2020 SENIOR BONDS. THE 2020 SENIOR BONDS AND BENEFICIAL OWNERSHIP INTERESTS THEREIN ARE OFFERED ONLY TO, AND WILL BE SOLD TO NO MORE THAN 35, “**QUALIFIED INSTITUTIONAL BUYERS**” WITHIN THE MEANING OF RULE 144A PROMULGATED UNDER THE SECURITIES ACT OF 1933, AS AMENDED, THAT HAVE SIGNED A LETTER SUBSTANTIALLY IN THE FORM SET FORTH IN APPENDIX IV, AND MAY BE TRANSFERRED ONLY TO OTHER QUALIFIED INSTITUTIONAL BUYERS. See “Restrictions on Purchase and Transfer” under THE 2020 SENIOR BONDS herein.

The 2020 Senior Bonds will be issued as fully registered bonds without coupons in denominations of \$250,000 principal amount and multiples of \$5,000 in excess thereof. The 2020 Senior Bonds will be issued by means of a book-entry only system evidencing ownership and transfer of the 2020 Senior Bonds on the records of The Depository Trust Company (“**DTC**”) and its participants. Purchasers will not receive definitive 2020 Senior Bonds while the 2020 Senior Bonds are recorded on the records of DTC. Interest on the 2020 Senior Bonds will be payable on July 1, 2021, and each January 1 and July 1 thereafter. The 2020A Senior Bonds are subject to redemption at the option of the Authority, the earliest redemption date being July 1, 2030, and the 2020 Senior Bonds are subject to mandatory redemption, as described herein. The maturity schedule, interest rates, prices and approximate yields of the 2020 Senior Bonds are as set forth on the inside cover page of this Limited Offering Memorandum.

In the opinion of Nixon Peabody LLP, Bond Counsel, under existing law and assuming compliance with the tax covenants described herein, and the accuracy of certain representations and certifications made by the Authority described herein, interest on the 2020A Senior 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**”). Bond Counsel is also of the opinion that such interest is not treated as a preference item in calculating the alternative minimum tax imposed under the Code. Interest on the 2020B Senior Bonds is not excluded from gross income for federal income tax purposes. Bond Counsel is further of the opinion that the 2020 Senior Bonds and interest thereon are exempt from state, Puerto Rico and local taxation. See TAX MATTERS herein regarding certain other tax considerations.

The 2020 Senior Bonds are not a debt of the Commonwealth of Puerto Rico or any of its municipalities or other political subdivisions, other than the Authority, and neither the Commonwealth of Puerto Rico nor any such municipalities or other political subdivisions, other than the Authority, shall be liable for the payment of the principal of or interest on said Bonds.

The issuance of the 2020 Senior Bonds and their purchase by the Underwriters are subject to the approval of legality by Nixon Peabody LLP, New York, New York, Bond Counsel, and certain other conditions. Norton Rose Fulbright US LLP, New York, New York, will pass upon certain legal matters for the Underwriters, and DLA Piper (Puerto Rico) LLC, San Juan, Puerto Rico, will pass upon certain legal matters for the Authority. The 2020 Senior Bonds will be dated their date of delivery and are expected to be available for delivery through DTC on or about December 17, 2020.

Barclays

BofA Securities

MATURITY SCHEDULE

\$1,370,075,000

PUERTO RICO AQUEDUCT AND SEWER AUTHORITY Revenue Refunding Bonds, Series 2020 (Senior Lien)

\$1,351,300,000 Revenue Refunding Bonds, Series 2020A (Senior Lien)

\$105,340,000 Serial Bonds

Maturity Date (July 1)	Principal Amount	Interest Rate	Priced to Yield	CUSIP[†] No. (Base CUSIP 745160)	Maturity Date (July 1)	Principal Amount	Interest Rate	Priced to Yield	CUSIP[†] No. (Base CUSIP 745160)
2021	\$33,280,000	4.00%	2.50%	SB 8	2024	\$3,425,000	5.00%	3.10%	SE 2
2022	12,475,000	4.00	2.70	SC 6	2025	42,790,000	5.00	3.20	SF 9
2023	13,370,000	4.00	2.95	SD 4					

\$248,575,000 5.00% Revenue Refunding Bonds, Series 2020A (Senior Lien) Term Bonds due July 1, 2030, Priced to Yield 3.70%*, CUSIP[†] No. 745160 SG 7

\$290,830,000 5.00% Revenue Refunding Bonds, Series 2020A (Senior Lien) Term Bonds due July 1, 2035, Priced to Yield 3.95%***, CUSIP[†] No. 745160 SH 5

\$706,555,000 5.00% Revenue Refunding Bonds, Series 2020A (Senior Lien) Term Bonds due July 1, 2047, Priced to Yield 4.15%***, CUSIP[†] No. 745160 SJ 1

\$18,775,000 Federally Taxable Revenue Refunding Bonds, Series 2020B (Senior Lien)

\$18,775,000 4.50% Term Bonds due July 1, 2024, Price 100%, CUSIP[†] No. 745160 SA 0

* Yield to the approximate average life of 7.64 years is 3.444%.

** Priced at the stated yield to the July 1, 2030 earliest optional redemption date at a redemption price of par.

[†] Copyright American Bankers Association. CUSIP data herein are provided by CUSIP Global Services, which is managed on behalf of the American Bankers Association by S&P Global Market Intelligence, a division of S&P Global Inc. The CUSIP numbers listed above are being provided solely for the convenience of the beneficial owners only at the time of issuance of the 2020 Senior Bonds and the Authority, the Trustee and the Underwriters do not make any representation with respect to such numbers or undertake any responsibility for their accuracy now or at any time in the future. A CUSIP number is subject to being changed after the issuance of the 2020 Senior Bonds as a result of various subsequent actions including, but not limited to, a refunding in whole or in part of the maturity corresponding to such CUSIP Number or as a result of the procurement of secondary market portfolio insurance or other similar enhancement that is applicable to all or a portion of the 2020 Senior Bonds.

IN MEMORIAM **Efraín Acosta Reboyras** **(1954-2020)**



Efraín (“Efra”) was Executive Director of Finance for the Authority for 18 years. He made significant contributions to many areas of the Authority during his tenure and was the embodiment of what a public servant should be. Efraín passed away on August 18, 2020. He leaves behind a legacy characterized by leadership, guidance, and friendship that will be deeply missed by all within the Authority and all others who were fortunate to know him.

IMPORTANT INFORMATION FOR INVESTORS

NO DEALER, BROKER, SALESPERSON OR OTHER PERSON HAS BEEN AUTHORIZED BY THE AUTHORITY OR THE UNDERWRITERS TO GIVE ANY INFORMATION OR TO MAKE ANY REPRESENTATIONS OTHER THAN THOSE CONTAINED IN THIS LIMITED OFFERING MEMORANDUM, AND, IF GIVEN OR MADE, SUCH OTHER INFORMATION OR REPRESENTATIONS MUST NOT BE RELIED UPON AS HAVING BEEN AUTHORIZED BY ANY OF THE FOREGOING. THE INFORMATION CONTAINED IN THIS LIMITED OFFERING MEMORANDUM HAS BEEN OBTAINED FROM THE AUTHORITY AND OTHER SOURCES THAT ARE BELIEVED BY THE UNDERWRITERS TO BE RELIABLE. THE UNDERWRITERS HAVE PROVIDED THE FOLLOWING SENTENCE FOR INCLUSION IN THIS LIMITED OFFERING MEMORANDUM. THE UNDERWRITERS HAVE REVIEWED THE INFORMATION IN THIS LIMITED OFFERING MEMORANDUM IN ACCORDANCE WITH, AND AS PART OF, THEIR RESPONSIBILITIES TO INVESTORS UNDER 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. THIS LIMITED OFFERING MEMORANDUM DOES NOT CONSTITUTE AN OFFER TO SELL OR THE SOLICITATION OF AN OFFER TO BUY, AND THERE SHALL NOT BE ANY SALE OF THE 2020 SENIOR BONDS, BY ANY PERSON IN ANY JURISDICTION IN WHICH IT IS UNLAWFUL FOR SUCH PERSON TO MAKE SUCH OFFER, SOLICITATION OR SALE.

THE INFORMATION AND EXPRESSIONS OF OPINION HEREIN ARE SUBJECT TO CHANGE WITHOUT NOTICE, AND NEITHER THE DELIVERY OF THIS LIMITED OFFERING MEMORANDUM NOR ANY SALE MADE HEREUNDER SHALL, UNDER ANY CIRCUMSTANCES, CREATE ANY IMPLICATION THAT THERE HAS BEEN NO CHANGE IN THE AFFAIRS OF THE AUTHORITY SINCE THE DATE OF THIS LIMITED OFFERING MEMORANDUM.

NO CONTINUING DISCLOSURE

THE OFFERING OF THE 2020 SENIOR BONDS IS EXEMPT FROM THE CONTINUING DISCLOSURE REQUIREMENTS OF SECURITIES AND EXCHANGE COMMISSION RULE 15C2-12 (THE “**RULE**”) BY REASON OF THE EXEMPTION THERETO CONTAINED IN PARAGRAPH (D)(1)(i) THEREOF.

INVESTMENT CONSIDERATIONS; TRANSFER RESTRICTIONS

THE 2020 SENIOR BONDS HAVE RISK CHARACTERISTICS THAT REQUIRE CAREFUL ANALYSIS AND CONSIDERATION BEFORE A DECISION TO PURCHASE IS MADE. THE 2020 SENIOR BONDS SHOULD ONLY BE PURCHASED BY INVESTORS WHO HAVE ADEQUATE EXPERIENCE TO EVALUATE THE MERITS AND THE RISKS OF THE 2020 SENIOR BONDS AND WHO ARE ABLE TO BEAR THE RISK OF LOSS OF ALL OR A PORTION OF THEIR INVESTMENT IN THE 2020 SENIOR BONDS. EACH PROSPECTIVE INVESTOR SHOULD CONSULT ITS COUNSEL, ACCOUNTANT AND OTHER ADVISORS AS TO FINANCIAL, LEGAL, AND RELATED MATTERS CONCERNING THE INVESTMENT DESCRIBED HEREIN.

THE 2020 SENIOR BONDS HAVE NOT BEEN, AND ARE NOT REQUIRED TO BE, REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE “**SECURITIES ACT**”), OR UNDER THE LAWS OF ANY OTHER JURISDICTION, AND THE TRUST AGREEMENT HAS NOT BEEN, AND IS NOT REQUIRED TO BE, 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 EXAMINATION OF THE TERMS OF THE OFFERING, INCLUDING THE MERITS AND RISKS INVOLVED. THE 2020 SENIOR BONDS HAVE NOT BEEN RECOMMENDED BY ANY FEDERAL OR STATE SECURITIES COMMISSION OR REGULATORY AUTHORITY. FURTHERMORE, THE FOREGOING AUTHORITIES HAVE NOT CONFIRMED THE ACCURACY OR DETERMINED THE ADEQUACY OF THIS LIMITED OFFERING MEMORANDUM. ANY REPRESENTATION TO THE CONTRARY IS A CRIMINAL OFFENSE.

THE 2020 SENIOR BONDS ARE BEING OFFERED TO, AND WILL BE SOLD ONLY TO NOT MORE THAN 35, "QUALIFIED INSTITUTIONAL BUYERS" ("**QUALIFIED INSTITUTIONAL BUYERS**") AS DEFINED IN RULE 144A UNDER THE SECURITIES ACT. EACH INITIAL PURCHASER OF THE 2020 SENIOR BONDS WILL BE REQUIRED TO DELIVER AN INVESTOR LETTER IN THE FORM ATTACHED HERETO AS *APPENDIX IV*, IN CONNECTION WITH SUCH PURCHASE PROVIDING REPRESENTATIONS AND ASSURANCES TO THE AUTHORITY AND THE UNDERWRITERS REGARDING, AMONG OTHER MATTERS, EACH SUCH PURCHASER'S KNOWLEDGE AND SOPHISTICATION IN THE EVALUATION AND PURCHASE OF SECURITIES SUCH AS THE 2020 SENIOR BONDS AND ITS STATUS AS A QUALIFIED INSTITUTIONAL BUYER. THE TRANSFER OF THE 2020 SENIOR BONDS IS RESTRICTED PURSUANT TO THE TERMS OF THE TRUST AGREEMENT TO ENTITIES THAT ARE QUALIFIED INSTITUTIONAL BUYERS.

THE 2020 SENIOR BONDS HAVE NOT BEEN AND WILL NOT BE REGISTERED UNDER THE SECURITIES ACT, IN RELIANCE UPON THE EXEMPTION PROVIDED BY SECTION 3(A)(2) OF THE SECURITIES ACT. EACH PURCHASER, BY ITS ACCEPTANCE OF A BOND IS DEEMED TO HAVE REPRESENTED THAT SUCH PURCHASER IS A QUALIFIED INSTITUTIONAL BUYER.

NO DEALER, BROKER, SALES REPRESENTATIVE OR OTHER PERSON HAS BEEN AUTHORIZED BY THE AUTHORITY OR THE UNDERWRITERS TO GIVE ANY INFORMATION OR TO MAKE ANY REPRESENTATIONS, OTHER THAN THOSE CONTAINED IN THIS LIMITED OFFERING MEMORANDUM IN CONNECTION WITH THE OFFERING DESCRIBED HEREIN, AND IF GIVEN OR MADE, SUCH OTHER INFORMATION OR REPRESENTATIONS MUST NOT BE RELIED UPON AS HAVING BEEN AUTHORIZED BY ANY OF THE FOREGOING. THIS LIMITED OFFERING MEMORANDUM DOES NOT CONSTITUTE AN OFFER TO SELL OR THE SOLICITATION OF AN OFFER TO BUY, NOR SHALL THERE BE ANY SALE OF THE 2020 SENIOR BONDS, BY ANY PERSON IN ANY JURISDICTION IN WHICH IT IS UNLAWFUL FOR SUCH PERSON TO MAKE SUCH OFFER, SOLICITATION OR SALE.

ALL QUOTATIONS FROM AND SUMMARIES AND EXPLANATIONS OF PROVISIONS OF LAWS, THE TRUST AGREEMENT, THE 2020 SENIOR BONDS, THE FISCAL PLAN, THE CONSULTING ENGINEER'S REPORT AND OTHER DOCUMENTS HEREIN DO NOT PURPORT TO BE COMPLETE. REFERENCE IS MADE TO SUCH LAWS, THE TRUST AGREEMENT, THE 2020 SENIOR BONDS, THE FISCAL PLAN, THE CONSULTING ENGINEER'S REPORT AND OTHER DOCUMENTS, FOR A FULL AND COMPLETE STATEMENT OF THEIR PROVISIONS SUCH DOCUMENTS SHOULD BE REVIEWED IN THEIR ENTIRETY. IF NOT ATTACHED HERETO AS AN APPENDIX, COPIES OF THE ABOVE ARE AVAILABLE FOR INSPECTION AT THE OFFICES OF THE AUTHORITY OR THE TRUSTEE.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING INFORMATION

THE STATEMENTS CONTAINED IN THIS LIMITED OFFERING MEMORANDUM, INCLUDING, WITHOUT LIMITATION, CERTAIN ECONOMIC AND FINANCIAL INFORMATION PROVIDED BY THE AUTHORITY HEREIN, THAT ARE NOT PURELY HISTORICAL, ARE FORWARD-LOOKING STATEMENTS, AS DEFINED IN THE PRIVATE SECURITIES LITIGATION REFORM ACT OF 1995, AND WHICH STATEMENTS EXPRESS CERTAIN EXPECTATIONS, INTENTIONS OR STRATEGIES OF THE AUTHORITY REGARDING THE FUTURE. ANY SUCH FORWARD-LOOKING INFORMATION, INCLUDING FORWARD-LOOKING ECONOMIC OR FINANCIAL INFORMATION, MUST BE VIEWED WITH CAUTION.

THE FORWARD-LOOKING STATEMENTS HEREIN ARE NECESSARILY BASED ON VARIOUS ASSUMPTIONS AND ESTIMATES, ARE INHERENTLY SUBJECT TO VARIOUS RISKS AND UNCERTAINTIES, INCLUDING RISKS AND UNCERTAINTIES RELATING TO THE POSSIBLE INVALIDITY OF THE UNDERLYING ASSUMPTIONS AND ESTIMATES AND POSSIBLE CHANGES OR DEVELOPMENTS IN SOCIAL, DEMOGRAPHIC, ECONOMIC, BUSINESS, INDUSTRY, MARKET, LEGAL AND REGULATORY CIRCUMSTANCES AND CONDITIONS AND ACTIONS TAKEN OR OMITTED TO BE TAKEN BY THIRD PARTIES, INCLUDING CUSTOMERS, SUPPLIERS, BUSINESS PARTNERS AND COMPETITORS, AND LEGISLATIVE, JUDICIAL AND OTHER GOVERNMENTAL AUTHORITIES AND OFFICIALS. ASSUMPTIONS RELATING TO THE FOREGOING INVOLVE JUDGMENTS WITH RESPECT TO, AMONG OTHER THINGS, FUTURE ECONOMIC AND MARKET CONDITIONS AND FUTURE BUSINESS DECISIONS, ALL OF WHICH ARE DIFFICULT OR IMPOSSIBLE TO PREDICT ACCURATELY AND, THEREFOR, THERE CAN BE NO ASSURANCE THAT THE FORWARD-LOOKING STATEMENTS CONTAINED IN THIS LIMITED OFFERING MEMORANDUM WOULD PROVE TO BE ACCURATE.

READERS SHOULD NOT PLACE UNDUE RELIANCE ON FORWARD-LOOKING STATEMENTS. ALL FORWARD-LOOKING STATEMENTS INCLUDED IN THIS LIMITED OFFERING MEMORANDUM ARE BASED ON INFORMATION AVAILABLE TO THE AUTHORITY ON THE DATE OF THIS LIMITED OFFERING MEMORANDUM, AND THE AUTHORITY ASSUMES NO OBLIGATION TO UPDATE ANY SUCH FORWARD-LOOKING STATEMENTS.

THE 2020 SENIOR BONDS INVOLVE RISKS, AND PROSPECTIVE PURCHASERS SHOULD READ THE SECTION HEREIN CAPTIONED "CERTAIN RISK FACTORS AND INVESTMENT CONSIDERATIONS." THE 2020 SENIOR BONDS MAY NOT BE SUITABLE INVESTMENTS FOR ALL PERSONS, AND PROSPECTIVE PURCHASERS SHOULD CAREFULLY EVALUATE THE RISKS AND MERITS OF AN INVESTMENT IN THE 2020 SENIOR BONDS, SHOULD CONFER WITH THEIR LEGAL AND FINANCIAL ADVISORS BEFORE CONSIDERING A PURCHASE OF AND SHOULD BE ABLE TO BEAR THE RISK OF LOSS OF THEIR INVESTMENT IN THE 2020 SENIOR BONDS.

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PUERTO RICO AQUEDUCT AND SEWER AUTHORITY
\$1,351,300,000 Revenue Refunding Bonds, Series 2020A (Senior Lien)
\$18,775,000 Federally Taxable Revenue Refunding Bonds, Series 2020B (Senior Lien)

INTRODUCTORY STATEMENT

The purpose of this Limited Offering Memorandum, which includes the cover page, the inside cover page and the appendices, is to provide certain information in connection with the issuance and sale by Puerto Rico Aqueduct and Sewer Authority (the “*Authority*”) of its Revenue Refunding Bonds, Series 2020 (Senior Lien), consisting of \$1,351,300,000 of its Revenue Refunding Bonds, Series 2020A (Senior Lien) (the “*2020A Senior Bonds*”) and \$18,775,000 of its Federally Taxable Revenue Refunding Bonds, Series 2020B (the “*2020B Senior Bonds*” and together with the 2020A Senior Bonds, the “*2020 Senior Bonds*”). Certain capitalized terms used in this Limited Offering Memorandum are used as defined in the Trust Agreement (hereinafter mentioned), a conformed copy of which is contained in Appendix II.

Supplemental Information. On November 25, 2020, Fitch Ratings, Inc. (“*Fitch*”) updated the portion of the 2008 Senior Bonds not refunded by the 2020 Senior Bonds and the 2012 Senior Bonds to CCC from CC. On December 8, 2020, the Authority filed with the Municipal Securities Rulemaking Board’s Electronic Municipal Market Access (“*EMMA*”) system answers to questions submitted to it by eligible potential purchasers of the 2020 Senior Bonds. The EMMA filing contains information regarding the status of the Authority’s audited financial statements for the fiscal year ended 2018, Trust Agreement account balances for the Current Expense Fund and Operating Reserve Fund, aging of certain of the Authority’s accounts receivable and its largest customers, among the topics covered. The Authority’s filing can be found on EMMA at:

<https://emma.msrb.org/MarketActivity/ContinuingDisclosureDetails/P21085516>.

The Authority. The Authority is a governmental instrumentality of the Commonwealth of Puerto Rico (the “*Commonwealth*” or “*Puerto Rico*”) created by Act No. 40 of the Legislative Assembly of Puerto Rico, approved May 1, 1945, as amended and reenacted (the “*Act*”), for the purpose of owning and operating the public water supply and wastewater systems in Puerto Rico and is the sole provider of public water and wastewater services in Puerto Rico.

The Authority’s water supply system (the “*Water System*”) serves most (approximately 96%) of Puerto Rico’s population. The Authority’s wastewater system (the “*Wastewater System*”) and, together with the Water System and ancillary facilities that support the Water System, the Wastewater System and the Authority’s operations, the “*Systems*”) serves more than half (approximately 59%) of Puerto Rico’s population. According to the United States Census Bureau, the population of Puerto Rico was 3,193,694 in 2019.

The Authority contracted Arcadis Caribe, PSC (the “*Consulting Engineer*”), to (i) prepare a Consulting Engineer’s Report, dated December 2019 (covering the period from July 1, 2018, through June 30, 2019) (the “*Consulting Engineer’s Report*”), on the condition of the Systems and the Authority’s capital improvement program for the six fiscal years ending June 30, 2024 (as the same may be amended and updated by the Authority from time to time, the “*CIP*”), its financial

condition and its financial projections and (ii) provide the services of the Consulting Engineer under the Trust Agreement. The Consulting Engineer's Report is attached hereto as *Appendix I*. As set forth in the Consulting Engineer's Report, the Consulting Engineer has concluded that, with exception of buried infrastructure improvements, the CIP and the Authority's operational initiatives are generally in alignment with the operational and regulatory needs of the Systems and adequately address all mandated requirements of existing consent decrees and agreements with the Authority's environmental regulatory overseers. See Sections 6.5 and 9.1 of the Consulting Engineer's Report in *Appendix I*. The CIP and projections included in the Consulting Engineer's Report are based upon the Authority's fiscal plan prepared by the Authority and modified by the Oversight Board (hereinafter mentioned) and certified on June 25, 2019.

As set forth in more detail in this Limited Offering Memorandum, the Consulting Engineer's Report in *Appendix I* and the Fiscal Plan for the Authority covering fiscal years 2021 – 2025, dated June 29, 2020 (the "**Fiscal Plan**"), and in effect as of the date of this Limited Offering Memorandum, prepared by the Authority and reviewed, revised and certified by the Financial Oversight and Management Board for Puerto Rico (the "**Oversight Board**"), attached hereto as *Appendix III*, the Authority faces significant operating, regulatory compliance, capital investment, rate setting and financial challenges. As noted in the Fiscal Plan, the Authority has made progress towards reaching fiscal sustainability. Successful implementation of the objectives identified in the Fiscal Plan, such as mandated rate increases and the restructuring of the debt under United States Department of Agriculture ("**USDA**"), Rural Development ("**RD**") program and under the United States Environmental Protection Agency ("**EPA**") Clean Water State Revolving Fund ("**CWSRF**") and Drinking Water State Revolving Fund ("**DWSRF**") and together with the CWSRF, the "**State Revolving Funds**" or "**SRFs**") programs (together with the RD program, the "**Federal Programs**"), has improved the Authority's overall financial position. There remain, however, operational deficiencies and significant capital needs to bring the Systems into a state of good repair. If left unaddressed, according to the Oversight Board as stated in the Fiscal Plan, these deficiencies and capital needs pose a risk to water quality, availability, and affordability for the people of Puerto Rico. See "Certain Risks Related to the Systems and the Authority Operations" under CERTAIN RISK FACTORS AND INVESTMENT CONSIDERATIONS, DEBT and *Appendix III*.

Oversight. Federal. The Authority has been designated by the Oversight Board, established pursuant to Section 101(b)(1) of the Puerto Rico Oversight, Management, and Economic Stability Act, Pub. L. No. 114-187, 130 Stat. 549 (2016) (codified at 48 U.S.C.A. §§ 2101–2241) (as the same may be amended, "**PROMESA**"), as a covered territorial instrumentality (as defined therein). Pursuant to section 207 of PROMESA, for so long as the Authority is a covered territorial instrumentality, it must obtain approval from the Oversight Board for the issuance, guarantee, exchange, modification, repurchase or redemption of any debt. On November 20, 2020, the Oversight Board approved the issuance of the 2020 Senior Bonds and the proposed amendments to the Trust Agreement as set forth in "Proposed Amendments to Trust Agreement" below in this section.

Under PROMESA, the Oversight Board has certain fiscal oversight powers related to Puerto Rico and its "covered territorial instrumentalities," of which the Authority is one, until the Oversight Board either (a) excludes it from being a covered territorial instrumentality under PROMESA section 101(d)(2)(A), or (b) is terminated under PROMESA section 209 because

Puerto Rico and its public corporations, and instrumentalities have adequate access to the capital markets and have experienced balanced budgets for four consecutive years. The Fiscal Plan is the current attempt by the Oversight Board to assist the Authority in achieving fiscal responsibility and access to the capital markets. Among other powers, the Oversight Board has the power to exercise budgeting and financial controls over the fiscal affairs of the Authority by certifying an Authority fiscal plan that the Oversight Board determines meets the requirements of PROMESA section 201 and by certifying Authority budgets that are consistent with the certified fiscal plan. The Oversight Board also has the power to review contracts, rules, regulations, executive orders and, if necessary take certain actions to ensure compliance with the certified Fiscal Plan. As a covered territorial instrumentality under PROMESA, the Authority is eligible to be a debtor under Title III of PROMESA if the Authority desires to effect a plan to adjust its debts and the Governor requests that the Oversight Board issue a certification under section 206(b) of PROMESA for the Authority. See “Federal” under AUTHORITY OVERSIGHT. The Authority has no current intent to commence a proceeding under Title III of PROMESA. The Authority is, however, not prohibited from availing itself of the restructuring process of Title III or Title VI under PROMESA with the approval of the Oversight Board. See “Certain Risks Related to the Authority’s Eligibility under PROMESA” under CERTAIN RISK FACTORS AND INVESTMENT CONSIDERATIONS and *Appendix III*.

Puerto Rico. Puerto Rico Fiscal Agency and Financial Advisory Authority (“*AAFAF*”), an independent public corporation and governmental instrumentality, was created by Act No. 21-2016 to act as fiscal agent, financial advisor and reporting agent of the Commonwealth of Puerto Rico (“*Commonwealth*”) and its instrumentalities. Act No. 2-2017 repealed parts of Act No. 21-2016 and expanded AAFAF’s powers by authorizing AAFAF to be the lead public corporation and instrumentality responsible for coordinating the sustainable use of public resources in Puerto Rico and presenting a coordinated and global vision of the capital needs of the instrumentalities of the Government of Puerto Rico. AAFAF assumed all fiscal agency responsibilities previously assigned to Government Development Bank for Puerto Rico (“*GDB*”). It is mandated to assist the Government of Puerto Rico and its public corporations and other instrumentalities, such as the Authority, to take measures that enable Puerto Rico to overcome the current financial and operational crises and to provide its residents with essential services. See “Government of Puerto Rico Oversight” under AUTHORITY OVERSIGHT and PUERTO RICO FISCAL AGENCY AND FINANCIAL ADVISORY AUTHORITY.

Purpose of the 2020 Senior Bonds. The 2020 Senior Bonds are being issued to (i) provide funds to redeem or defease (a) a portion of the Authority’s currently outstanding \$1,230.03 million Revenue Bonds, Series A, and Series B (Senior Lien) (collectively, the “*2008 Senior Bonds*”) issued under the Master Trust Agreement (as defined below) on March 18, 2008, and (b) all of the Authority’s currently outstanding \$284.8 million Revenue Refunding Bonds, 2008 Series A and 2008 Series B, each guaranteed by the Commonwealth and issued on the same date (collectively, the “*2008 Commonwealth Guaranteed Bonds*” or the “*Guaranteed Bonds*”) under Authority Resolution No. 1583, adopted on December 7, 1995 and amended and restated on March 7, 2008 (as so amended and restated, the “*Guaranteed Bond Resolution*”) (the principal amount and corresponding maturities of the 2008 Senior Bonds and the 2008 Commonwealth Guaranteed Bonds being so redeemed or defeased, the “*Refunded Bonds*”), and (ii) pay the costs of issuance of the 2020 Senior Bonds. See PLAN OF REFUNDING.

Security for the 2020 Senior Bonds. The 2020 Senior Bonds will be issued under and secured by a Master Agreement of Trust, dated as of March 1, 2008, as amended and restated as of February 15, 2012, and as further amended to the date of this Limited Offering Memorandum (the “**Master Trust Agreement**”) and the Eighth Supplemental Agreement of Trust fixing their details (the “**Eighth Supplemental Agreement**,” and together with Master Trust Agreement, the “**Trust Agreement**”), each by and between the Authority and Banco Popular de Puerto Rico, trustee (the “**Trustee**”). The 2020 Senior Bonds, the portion of the 2008 Senior Bonds not refunded by the 2020 Senior Bonds, the Authority’s outstanding Revenue Bonds, Series 2012A and Series 2012B (Senior Lien) (together, the “**2012 Senior Bonds**”) and any Additional Bonds issued on a parity therewith under the Trust Agreement, are collectively referred to in this Limited Offering Memorandum as the “**Senior Bonds**.”

Under the Trust Agreement, the Authority is also permitted to incur Other System Indebtedness on a parity as to payment with the Senior Bonds, including the 2020 Senior Bonds (upon compliance with certain financial tests), and such Other System Indebtedness together with the Senior Bonds are referred to as “**Senior Indebtedness**.” Other System Indebtedness as of October 31, 2020, included (i) indebtedness to Rural Utilities Service of the United States Department of Agriculture (the “**RD/RUS Lender**”) of approximately \$400 million aggregate principal amount of notes issued by the Authority to the RD/RUS Lender, pursuant to that certain Loan Agreement, dated as of July 26, 2019 (the “**RUS Loan Agreement**”), between the RD/RUS Lender and the Authority (said notes, together with any additional notes to be issued under the RUS Loan Agreement, the “**Senior RUS Indebtedness**”), and (ii) approximately \$596.6 million aggregate principal amount of notes issued to (1) Puerto Rico Infrastructure Financing Authority (“**PRIFA**”), as operating agent, and the Puerto Rico Department of Natural and Environmental Resources (“**DNER**”), as administrator, of the Puerto Rico CWSRF program, and (2) PRIFA, as operating agent, and the Puerto Rico Department of Health (“**DOH**”), as administrator of the Puerto Rico DWSRF program (such notes, together, the “**Senior Revolving Fund Indebtedness**” and the RD/RUS Lender, DOH, DNER and PRIFA (as agent for EPA (hereinafter mentioned)), together, the “**Federal Lenders**”). See DEBT.

Senior Indebtedness, which includes Senior Bonds and Other System Indebtedness payable on a parity with the Senior Bonds, has a first claim on Authority Revenues other than that portion of Authority Revenues consisting of moneys received from the Commonwealth for the payment of principal and interest on Commonwealth Guaranteed Indebtedness and Commonwealth Supported Obligations, which moneys are not subject to the lien of the Trust Agreement and may only be used to make such payments. The Authority is proposing an amendment of the Trust Agreement to, among other things, change the priority of payments for the Bonds outstanding thereunder as described further under “Proposed Amendments to Trust Agreement” below in this section.

The Authority is permitted under the Trust Agreement to issue two additional types of Indebtedness with a claim on Authority Revenues subordinate to the claim on Authority Revenues of the Senior Indebtedness. “**Senior Subordinate Bonds**” are issuable for any lawful purpose of the Authority upon the Authority’s satisfying the applicable financial tests for their issuance (see SECURITY FOR THE BONDS), which together with Other System Indebtedness incurred by the Authority on a parity with the Senior Subordinate Bonds in satisfaction of the same tests is collectively referred to herein as “**Senior Subordinate Indebtedness**.” Such Senior Subordinate

Indebtedness will have a first claim on Authority Revenues, after the claim of the Senior Indebtedness has been satisfied. “**Subordinate Bonds**” are issuable also for any lawful purpose of the Authority upon the Authority’s satisfying the applicable financial tests for their issuance (see SECURITY FOR THE BONDS), which together with Other System Indebtedness incurred by the Authority on a parity with the Subordinate Bonds in satisfaction of the same tests is collectively referred to herein as “**Subordinate Indebtedness**.” Such Subordinate Indebtedness will have a claim on Authority Revenues subordinate to the claim of the Senior Indebtedness and the Senior Subordinate Indebtedness. Collectively, the Senior Bonds, including the 2020 Senior Bonds, Senior Subordinate Bonds and Subordinate Bonds are referred to herein as the “**Bonds**.” No Senior Subordinate Indebtedness or Subordinate Indebtedness is currently outstanding. See below for a discussion of Commonwealth Guaranteed Indebtedness and Commonwealth Supported Obligations.

Under the Trust Agreement, Authority Revenues are pledged to the payment in the priority set forth therein of the principal of and premium, if any, and interest on the Bonds and Other System Indebtedness on a parity therewith and maintaining reserves therefor. Authority Revenues remaining after the payment of the Bonds and such parity Other System Indebtedness (and maintaining such reserves) are used to pay the Authority’s Current Expenses and maintain the required balance in the Operating Reserve Fund and in the Capital Improvement Fund. Authority Revenues remaining thereafter are used to pay debt service on the Authority’s outstanding Commonwealth Guaranteed Indebtedness and Commonwealth Supported Obligations. See SECURITY FOR THE BONDS. Upon the occurrence and continuation of an Event of Default and an acceleration of the Bonds, however, the Trustee is to pay Current Expenses prior to the payment of debt service on any Bonds and Other System Indebtedness. See “Acceleration” under SECURITY FOR THE BONDS.

Proposed Amendments to Trust Agreement. In connection with the issuance of the 2020 Senior Bonds, the Authority has proposed certain amendments to the Trust Agreement, which amendments are contained in the form of the Second Amended and Restated Trust Agreement included hereto as *Appendix VII*, to, among other things, change the priority of payments for the Bonds outstanding thereunder (a) from the current order of payments, under which Authority Revenues held under the Trust Agreement are applied to pay debt service on the Bonds prior to being applied to pay Current Expenses of the Authority (commonly known as a “**gross revenue pledge**”), to (b) a payment priority that would have Authority Revenues pay Current Expenses prior to being applied to pay debt service on the Bonds and Other System Indebtedness (commonly known as a “**net revenue pledge**”). Each purchaser of the 2020 Senior Bonds will have consented by its purchase and execution of the letter (the form of which is appended to this Limited Offering Memorandum in *Appendix IV*) (the “**Investor Letter**”) to the terms and execution by the Trustee of the Second Amended and Restated Trust Agreement. The proposed amendments will become effective upon the receipt of the written consent of (i) all the holders of Outstanding Bonds under the Trust Agreement and (ii) the Federal Lenders. As noted above (see “Oversight – Federal” above in this section), the Oversight Board has approved the proposed amendments to the Trust Agreement. The holders of any Commonwealth Guaranteed Indebtedness and Commonwealth Supported Obligations (described further below) do not and will not have the right to consent to the execution of the Second Amended and Restated Trust Agreement. See PROPOSED AMENDMENTS TO TRUST AGREEMENT and “Certain Risks Related to the Limited Source

of Payment and Security for the Senior Indebtedness and Remedies Under the Trust Agreement” under CERTAIN RISK FACTORS AND INVESTMENT CONSIDERATIONS.

Commonwealth Guaranteed Indebtedness. As of October 31, 2020, the Authority had outstanding \$284.8 million principal amount of 2008 Commonwealth Guaranteed Bonds (together with any additional obligation of the Authority that may subsequently be guaranteed by the Commonwealth, the “**Commonwealth Guaranteed Indebtedness**”), that were issued under the Guaranteed Bond Resolution. The 2008 Commonwealth Guaranteed Bonds are considered Commonwealth Guaranteed Indebtedness under the Trust Agreement, payable from Authority Revenues after payment of debt service on the Bonds and Other System Indebtedness and payment of Current Expenses and other deposits required by the Trust Agreement, including to the Operating Reserve Fund and the Capital Improvement Fund. Payment of Commonwealth Guaranteed Indebtedness is not secured by a pledge of Authority Revenues under the Trust Agreement, and failure to pay principal of or interest on Commonwealth Guaranteed Indebtedness is not an Event of Default under the Trust Agreement. The Authority will apply a portion of the proceeds of the 2020 Senior Bonds to redeem all of the currently outstanding the 2008 Commonwealth Guaranteed Bonds. See PLAN OF REFUNDING.

Commonwealth Supported Obligations. Commonwealth Supported Obligations are payable under the Trust Agreement from Authority Revenues after payment of debt service on the Bonds and Other System Indebtedness and payment of or making (i) Current Expenses, (ii) other deposits required by the Trust Agreement, including to the Operating Reserve Fund and the Capital Improvement Fund, and (iii) the Commonwealth Guaranteed Indebtedness. The Authority currently has a note outstanding held by Puerto Rico Public Finance Corporation (“**PFC**”) securing certain outstanding PFC bonds, the proceeds of which were used to finance the construction of the North Coast Superaqueduct System (the “**PFC Bonds**”). While the PFC Bonds are considered Commonwealth Supported Obligations under the Trust Agreement, the PFC Bonds are contractually payable “solely” from Commonwealth budgetary appropriations. The Commonwealth has not made budgetary appropriations for debt service on the PFC Bonds after fiscal year 2015. As of October 31, 2020, the Authority had outstanding \$162.7 million in notes securing the PFC Bonds, payable from and subject to appropriations by the Puerto Rico Legislature for such purpose.

The Authority has no legal obligation to pay the PFC Bonds if no Puerto Rico legislative appropriations for such purpose have been made. While the Authority has periodically paid debt service on the PFC Bonds from Authority Revenues, it has not made any such debt service payments on the PFC Bonds since 2011. Payment of Commonwealth Supported Obligations is not secured by a pledge of Authority Revenues under the Trust Agreement. Under the Trust Agreement and as noted in the Fiscal Plan, if the Authority does not make this payment, the obligation is not cumulative and, therefore, does not carry forward to future periods; failure to make these payments or deposits in respect thereof is not an event of default under the Trust Agreement. The Fiscal Plan assumes no payments by the Authority related to any PFC Bonds during the six fiscal year period it covers. The Commonwealth’s obligations under the PFC Bonds are subject to ongoing bankruptcy proceedings of the Commonwealth under Title III of PROMESA. See Chapter 3 of the Fiscal Plan in *Appendix III*.

Audited Financial Statements. This Limited Offering Memorandum does not include any audited financial statements of the Authority. The most recent audited financial statements for the Authority are as of and for the fiscal year ended June 30, 2017. The Authority has covenanted in the Trust Agreement that in the first month of each fiscal year it will cause an audit to be made of its books and accounts relating to the Systems by an independent firm of certified public accountants of suitable experience and responsibility chosen by the Authority's Board (hereinafter mentioned). The Trust Agreement also requires that before the first day of the sixth month following the making of such audit, reports of such audits shall be filed with the Trustee and the Authority, and copies of such reports mailed to the Consulting Engineer, among others. The audited financial statements for fiscal years 2018, 2019 and 2020 have not been completed and, therefore, have not been filed with the required parties in accordance with the Trust Agreement. The Authority anticipates that audited financial statements for the Authority, as of and for the fiscal year ended June 30, 2018, will be made publicly available on or about December 31, 2020, subject to final review and sign off by the Authority's independent auditors. The Authority expects that the audited financial statements, as of and for the fiscal year ended June 30, 2019, will be completed and made public during the first half of calendar year 2021, subject to timely receipt of certain information from the Government Employees Retirement System. See INDEPENDENT AUDITORS and "Certain Risks Related to the Potential Absence of a Secondary Market for the 2020 Senior Bonds" under CERTAIN RISK FACTORS AND INVESTMENT CONSIDERATIONS.

The Authority is subject to certain continuing disclosure undertakings in respect of its currently outstanding Senior Bonds and is obligated to file annually with EMMA (<https://emma.msrb.org/Home/Index>) its audited financial statements and updates of the financial and operating data set forth in such undertakings (along with notice of any delays in any such filings) as well as notice of the occurrence of the listed events set forth in such undertakings and any failure of the Authority to file the required information. Notice of failure to file the annual reports were filed with EMMA on April 1, 2019, and March 27, 2020, for fiscal years 2018 and 2019, respectively. See INDEPENDENT AUDITORS, CONTINUING DISCLOSURE and "Certain Risks Related to the Potential Absence of a Secondary Market for the 2020 Senior Bonds" under CERTAIN RISK FACTORS AND INVESTMENT CONSIDERATIONS.

No Incorporation of Information by Reference. Except as expressly provided herein (see, for example, DEBT), this Limited Offering Memorandum does not incorporate by specific reference any information contained on the Authority's website, on the respective websites of AAFAF, the Commonwealth or the Oversight Board, or on any other website.

Restrictions on Initial Purchase. The 2020 Senior Bonds are offered, and will be sold to no more than 35 "Qualified Institutional Buyers" as defined under applicable federal securities laws. The initial purchasers of the 2020 Senior Bonds will be required to execute a letter substantially in the form attached hereto as *Appendix IV*. See TRANSFER RESTRICTIONS in this Limited Offering Memorandum.

Miscellaneous. This Limited Offering Memorandum includes descriptions of the 2020 Senior Bonds, the Trust Agreement, the Eighth Supplemental Agreement, the proposed Second Amended and Restated Trust Agreement, the Fiscal Plan and the Consulting Engineer's Report. Such descriptions do not purport to be complete and are qualified in their entirety by reference to

such documents, each of which is attached hereto as an appendix, and such descriptions are qualified in their entirety to the terms and definitive forms of such documents appended hereto. All references to the 2020 Senior Bonds are qualified in their entirety by reference to the terms and definitive form thereof contained in the Eighth Supplemental Agreement. In addition to the forms of certain of the foregoing documents attached to this Limited Offering Memorandum as Appendices, copies of all such documents and agreements, are available for inspection during regular business hours at the offices of AAFAF, Roberto Sánchez Vilella Government Center, Avenida de Diego, Parada 22, San Juan, Puerto Rico 00940, telephone number (787) 722-2525, or at the principal corporate trust office of the Trustee, San Juan, Puerto Rico.

CERTAIN RISK FACTORS AND INVESTMENT CONSIDERATIONS

AN INVESTMENT IN THE 2020 SENIOR BONDS INVOLVES A HIGH DEGREE OF RISK. SET FORTH BELOW IS A SUMMARY OF CERTAIN RISKS ASSOCIATED WITH THE 2020 SENIOR BONDS. TO MAKE A JUDGMENT AS TO ITS ABILITY TO BEAR THE RISK OF AN INVESTMENT IN THE 2020 SENIOR BONDS, EACH PROSPECTIVE INVESTOR SHOULD CAREFULLY REVIEW THE RISK FACTORS SET FORTH BELOW TO ASSESS THE CREDIT-WORTHINESS AND FINANCIAL CONDITION OF THE AUTHORITY AND ITS ABILITY TO MEET ITS OBLIGATIONS UNDER THE TRUST AGREEMENT, INCLUDING, BUT NOT LIMITED TO, PAYMENT OF THE INTEREST ON, AND PRINCIPAL OF, THE 2020 SENIOR BONDS.

THE FOLLOWING DISCUSSION OF RISK FACTORS IS INTENDED ONLY AS A SUMMARY OF CERTAIN RISK FACTORS AND DOES NOT PURPORT TO IDENTIFY ALL OF THE RISK FACTORS THAT MAY AFFECT THE AUTHORITY'S ABILITY TO MEET ITS OBLIGATIONS UNDER THE TRUST AGREEMENT, INCLUDING, BUT NOT LIMITED TO, PAYING DEBT SERVICE ON THE 2020 SENIOR BONDS. MOREOVER, THE ORDER OF PRESENTATION OF THE RISK FACTORS DOES NOT NECESSARILY REFLECT THE ORDER OF THEIR IMPORTANCE. PROSPECTIVE INVESTORS ARE ADVISED TO READ ALL THE INFORMATION IN THIS LIMITED OFFERING MEMORANDUM. IN EVALUATING AN INVESTMENT IN THE 2020 SENIOR BONDS, ANY ONE OR MORE OF THE FACTORS DISCUSSED AND OTHERS NOT CURRENTLY CONTEMPLATED OR DESCRIBED HEREIN COULD ADVERSELY AFFECT THE AUTHORITY'S OPERATIONS, REVENUES, OBLIGATIONS (INCLUDING ITS EXPENSES, AMONG OTHERS), CIP AND LEGAL STATUS TO AN EXTENT THAT CANNOT BE DETERMINED AT THIS TIME, AND COULD LEAD TO A DECREASE IN THE MARKET VALUE OF THE 2020 SENIOR BONDS OR IMPAIR THE AUTHORITY'S ABILITY TO MEET ITS OBLIGATIONS UNDER THE TRUST AGREEMENT, INCLUDING, BUT NOT LIMITED TO, PAYING DEBT SERVICE ON THE SENIOR INDEBTEDNESS, INCLUDING THE 2020 SENIOR BONDS. NO ASSURANCE CAN BE PROVIDED THAT OTHER FACTORS WILL NOT BE MATERIAL NOW OR IN THE FUTURE.

ADDITIONAL RISKS AND UNCERTAINTIES NOT CURRENTLY KNOWN BY THE AUTHORITY, OR THAT THE AUTHORITY DOES NOT CURRENTLY CONSIDER TO BE MATERIAL, OR THAT ARE GENERALLY APPLICABLE TO ALL

STATES, GOVERNMENTAL INSTRUMENTALITIES, PUBLIC AUTHORITIES, PUBLIC CORPORATIONS AND SIMILAR PUBLIC ENTITIES, ALSO MAY MATERIALLY AND ADVERSELY AFFECT THE FINANCIAL CONDITION OF THE AUTHORITY, AND ITS ABILITY TO MEET ITS OBLIGATIONS UNDER THE TRUST AGREEMENT, INCLUDING, BUT NOT LIMITED TO, PAYMENT OF THE INTEREST ON, AND PRINCIPAL OF, THE 2020 SENIOR BONDS. PROSPECTIVE INVESTORS ARE ADVISED TO CONSIDER THE FOLLOWING RISK FACTORS, AMONG OTHERS, AND TO READ THE OTHER INFORMATION CONTAINED IN THIS LIMITED OFFERING MEMORANDUM, INCLUDING THE APPENDICES, IN EVALUATING A POTENTIAL INVESTMENT IN THE 2020 SENIOR BONDS.

Set forth below are certain risk factors and investment considerations related to: (1) the Authority's eligibility under PROMESA; (2) the financial condition of the Authority; (3) natural disasters; (4) the limited sources of payment and security for the Senior Indebtedness and limited remedies available upon an Event of Default under the Trust Agreement; (5) the potential absence of a secondary market for the 2020 Senior Bonds; (6) the political and economic circumstances of Puerto Rico; and (7) the condition of the Systems and the operations of the Authority. As noted above, the risk factors and investment considerations set forth below do not identify all of the risks that may affect the Authority's ability to pay debt service on the Senior Indebtedness or the liquidity and availability of a secondary market with respect to the 2020 Senior Bonds. Nor do these risk factors and investment considerations necessarily address risks that may affect the Authority's ability to pay debt service on Senior Subordinate Indebtedness or Subordinate Indebtedness. As of the date of this Limited Offering Memorandum, the Authority has no Senior Subordinate Indebtedness or Subordinate Indebtedness Outstanding under the Trust Agreement. These risk factors and investment considerations are described by the Authority to highlight how the Authority's current circumstances present certain risks to investors in the 2020 Senior Bonds that are particular to the Authority and that must be evaluated prior to purchasing any 2020 Senior Bond or any interest therein.

1. Certain Risks Related to the Authority's Eligibility Under PROMESA

The Authority is a covered territorial instrumentality under PROMESA and is eligible to become a debtor in a Title III proceeding under PROMESA if other requirements are satisfied, although it has no present intent to commence a proceeding under Title III of PROMESA. If the Authority were to become a Title III debtor under PROMESA, the Authority's obligations under the Trust Agreement, including the obligation to pay debt service on its Senior Indebtedness, including the 2020 Senior Bonds, could be adversely affected, circumscribed, prejudiced, reduced or discharged either partially or in their entirety.

PROMESA grants Puerto Rico and its component units access to an orderly mechanism to restructure their debts upon satisfaction of the requirements for filing set forth in PROMESA. To ensure fiscal and economic discipline, PROMESA also created the Oversight Board, which has certain fiscal oversight powers related to Puerto Rico's finances. In general, PROMESA seeks to provide Puerto Rico with fiscal and economic discipline through, among other things (i) the establishment of the Oversight Board, and (ii) two alternative methods to adjust its debt: (a) a voluntary, largely out-of-court, financial debt modification process under Title VI of PROMESA, and (b) an in court, quasi-bankruptcy proceeding under Title III of PROMESA.

Specifically, Title III of PROMESA establishes an in-court process for restructuring the debts of Puerto Rico and other United States territories that is modeled after the process under Chapter 9 of the Bankruptcy Code, which provides for the adjustment of debts of a municipality (including provisions regarding the ability to bind non-consenting classes of creditors to debt modifications if certain requirements are satisfied). Title III proceedings have been filed and are ongoing with respect to the Commonwealth, Puerto Rico Highways and Transportation Authority, the Employees Retirement System, Puerto Rico Electric Power Authority, and Puerto Rico Public Buildings Authority. In addition, on February 5, 2019, the Title III court confirmed a plan of adjustment for the Puerto Rico Sales Tax Financing Corporation, which became effective on February 12, 2019.

Because the Authority is a covered territorial instrumentality under PROMESA, it is eligible to be a debtor under Title III of PROMESA if the Authority desires to effect a plan to adjust its debts and the Governor requests that the Oversight Board issue a certification under section 206(b) of PROMESA for the Authority. If the Oversight Board were to issue a restructuring certification for the Authority pursuant to PROMESA sections 104(j) and 206 and file a voluntary petition for relief pursuant to section 304(a) of PROMESA commencing a case under Title III, the payment of debt service by the Authority on the Senior Indebtedness, including the 2020 Senior Bonds, could be adversely affected, circumscribed, prejudiced, reduced or discharged either partially or in its entirety.

Any Title III proceeding for the Authority may involve the exercise of judicial discretion as to various matters that may affect the timing and priority of application of Authority Revenues to the payment of the Senior Indebtedness, including the 2020 Senior Bonds. If the Authority were to become the debtor in a Title III proceeding under PROMESA, the Trustee may be prohibited from taking actions to collect Authority Revenues or to enforce any obligation of the Authority, without the Title III court's permission, including the payment of interest on, and principal of, the Senior Indebtedness, including the 2020 Senior Bonds. As part of its plan of adjustment in a Title III proceeding, the Authority may be able to alter the priority, interest rate, principal amount, payment terms, collateral, maturity dates, payment sources, covenants (including tax-related covenants relating to Senior Indebtedness, including the 2020A Senior Bonds), and other terms or provisions of the Authority's Indebtedness, including the Senior Indebtedness, and other transaction documents related to the Senior Indebtedness, if the court determines that the plan is fair, equitable, not unfairly discriminatory and is in the best interests of creditors and otherwise complies with Title III of PROMESA and the applicable provisions of the Bankruptcy Code. There also may be other possible effects of an Authority Title III proceeding that could result in delays or reductions in payments due on the Senior Indebtedness, including the 2020 Senior Bonds. Regardless of any specific adverse determinations or actions in any Title III proceeding, the commencement and existence of a Title III proceeding for the Authority would likely have an adverse effect on the liquidity or market prices of the Senior Indebtedness, including the 2020 Senior Bonds.

In a Title III proceeding for the Authority, the debtor or other parties-in-interest could seek to challenge whether the Authority Revenues constitute "special revenues" within the meaning of Bankruptcy Code section 902 made applicable to a Title III proceeding pursuant to PROMESA section 301. If the court were to determine that the Authority Revenues do not constitute "special revenues," the court could conclude that the revenues are, therefore, subject to the automatic stay,

and that any Authority Revenues generated after the filing of the petition are not subject to the Trustee's lien or pledge under the Trust Agreement.

In addition, even if the Authority Revenues were determined by the court to constitute "special revenues" within the meaning of section 902 of the Bankruptcy Code, the governing provisions of PROMESA and the Bankruptcy Code generally provide that any consensual lien on "special revenues" "derived" from a project or system is subject to the prior payment by the Authority of necessary operating expenses of the project or system. This rule applies regardless of the provisions of transaction documents. If the Title III court were to conclude that the Authority Revenues are "derived" from a project or system, then it could determine that the Trustee may not compel use of Authority Revenues to pay debt service on the Senior Indebtedness, including the 2020 Senior Bonds to the extent the revenues are needed to pay necessary operating expenses of the Authority. Moreover, under precedent established in the Commonwealth's Title III proceeding, a court could decide that post-petition special revenues received by the Authority are not required by PROMESA's provisions (incorporating the "special revenues" provisions from Chapter 9 of the Bankruptcy Code) to be applied by the Authority to debt service payments on the Senior Indebtedness, after payment of necessary operating expenses, such application by the Authority being merely optional during the Title III proceeding. If the court were to make such a determination, the Trustee would be prohibited from taking any action to collect the Authority Revenues or enforce its pledge or lien thereon, including for the benefit of the Senior Indebtedness, including the 2020 Senior Bonds, without the court's permission. In addition, under a Title III proceeding there is a risk that the Authority could use Authority Revenues to pay Current Expenses prior to making the deposits with the Trustee required under the Trust Agreement, which would have the practical effect of transforming the current gross revenue pledge of the Authority Revenues created by the Trust Agreement into a net revenue pledge of the Authority Revenues. For a discussion of proposed amendments to the Trust Agreement that would change the pledge of the Authority Revenues from a "gross revenue pledge" to a "net revenue pledge" by changing the order of monthly deposits of Revenues with the Trustee, such that deposits for Current Expenses for up to three months are made prior to required deposits for debt service on Bonds or Other System Indebtedness, see PROPOSED AMENDMENTS TO TRUST AGREEMENT.

The Authority is also eligible for a modification of its debts in a Title VI proceeding under PROMESA should it desire and be authorized to pursue one, although it has no present intention to commence any modification under Title VI of PROMESA. If the Authority were to pursue a consensual modification of its debts under Title VI, and if judicial approval of such a Title VI modification under PROMESA were granted with respect to the Authority, the rights of Holders of the Senior Indebtedness under the Trust Agreement could be impaired, including, but not limited to, the elimination or diminution of such Holders' right to receive all or a portion of the principal of and interest on the Senior Indebtedness, including the 2020 Senior Bonds.

Title VI of PROMESA establishes a largely out-of-court process for modifying Puerto Rico's debts through collective creditor action. Under PROMESA section 601(d), the Oversight Board is authorized to establish "pools" of bonds issued by each Puerto Rico government-related issuer based upon relative priorities. After establishing the pools, the government issuer or any bondholder or bondholder group may propose a modification to one or more series of the government issuer's bonds. If a voluntary agreement exists, the Oversight Board must issue a certification and execute a number of additional processes in order to qualify the modification. Finally, the United States District Court for Puerto Rico may enter an order approving the

Qualifying Modification and vesting in the issuer all property free and clear of claims in respect of any then outstanding debt obligations, such as the issuer's revenue bonds, for example. A modification of a bond under Title VI of PROMESA could include a "modification, amendment, supplement, or waiver affecting any one or more series of Bonds, including those effected by way of exchange, conversion, or substitution." The Title VI process was successfully used to restructure the debts of GDB, which completed its Qualified Modification on November 29, 2018.

There is a risk that the financial terms and legal rights and remedies associated with the Senior Indebtedness, including the 2020 Senior Bonds, could be modified in the future pursuant to a collective creditor action under Title VI of PROMESA. Any such modification could affect the payment terms, principal amount, maturity or collateral pledged with respect to the Senior Indebtedness and adversely affect the liquidity or market prices of the Senior Indebtedness, including the 2020 Senior Bonds.

Although the Authority has no present intention or authorization to commence a proceeding under either Title III or Title VI of PROMESA, AAFAF included the Authority in AAFAF's comprehensive evaluation of all government issuers for filing as a debtor under Title III of PROMESA or seeking a modification of its debts through a Title VI proceeding under PROMESA. No assurance can be provided that any subsequent such evaluation by AAFAF would not include the Authority or would not result in a Title III or Title VI proceeding being commenced in respect of the Authority or that the Governor will not request that the Oversight Board file a Title III or Title VI proceeding under PROMESA. If the Authority were to become a debtor under Title III or Title VI of PROMESA, the Authority's obligations under the Trust Agreement, including its obligation to pay debt service on its Indebtedness, including the 2020 Senior Bonds, could be adversely affected, circumscribed, prejudiced, reduced or discharged either partially or in their entirety.

In the ordinary course of business, the Authority, AAFAF and the Oversight Board have retained and continue to retain legal and financial professionals to provide advice in connection with debt and PROMESA-related matters for the Authority. The Oversight Board has never received a formal request to commence any proceeding under PROMESA for the Authority from the Governor. The Authority, AAFAF and the Governor have requested approvals under Section 207 of PROMESA from the Oversight Board, which approvals have been granted, (i) to restructure the Authority's Senior RUS Indebtedness and Senior Revolving Fund Indebtedness, which closed on July 26, 2019, (ii) to approve the issuance of additional Clean Water State Revolving Fund loans, which closed on August 18, 2020, and (iii) to approve the settlement of the Authority's obligations under the DRA Loan Agreement (hereinafter mentioned, see "Source of Payment" under SECURITY FOR THE BONDS). Although AAFAF and the Authority currently have no intention of commencing a proceeding under Title III or Title VI of PROMESA, as part of the discussions held with holders of the then-outstanding Senior Bonds in 2017 and 2018 following Hurricanes Irma and María, AAFAF, on behalf of the Authority, considered and discussed with certain holders of Senior Bonds, the possibility of filing a proceeding under Title III or Title VI of PROMESA, in light of the uncertainty surrounding the Authority's liquidity and Puerto Rico's overall economic circumstances at the time.

Under current law, any potential restructuring of the Authority's Bonds and Other System Indebtedness that would impair the rights under the Trust Agreement of nonconsenting holders of such Indebtedness would require a filing under Title III or Title VI of PROMESA. Any such proceeding could adversely affect the payment terms, principal amount, maturity or collateral

pledged with respect to the Senior Indebtedness. In addition, any such filing or restructuring could adversely affect the liquidity or market prices of the Senior Indebtedness, including the 2020 Senior Bonds, as described above.

The ongoing Title III proceedings of the Commonwealth and certain of its covered territorial instrumentalities, as well as any developments in respect of a potential Title III or Title VI proceeding for the Authority, may affect the liquidity of, or market for, the Senior Bonds, including the 2020 Senior Bonds.

Judicial decisions and other events related to the ongoing proceedings under PROMESA may affect the market for debt issued by the Commonwealth and its political subdivisions, instrumentalities and public corporations, including the Authority. Any developments regarding the potential for a Title III or Title VI proceeding in respect of the Authority, or the Commonwealth or its other political subdivisions, instrumentalities or public corporations, may affect the liquidity of, or market for, the Senior Indebtedness, including the 2020 Senior Bonds.

2. Certain Risks Related to the Authority's Financial Condition

Although during the five fiscal years ended June 30, 2020, the Authority has been able to generate sufficient Operating Revenues to pay debt service on its Bonds and Other System Indebtedness and its Current Expenses, the Authority has faced challenges in funding its CIP and servicing all of its other Indebtedness, including its Commonwealth Guaranteed Indebtedness. It is possible that the Authority will not generate sufficient revenues in the future to comply with all of its obligations under the Trust Agreement, including, but not limited to, its obligation to pay debt service on the 2020 Senior Bonds.

Prior to the implementation of any of the operational reforms described in the Fiscal Plan, the Authority projected a cumulative deficit of \$1.7 billion in fiscal years 2020 through 2025, inclusive. Although a portion of the projected deficit is addressed by initiatives already implemented, other initiatives that have not been implemented will be required to eliminate the rest of the projected deficit. This deficit is expected to be driven by a combination of falling revenues from a shrinking customer base, a contracting Puerto Rico economy, and rising operating expenses and capital investment requirements to maintain the Systems and comply with outstanding regulatory agreements. If the Authority does not increase rates or is not able to control its Current Expenses and CIP related costs, and does not adopt the reforms included by the Oversight Board under the Fiscal Plan or other reforms to address the projected deficit, the Authority may not meet its obligations under the Trust Agreement, including, but not limited to, its obligations to pay debt service on the Senior Indebtedness, including the 2020 Senior Bonds. See Chapter 2 of the Fiscal Plan in *Appendix III*. Even if the Authority adopts the reforms under the Fiscal Plan or other reforms to address the projected deficit, the Authority's obligations under the Trust Agreement may still exceed the Authority's Operating Revenues.

The Authority may not adjust its rates consistent with its projections, and its projections may not be accurate. If the Authority does not project accurately its Operating Revenues, Current Expenses, CIP needs and funding sources, or does not adjust its rates in accordance with such projections, the Authority may not meet its obligations under the Trust Agreement, including, but not limited to, the obligation of the Authority to pay debt service on the Senior Indebtedness, including the 2020 Senior Bonds.

The Fiscal Plan projections are premised, to a significant extent, on the Authority's ability to meet the objectives set forth in the Fiscal Plan and to increase its rates, as well as secure other sources of funding, including from the federal government of the United States, or implement further revenue raising or expense reduction measures in order to produce additional Operating Revenues during the period, as well as upon maintaining or increasing its total annual billings and maintaining a collection rate that is at or above 96% starting in January 2021 for residential, commercial and industrial customers. While the Authority attempts to model and project the impact that rate increases will have on Operating Revenues, no assurance can be provided that such models and projections will prove accurate. The Authority's preliminary collection rate for the fiscal year ended June 30, 2020, was 94%, reflecting the impact of the pandemic caused by the 2019 novel coronavirus ("**COVID-19**"). Under the Authority's current rate resolution, which became effective on July 15, 2013 (approved under Resolution 2794), as amended on December 18, 2013, the Authority may adjust rates by 4.5% annually and 25% in the aggregate without complying with certain public hearing and review procedures required by applicable law. Although the Authority implemented four rate increases between January 1, 2018, and July 1, 2020, before 2005 the Authority had not revised its rates in twenty years, showing a prior history of infrequently changing its rates. See "Rate Setting Powers" under RATES, BILLINGS AND COLLECTIONS, Section 8.3 of the Consulting Engineer's Report in *Appendix I* and Chapter 3 of the Fiscal Plan in *Appendix III*. The Authority must increase rates, receive additional sources of funding or implement further revenue raising or expense reduction measures (or any combination or all of them) to meet its obligations under the Trust Agreement.

The Authority's ability to increase its rates or collect additional revenues from its customers, as well as to control its expenses, are affected by economic conditions, water consumption trends and population trends in Puerto Rico, as well as potential political interference. Puerto Rico has been in recession since 2006, and according to the U.S. Census Bureau, between 2012 and 2018 its population declined 2.1% annually. See Section 8.4.1 of the Consulting Engineer's Report in *Appendix I*. Between fiscal year 2015 and fiscal year 2019, Puerto Rico's population decreased by 8.1% based on estimates published by the U.S. Census Bureau. This corresponded with a decline in water consumption of 13% and billing by 2.5%, despite Authority rate increases implemented in fiscal years 2018 through 2020. The Authority has approved a moderate rate adjustment schedule for five years from fiscal year 2018 through fiscal year 2022. The first four scheduled rate adjustments have been implemented as planned, on January 1, 2018, July 1, 2018, July 1, 2019, and July 1, 2020, respectively. The next rate adjustment is scheduled to be implemented on July 1, 2021. The Authority also expects to conduct a review of the current rate structure and recommend an optimal rate structure aligned with industry standard cost allocation and rate design principles. Such rate and structure modifications may not, however, be sufficient for the Authority to meet its obligations under the Trust Agreement.

If the Authority's financial results do not meet its assumptions regarding its ability to increase its Operating Revenues through increased rates and collections, its ability to meet its obligations under the Trust Agreement, including, but not limited to, its obligation to pay debt service on the 2020 Senior Bonds, may be impaired. See Chapter 2 of the Fiscal Plan in *Appendix III*. The Authority disagrees with the Oversight Board regarding several measures in the Fiscal Plan, and does not intend to pursue several of the cost reform measures identified therein. See "Authority Disagreements with Oversight Board Regarding Fiscal Plan" under THE AUTHORITY'S FISCAL PLAN. As a result, if the Authority does not otherwise identify and achieve meaningful alternative cost saving measures, the Authority may not meet the cost

containment goals set forth by the Oversight Board in the Fiscal Plan. See “Certain Risks Related to the Political and Economic Circumstances of Puerto Rico” below.

Also, while the Authority expects to receive certain federal funds, in the form of grants or loans, for permanent infrastructure work for the Systems’ recovery and resiliency, which funds would supplement other available resources to fund its CIP, no assurance can be given as to when or if such additional funds will be received by the Authority or that the grants or loans will be sufficient to pay the cost of capital projects necessary to meet the recovery and resiliency needs of the Systems. Failure to receive any such federal funds would have an impact, which could be material, on implementation of the Authority’s CIP. See “Certain Risks Related to Natural Disasters” and “Certain Risks Related to the Systems and the Authority Operations.”

3. Certain Risks Related to Natural Disasters

Natural disasters may impair the ability of the Authority to operate its Systems. If a natural disaster were to destroy critical assets of the Systems or were to impair the operations of the Systems, the ability of the Authority to meet its obligations under the Trust Agreement, including, but not limited to, its obligation to pay debt service on Senior Indebtedness, including the 2020 Senior Bonds, could be impaired.

The Authority is subject to a variety of weather and other risks related to the geographic location of Puerto Rico, including, but not limited to hurricanes, tropical storms, flooding earthquakes and droughts. See “September 2017 Hurricanes,” “2020 Seismic Activity” and “2020 Drought” under THE AUTHORITY. Such natural disasters have, from time to time, and are expected to continue to, damage the Systems, increase expenses, reduce revenues as a result of the disruptions in service to the Authority’s customers, delay or impair the execution of the CIP or create logistical challenges for the Authority, because vital equipment, fuel and other resources may become unavailable for extended periods as a result of such events. If a major storm were to strike Puerto Rico, the Systems may experience substantial damage and, based also on the impact on the electric system, a resulting interruption in service, as was the case after the September 2017 Hurricanes struck Puerto Rico and during the 2020 earthquakes and aftershocks. Such events may materially adversely affect the Authority’s ability to provide service and collect Operating Revenues. Repair and maintenance of the Systems are also subject to availability of key raw materials, including chemicals, and on the continued operations of port facilities in Puerto Rico and elsewhere, including ports in the Gulf Coast of the United States. Hurricanes and other storms in the Gulf have in the past affected the price and availability of materials such as chemicals and oil, increasing the Authority’s costs of operations. In addition, Puerto Rico has recently experienced several drought periods that caused the Authority to implement rationing and other measures to conserve its water sources, resulting in increased expenses and reduced revenues.

Although the Authority has taken steps to mitigate the impact of hurricanes and tropical storms, including implementation of a hurricane preparedness plan, securing insurance coverage where available, acquiring electric generators, and planning for an investment in projects to improve the resiliency of the Systems, subject to funding availability, the Authority expects that climate change could amplify the effects of these disasters on the Systems.

Therefore, if all, substantially all or any portion of the Systems is damaged or destroyed by any casualty or condemned by a governmental authority, there is no assurance that insurance proceeds, pollution liability insurance proceeds (if available), federal funds (in the form of grants or loans) or Operating Revenues would be sufficient to repair or replace such property. Even if

applicable insurance proceeds, federal grants or loans and Operating Revenues are adequate, there is no assurance that such damage or destruction would not impair the ability of the Authority to provide water and wastewater service to its customers. Critical damage or destruction of the Systems, or the inability of the Authority to provide services to its customers, may impair the ability of the Authority to meet its obligations under the Trust Agreement, including, but not limited to, its obligation to pay debt service on the 2020 Senior Bonds. Furthermore, while the Authority has received certain funds from the Federal Emergency Management Agency (“*FEMA*”) in recent years, mostly to pay incremental expenses to address recent emergencies caused by natural disasters and such funds have aided the Authority in meeting its financial obligations, and while the Authority expects to receive additional FEMA funds for permanent infrastructure work for recovery and resiliency of the Authority Systems under federal assistance programs in the aftermath of the September 2017 Hurricanes and other natural disasters, no assurance can be given as to when or if such additional funds will be received by the Authority or that they will be sufficient to pay the cost of capital projects necessary to address the recovery and resiliency needs of the Systems.

4. Certain Risks Related to the Limited Source of Payment and Security for the Senior Indebtedness and Remedies Under the Trust Agreement

The Senior Indebtedness is payable only from the Authority Revenues. The Senior Indebtedness is not a general obligation of the Authority or any other agency, public corporation, political subdivision or instrumentality of Puerto Rico. The Authority may not increase Authority Revenues sufficiently to meet its obligations under the Trust Agreement, including payment of debt service on the Senior Indebtedness, including the 2020 Senior Bonds.

The Senior Indebtedness, including the 2020 Senior Bonds and any additional Bonds or Other System Indebtedness that the Authority may incur from time to time under the Trust Agreement, and Current Expenses are payable solely from Authority Revenues. The Senior Indebtedness, including the 2020 Senior Bonds, is not a debt of the Commonwealth or any of its municipalities, instrumentalities, public corporations or other political subdivisions, other than the Authority, and neither the Commonwealth nor any such municipalities or other political subdivisions or instrumentalities of the Commonwealth, other than the Authority, are liable for the payment of principal of, or interest on, the Senior Indebtedness, including the 2020 Senior Bonds. If the Authority does not increase Authority Revenues and control its expenses, the Authority may not meet its obligations under the Trust Agreement, including, but not limited to, paying debt service on the Senior Indebtedness, including the 2020 Senior Bonds.

The imposition and collection by the Authority of rates, fees and charges for services of the Systems provide the only security and source of payment for the Senior Indebtedness, including the 2020 Senior Bonds, the Authority’s other Indebtedness and Current Expenses. Although the Authority will continue to set aside moneys in certain reserve and other funds, these funds may not be sufficient to cover the Authority’s obligations should the Authority continue to encounter financial difficulty. The Operating Revenues of the Authority are dependent on the rates it charges, the volume of water billed to its customers and its ability to collect the amounts billed. The inability of, or failure by, the Authority to charge rates that produce, or to collect, sufficient Operating Revenues could result in the Authority failing to meet the provisions of the Rate Covenant in the Trust Agreement or debt service payments on its Senior Indebtedness, including the 2020 Senior Bonds, or to pay its Current Expenses or CIP. See SECURITY FOR THE BONDS and Chapters 3 and 6 of the Fiscal Plan in *Appendix III*. For a discussion of proposed amendments

to the Trust Agreement that would change the pledge of the Authority Revenues from a “gross revenue pledge” to a “net revenue pledge” by changing the order of monthly deposits of Revenues with the Trustee, such that deposits for Current Expenses for up to three months are made prior to required deposits for debt service on Bonds or Other System Indebtedness, see PROPOSED AMENDMENTS TO TRUST AGREEMENT.

The Senior Indebtedness is not secured by the Systems or any other physical assets. No foreclosure remedy is available to the Trustee or Holders of the Senior Indebtedness.

Neither the Senior Indebtedness, including the 2020 Senior Bonds, nor other outstanding bonds or indebtedness of the Authority will be secured by a mortgage or other lien on the physical assets of the Authority, and the Trustee and the owners of such Bonds or indebtedness will have no rights to direct management changes, continuity or decisions except in the case of bringing suit to compel compliance with the provisions of the Rate Covenant in the Trust Agreement. See “Rate Covenant” under SECURITY FOR THE BONDS and *Appendix II*.

The remedies available to Holders of the Senior Bonds under the Trust Agreement are limited and may not be sufficient to pay debt service on the Senior Indebtedness.

If an Event of Default occurs under the Trust Agreement, the ability of the Trustee to raise sufficient funds to meet the obligations under the Trust Agreement, including, but not limited to, the obligation of the Authority to pay debt service on the Senior Indebtedness, including the 2020 Senior Bonds, will depend upon the exercise of various remedies specified in the Trust Agreement. Under existing law, those remedies are often subject to discretion and delay and may not be readily available or may be substantially limited. The application of equitable principles may also delay or otherwise adversely affect the enforcement of rights by holders of the Senior Indebtedness. In addition, as discussed below, upon the occurrence and continuation of an Event of Default and an acceleration of the Senior Indebtedness, the Trustee is required under the Trust Agreement to pay Current Expenses prior to the payment of debt service on any Senior Indebtedness. See “Acceleration” under SECURITY FOR THE BONDS and *Appendix II*.

If the Trustee exercises its right to accelerate the Senior Indebtedness under the Trust Agreement, the Trustee remains obligated to pay the Current Expenses of the Authority each month prior to making any payment on the Senior Indebtedness, including the 2020 Senior Bonds.

Upon the occurrence and continuation of an Event of Default under the Trust Agreement, the Trustee can, under certain circumstances, declare the entire unpaid principal of the Senior Bonds due and payable. Upon any such declaration, under the terms of the Trust Agreement, the Trustee is required to pay each month, from Operating Revenues, an amount equal to the Current Expenses of the Systems for such month (as set forth in the Authority’s annual budget for that fiscal year) prior to making any payment of Operating Revenues to the Holders of the Senior Indebtedness. Under such circumstances, if available Operating Revenues in any month do not exceed the Current Expenses of the Systems for such month, no moneys would be available to pay the Senior Indebtedness, including the 2020 Senior Bonds, for such month.

The validity of the 2020 Senior Bonds and the Trust Agreement will not be determined by a court of competent jurisdiction before the 2020 Senior Bonds are issued.

Unlike in many other United States jurisdictions, Puerto Rico law does not currently provide a formal judicial validation process for the incurrence of government debt, such as the

2020 Senior Bonds, that would permit the issuer of such government debt, such as the Authority, to bring a legal action to determine the validity of such government debt prior to its issuance. Although Bond Counsel will deliver its approving opinion upon the delivery of the 2020 Senior Bonds and will conclude in its opinion that the 2020 Senior Bonds are valid obligations of the Authority issued in compliance with the Act and entitled to the benefit and security of the Trust Agreement, such opinion is not a guarantee as to the validity of the 2020 Senior Bonds, the validity and enforceability of the Trust Agreement or the other matters set forth in the opinion. The proposed form of such opinion is attached as *Appendix VI*. In addition, although the Oversight Board has issued its approval of the issuance of the 2020 Senior Bonds pursuant to Section 207 of PROMESA, see “Federal - Main Components of PROMESA” under AUTHORITY OVERSIGHT, such approval is not a guarantee as to the validity of the 2020 Senior Bonds and would not bind a future court in determining the validity of the 2020 Senior Bonds or the validity and enforceability of any particular provision in the Trust Agreement.

Although the Authority is of the view that the 2020 Senior Bonds have been issued in compliance with the Act and the Trust Agreement and that the Trust Agreement is valid and enforceable, the Authority can give no assurance that any creditors of the Authority or other interested persons will not bring suit to challenge the validity of the 2020 Senior Bonds or the enforceability of particular provisions of the Trust Agreement. Should suit be brought, the value of the 2020 Senior Bonds could be significantly reduced during its pendency even if the outcome is ultimately favorable to the Authority. In addition, a successful challenge to the validity of the 2020 Senior Bonds or the validity or enforceability of particular provisions of the Trust Agreement may result in the 2020 Senior Bonds being declared void, and the holders of the 2020 Senior Bonds may not be able to recover from the Authority their purchase price for the 2020 Senior Bonds from the Authority, or may invalidate or limit the enforceability of particular provisions in the Trust Agreement that could have a material effect on the market value of the 2020 Senior Bonds.

If the Authority obtains sufficient consents to amend the Trust Agreement as described under PROPOSED AMENDMENTS TO THE TRUST AGREEMENT, the Authority’s obligation to pay debt service on the Senior Indebtedness, including the 2020 Senior Bonds, would become subordinate to the payment of Current Expenses.

The Authority will seek the consent of, among others, the Holders of all Outstanding Senior Indebtedness to the amendment of certain provisions of the Trust Agreement. On November 20, 2020, the Oversight Board approved the issuance of the 2020 Senior Bonds and the amendment of the Trust Agreement as set forth in the Second Amended and Restated Trust Agreement. The proposed amendments (summarized in PROPOSED AMENDMENTS TO THE TRUST AGREEMENT) (the “***Proposed Amendments***”) will not become effective unless and until all such consents have been received.

Among other things, the Proposed Amendments would change the priority of payments under the Trust Agreement such that Senior Indebtedness would be payable from Revenues remaining after the payment of Current Expenses for each month even prior to an acceleration event. Furthermore, as is the case under the Trust Agreement in its current form, following an event of default thereunder, the availability of funds available to pay Current Expenses would not be interrupted, because Current Expenses would continue to have priority over the Authority’s debt service obligations on the Senior Indebtedness.

If the Holders of all Outstanding Senior Indebtedness consent to the Proposed Amendments in accordance with the requirements of the Trust Agreement and the Proposed Amendments become effective, to the extent available Revenues in any month, and in the discretion of the Authority, up to two additional months, do not exceed the Current Expenses of the Systems for such period, no revenues would be available to fund debt service payments on the Senior Indebtedness, including the 2020 Senior Bonds. In addition, upon the Proposed Amendments becoming effective, amounts on deposit in the Current Expense Fund would not be required to pay debt service on Bonds or Other System Indebtedness.

As described above, Title III of PROMESA establishes a judicial process for restructuring debt that is modeled after the process under Chapter 9 of the Bankruptcy Code. If PROMESA or a similar law is no longer in effect in Puerto Rico, the process for restructuring debt of the Authority would require the mutual agreement of the Authority and the Holders of Bonds and Other System Indebtedness. In those circumstances, the subordination of debt service to the prior payment of Current Expenses might increase the possibility of the Authority failing to comply with its obligation to pay debt service on Bonds and Other System Indebtedness because the Authority will continue to be permitted to pay Current Expenses without judicial or other interference or oversight while the restructuring of the Authority's Bonds and Other System Indebtedness is being negotiated. See additional discussion on PROMESA under "Certain Risks Related to the Authority's Eligibility under PROMESA" above.

The Authority cannot predict when or if the necessary consents to the Proposed Amendments will be obtained. Until all the required consents to the Proposed Amendments have been obtained, the Trust Agreement will remain in effect in its current form, and the Trust Agreement will continue to require, prior to an acceleration of the Bonds upon an event of default, payment of debt service on Bonds and Other System Indebtedness prior to payment of Current Expenses.

5. Certain Risks Related to the Potential Absence of a Secondary Market for the 2020 Senior Bonds

A purchase of the 2020 Senior Bonds is suitable only for investors that can bear the risks associated with the potential limited liquidity of, or lack of liquidity and secondary market for, the 2020 Senior Bonds, all or any of which can significantly impact the value of the 2020 Senior Bonds.

There can be no assurance that there will be a secondary market for the 2020 Senior Bonds, which market is dependent upon prevailing market conditions, the financial condition or market position of firms that may make a secondary market and the financial condition and results of operations of the Authority. As a result of concerns with the Commonwealth's and the Authority's current financial circumstances, Holders of the 2020 Senior Bonds may encounter limited market acceptance upon any attempt to sell the 2020 Senior Bonds, making sales potentially difficult and adversely affecting the market value of the 2020 Senior Bonds. Holders of the 2020 Senior Bonds may not be able to sell such 2020 Senior Bonds for any price for some time or any price offered may be severely depressed (potential purchasers may demand discounts to the par amount of such 2020 Senior Bonds in order for such potential purchaser to be willing to purchase the 2020 Senior Bonds). The absence of a secondary market for the 2020 Senior Bonds or a lack of liquidity in the secondary market could limit bondholders' ability to resell any 2020 Senior Bonds or adversely affect the market value of the 2020 Senior Bonds. No Underwriter or any other person is obligated

to maintain a market for the 2020 Senior Bonds, and any such market making may be discontinued at any time at the sole discretion of any such Underwriter or person.

While the 2020 Senior Bonds do not carry a credit rating, the existing outstanding Senior Bonds of the Authority are currently rated below investment grade. Any further downgrade or withdrawal of the rating on the currently rated Senior Bonds could impair the liquidity of the Senior Bonds, including the 2020 Senior Bonds, could prevent formation of a secondary market for the 2020 Senior Bonds and may lower the value of the 2020 Senior Bonds.

Moody's Investors Service, Inc. ("**Moody's**") and Fitch have, respectively, assigned ratings of Ca negative and CCC to the Authority's outstanding Senior Bonds. These credit ratings are associated with long-term debt securities that are deemed by such nationally recognized statistical rating organizations to be highly speculative and not investment grade. Moody's, for example, describes bonds that it rates "Ca" as bonds that are "speculative, of poor standing and are subject to very high credit risk." The secondary market for non-investment grade debt securities is smaller and less liquid than the market for investment grade debt securities and is often subject to more volatility than that for investment grade debt securities. Further, it is possible that there may not be sufficient demand for the Authority to issue any future bonds or notes. The cost to the Authority of borrowing is likely to be substantially higher than if it were able to issue more highly rated debt securities. Even though the 2020 Senior Bonds will not be rated by any nationally recognized statistical rating organization, such as those mentioned above, downgrades or withdrawal of the credit ratings assigned to the other outstanding Senior Bonds could impair the liquidity of the Senior Bonds, including the 2020 Senior Bonds, and could prevent formation of a secondary market for the 2020 Senior Bonds.

The 2020 Senior Bonds will be issued in minimum denominations of \$250,000, and any transfer of the 2020 Senior Bonds will be limited to Qualified Institutional Buyers. These and other terms of the 2020 Senior Bonds may reduce the liquidity of the 2020 Senior Bonds.

The Eighth Supplemental Agreement contains provisions limiting secondary market transfers of the 2020 Senior Bonds and beneficial ownership interests in the 2020 Senior Bonds only to Qualified Institutional Buyers and requiring that the Authorized Denominations of the 2020 Senior Bonds be \$250,000 of principal and any multiple of \$5,000 of principal in excess thereof. See TRANSFER RESTRICTIONS and *Appendix IV*. Such provisions were included in the 2020 Senior Bonds to limit investment in the 2020 Senior Bonds to investors that are able to evaluate and bear the high degree of risk associated with the 2020 Senior Bonds. These and other terms of the 2020 Senior Bonds may reduce the ability of investors to sell the 2020 Senior Bonds in the secondary market.

The absence of current audited financial statements of the Authority, uncertainty with respect to the Authority's timely issuance of audited financial statements going forward and the Authority's failure to timely meet its continuing disclosure undertakings may prevent the formation of a secondary market for the 2020 Senior Bonds.

The Authority has not published audited financial statements since the publication on September 30, 2019, of the Authority's audited financial statements for the Fiscal Year ended June 30, 2017. No assurance can be provided that the Authority will be able to publish audited financial statements on a regular annual schedule in the future. The Authority's audited financial statements for the Fiscal Year ended June 30, 2018, are expected to be published on or about December 31, 2020, subject to final review and sign off by the Authority's independent auditors.

No assurance can be given that the audited financial statements for Fiscal Year ended June 30, 2018, when published, will reflect financial results that are the same as the unaudited financial information for fiscal year 2018 set forth in this Limited Offering Memorandum. See “Audited Financial Statements” under “INTRODUCTORY STATEMENT.” The Authority has also not met timely its obligations under its continuing disclosure undertakings in connection with the public sale of its outstanding Bonds. Although the Authority is not required to file any continuing disclosure in connection with the 2020 Senior Bonds under an exemption provided in Rule 15c-12 under the Exchange Act, the availability of a secondary market for the 2020 Senior Bonds may be dependent on the timely and reliable ongoing disclosure of operating and financial information by the Authority, including publication of audited financial statements, and severely limited by the absence of such ongoing disclosure.

6. Certain Risks Related to the Political and Economic Circumstances of Puerto Rico

The economic circumstances confronting Puerto Rico may affect the Authority’s Operating Revenues and may prevent the Authority from being able to meet its obligations under the Trust Agreement, including, but not limited to, the obligation of the Authority to pay debt service on the Senior Indebtedness, including the 2020 Senior Bonds.

Puerto Rico has faced a number of fiscal and economic challenges in recent years due, among other factors, to continued Commonwealth budget deficits, a prolonged economic recession, high unemployment, population declines, low per capita income and high levels of debt and pension obligations. See AUTHORITY OVERSIGHT.

On September 6, 2017, and September 20, 2017, Hurricanes Irma and María, respectively, hit Puerto Rico, leaving in their path economic and infrastructure-related damages and upending the daily lives of Puerto Rico’s over 3 million residents, including the interruption of basic utility services, such as water, electricity and telecommunications.

On January 7, 2020, Puerto Rico was struck by a 6.4 magnitude earthquake causing damage to infrastructure, mainly in the southern portion of Puerto Rico, an island-wide power outage and associated water shortages. A preliminary assessment by the United States Geological Survey of the damages caused by the earthquake and subsequent aftershocks, estimated total economic damages of approximately \$838 million. In addition, Puerto Rico continues to experience aftershocks that are not expected to stop in the near future. According to a January 29, 2020, report by the United States Geological Survey, Puerto Rico is at risk of other, potentially catastrophic earthquakes in the near term. On May 2, 2020, a 5.4 magnitude earthquake struck Puerto Rico’s southern coast. This seismic event, which briefly knocked out power in some areas, was centered near the city of Ponce where hundreds of structures were further damaged or destroyed. See “September 2017 Hurricanes” and “2020 Seismic Activity” under THE AUTHORITY.

The decrease in population resulting from the factors described above and ongoing economic contraction have resulted in a corresponding decrease in billed water consumption. As indicated above, between fiscal year 2015 and fiscal year 2019 Puerto Rico’s population decreased by 8.1% based on the U.S. Census Bureau estimates. This decrease corresponded with a decline in water consumption of 13% and a decline in billings of 2.5%, despite rate increases implemented in each of fiscal years 2018, 2019, 2020 and 2021.

These factors have caused significant disruption to the Island’s economic activity and to the finances and operations of the Authority. The Authority’s ability to achieve its projections,

including increasing its rates or collecting additional revenues from its customers, will be negatively affected by prevailing economic conditions and population and water consumption trends, as well as government measures to mitigate the impact of economic decline on the population. Furthermore, the Authority's diminished customer base may not have the financial resources to pay higher rates. Economic conditions and population trends, as included in the Fiscal Plan, are expected to continue trending negatively, possibly adversely affecting water consumption and, consequently, Operating Revenues. In addition, these economic circumstances and possible increases in materials and contractor costs may prevent the Authority from being able to implement long-term capital planning and other management practices necessary to prevent further physical deterioration of the Systems. The Authority's current administrative, operational and maintenance practices may not be sufficient to offset these negative effects on the Authority's financial and operating requirements for the Systems. Given the current economic circumstances in Puerto Rico, the Authority may not be able to meet its obligations under the Trust Agreement, including, but not limited to, its obligation to pay debt service on the 2020 Senior Bonds.

If the Commonwealth's economic condition does not improve, the Commonwealth may implement additional emergency measures that could prevent the Authority from meeting its obligations under the Trust Agreement, including, but not limited to, the obligation of the Authority to pay debt service on the Senior Indebtedness, including the 2020 Senior Bonds.

If the Commonwealth's economic condition does not improve, the Commonwealth may determine that additional emergency measures are necessary to mitigate the impact of the current economic conditions on its residents and protect their health, safety and welfare. Although the Authority is not aware of any plans or proposals under consideration by the Government of Puerto Rico that include new emergency measures, other than Act 39-2020 (see "Billings and Collections" under RATES, BILLINGS AND COLLECTIONS), no assurance can be provided that Puerto Rico's public policy will continue to allow the Authority to meet its obligations under the Trust Agreement. Under certain circumstances, the Puerto Rico legislative Assembly, through the enactment of new laws, or the Governor of Puerto Rico, through existing emergency powers, may take measures to protect the public health, safety and welfare of its residents, or to respond to a national or regional catastrophe or as a valid exercise of Puerto Rico's police power, any one of which could result in the Authority being unable to, or prevented from, collecting Operating Revenues sufficient or timely to meet all obligations under the Trust Agreement, including payment of debt service on the 2020 Senior Bonds.

The applicability of the U.S. Constitution and federal statutes, as well as Puerto Rico's relationship with the Oversight Board, may prevent the Authority from meeting its obligations under the Trust Agreement, including, but not limited to, the ability of the Authority to pay debt service on the Senior Indebtedness, including the 2020 Senior Bonds.

The Constitution and laws of Puerto Rico are effective only to the extent they are not superseded by federal laws, including the U.S. Constitution, existing statutes (such as PROMESA, including any potential amendments thereto) and future federal legislation, or by actions duly taken pursuant to any such federal laws. The federal government and the government of Puerto Rico are bound by the U.S. Constitution, including the "Takings Clause" of the Fifth Amendment, but the application of the Fifth Amendment may differ in territories, such as Puerto Rico, from its application in the 50 constituent States, and the extent of such differences is uncertain. Further, the "Contract Clause" of the U.S. Constitution does not bind the U.S. Congress. Therefore, although PROMESA and the Constitution of Puerto Rico provide protection against enactment of

legislation by the government of Puerto Rico after issuance of the 2020 Senior Bonds that would have the effect of substantially impairing the Authority's obligations under the Trust Agreement, no assurance can be given that future federal legislative or regulatory actions that impair the ability of the Authority to meet its obligations under the Trust Agreement will not occur.

The Oversight Board's primary function is to provide fiscal oversight through the development and approval of fiscal plans and budgets, and to enforce compliance with those plans and budgets through broad-based powers such as reducing non-debt expenditures and instituting certain hiring freezes. PROMESA also allows the Oversight Board to review new laws and seek court intervention to deny their enforcement if they are "significantly inconsistent" with the approved fiscal plans and budgets. The Authority is subject to the requirements of PROMESA, which includes a requirement that the Authority present a fiscal plan to the Oversight Board and such budgets and monthly or quarterly reports as are determined to be necessary by the Oversight Board. The Authority is also required to obtain the approval of the Oversight Board prior to entering any new financing or debt restructuring process. As a result of the fiscal difficulties faced by Puerto Rico, on May 3, 2017, the Oversight Board, at the request of the Governor, commenced a Title III case for the Commonwealth by filing a petition for relief under Title III of PROMESA in the U.S. District Court for the District of Puerto Rico. See AUTHORITY OVERSIGHT.

The Authority is subject to fiscal oversight by the Oversight Board and the government of Puerto Rico. The ability of the Authority to implement the initiatives that the Authority believes to be necessary to meet its obligations under the Trust Agreement, maintain the Systems and continue to provide service to customers will require continued cooperation among the Authority, the Oversight Board and the Puerto Rico government. The Authority cannot provide any assurance that such cooperation will continue. Furthermore, the Oversight Board has certain powers under Sections 204 and 108 of PROMESA to ensure that the Authority's actions comply with the Fiscal Plan, including seeking injunctive relief to prevent non-compliant actions under certain circumstances. As noted below, the Fiscal Plan contains objectives with respect to certain cost containment measures identified by the Oversight Board that the Authority and the Puerto Rico government disagree with and that the Authority does not expect to pursue. If the Authority, the Oversight Board and the Puerto Rico government do not work cooperatively, the Authority may not be able to implement in full the Fiscal Plan or other measures necessary to improve its fiscal condition and could impair the Authority's ability to meet debt service on the Senior Indebtedness. If the Authority does not implement the Fiscal Plan in full or make other changes necessary to improve the Authority's fiscal condition, it may not meet its obligations under the Trust Agreement, including, but not limited to, its obligation to pay debt service on Senior Indebtedness, including the 2020 Senior Bonds.

The Fiscal Plan sets forth certain measures to help eliminate the Authority's projected budget deficits. The Authority does not currently support or agree with certain of these measures. If the Authority does not meet the objectives or successfully implement the measures set forth in the Fiscal Plan or other measures necessary to improve the Authority's fiscal condition, the Authority may not meet its obligations under the Trust Agreement, including, but not limited to, its obligation to pay debt service on Senior Indebtedness, including the 2020 Senior Bonds.

The Authority has publicly stated that it disagrees with aspects of the Fiscal Plan. The Authority submitted its draft fiscal plan to the Oversight Board on May 4, 2020. On May 28, 2020, the Oversight Board issued a Notice of Violation identifying several areas in which the Authority

has underperformed and initiatives the Authority should undertake. On June 15, 2020, the Authority submitted a revised version of its proposed fiscal plan to the Oversight Board. The Oversight Board did not agree with the Authority's revised proposed fiscal plan and instead certified its own plan. The Fiscal Plan, as set forth in *Appendix III*, was not available to the Authority until it was made public on June 29, 2020. The Authority has identified several differences between its draft fiscal plan and the Fiscal Plan and does not currently expect to comply with certain aspects of the Fiscal Plan. For more details on the disagreements between the Authority and the Oversight Board with respect to the Fiscal Plan, see "Authority Disagreements with Oversight Board Regarding Fiscal Plan" under THE AUTHORITY'S FISCAL PLAN. If the Authority does not pursue all the objectives in the Fiscal Plan and does not identify or achieve alternative measures to replace the savings that the Fiscal Plan projects would be achieved by such objectives, the Authority may not meet its obligations under the Trust Agreement, including, but not limited to, its obligation to pay debt service on Senior Indebtedness, including the 2020 Senior Bonds.

Changes in Commonwealth and United States federal laws could have a material adverse effect on the Authority and the Senior Indebtedness.

There are a variety of Commonwealth and federal laws, regulations and constitutional provisions that apply to the Authority. There is no assurance that there will not be any change in, interpretation of, or addition to such applicable laws, regulations and provisions. Any such change, interpretation or addition could have a material adverse effect on the Authority or the Authority's revenues and on holders of the Senior Indebtedness, including the 2020 Senior Bonds. See TAX MATTERS for additional tax-related risks.

7. Certain Risks Related to the Systems and Authority Operations

The Fiscal Plan identifies several long-standing operational deficiencies faced by the Authority. The Authority is implementing or expects to implement programs to attempt to address these deficiencies, in accordance with the Fiscal Plan, but certain of these programs have been delayed or remain in a planning phase. If the Authority is not successful in addressing these operational deficiencies it may not meet its obligations under the Trust Agreement, including, but not limited to, its obligation to pay debt service on Senior Indebtedness, including the 2020 Senior Bonds.

Despite efforts to improve operations so that the Authority's Operating Revenues can exceed the Authority's obligations, many of the Authority's historical challenges persist. These challenges, as highlighted in the Fiscal Plan, include:

- Non-revenue water: Non-revenue water ("**NRW**") is the difference between water produced and water billed by the Authority to its clients or alternatively, the portion of the water produced by the Authority that does not generate revenues. The Fiscal Plan reported, using Authority estimates from fiscal year 2015, that 55% of the water produced by the Authority was NRW as a result of, among other things, water leaks, overflows, theft, and faulty metering. As discussed below and in the Consulting Engineer's Report in *Appendix I*, the Authority estimates that its fiscal year 2019 total water production was approximately 542 million gallons per day ("**MGD**") and NRW was approximately 349 MGD. Of the total volume of NRW, unbilled, authorized consumption was about 7 MGD, while water losses, which

totaled an estimated 342 MGD, consisted of approximately 39.4 MGD in apparent (commercial) losses and 302.7 MGD in real (physical) losses.¹ These estimates may be subject to material adjustments as a result of the low level of water production actually measured and the declining accuracy of the Authority's water consumption meters. This high level of NRW presents a significant challenge to the Authority's financial sustainability and water availability, increasing rates and making Puerto Rico's residents and businesses particularly vulnerable to droughts. Although the Authority projects that water audits and estimated NRW will be refined as metering efforts (both at the production and customer service points) get underway, the Authority has not made significant progress on implementing a program for reducing NRW despite committing to doing so in past fiscal plans and other publicly available documents.

- Accurate metering and effective customer service: The Authority continues to depend on old mechanical meters that have an estimated error margin of up to 15%. Inaccurate meters, combined with the fact that the Authority does not measure its full water production, precludes the Authority from determining completely the financial and operational impact of NRW and understanding customer consumption patterns.
- Systems reliability and resiliency: The Authority continues to underspend on its maintenance program. The Fiscal Plan states that as of April 2020, its spending on maintenance was 20% less than what was budgeted year-to-date. Moreover, a majority of its maintenance program is focused on corrective maintenance instead of preventative maintenance, increasing costs and suggesting the Authority is reacting to events after the fact as opposed to preemptively addressing them.
- Water Quality: Although Puerto Rico's water is deemed to be safe to drink, chlorine-based disinfection byproduct parameters were exceeded in the past. Regarding wastewater, EPA water quality reports from the past five years indicate troubling trends regarding parameters, such as phosphorus and nitrogen. The Authority continues to operate under the 2015 EPA Consent Decree and the 2006 Drinking Water Settlement Agreement and related regulatory agreements pursuant to which agreements the Authority has committed to complete certain improvement projects to address the main reasons that cause these violations. See "Regulatory Compliance" under ENVIRONMENTAL MATTERS.
- Capital Improvements: Delivering its CIP projects has been a consistent challenge for the Authority. As described below, absence of sufficient funding for past CIPs has resulted in physical deterioration of certain critical assets of the Systems. In fiscal year 2019, the Authority spent approximately 40% of its CIP budget (\$54 million out of \$140 million). While the lockdown measures undertaken by the

¹ As indicated in the Consulting Engineer's Report, the American Water Works Association ("AWWA") recommends against using NRW as a percentage of water production as a performance indicator of NRW efforts, because this method may show confusing and misleading results. Instead, AWWA recommends using other performance indicators for measuring NRW such as the volume of commercial and physical losses per connections per day and infrastructure leakage index.

Commonwealth in response to the COVID-19 pandemic required the Authority to temporarily suspend capital projects starting in March 2020, the Authority spent approximately \$70 million or 59% of the projected \$119 million in its CIP during fiscal year 2020.

- Rates: In the past the Authority has failed to increase rates to fully cover its obligations, consistent with standard utility practices. Recently, however, the Authority has approved a moderate rate adjustment schedule for five years from fiscal year 2018 through fiscal year 2022. The first four scheduled rate adjustments have been implemented as planned, on January 1, 2018, July 1, 2018, July 1, 2019, and July 1, 2020, respectively. The next rate adjustment is scheduled to become effective on July 1, 2021. The current rate adjustment schedule is an attempt at implementing more frequent, moderate rate increases, although these may still be insufficient to pay annual operating expenses, debt service obligations, and capital requirements, while also nearing maximum levels of affordability for low-income customers.

If the Authority does not address these historical challenges, it may not be able to generate sufficient revenues to cover all its obligations and eliminate its structural deficit. Certain of the programs to address these challenges that are described in the Fiscal Plan are currently delayed. For example, the implementation of a public private partnership solution to improve the ability of the Authority to measure water consumption and improve customer service has not been awarded, and no assurance can be provided that this program will be implemented as contemplated or, that if implemented, will achieve the expected results. In addition, the Fiscal Plan was developed based on information that may have been dated at the time it was published, which information in some cases may have understated the scope of the operational challenges faced by the Authority. The Authority does not consider NRW estimates to be accurate because a portion of the Authority's statistics with respect to NRW is not based on precise metered calculations. If the Authority does not eliminate its operational deficiencies, it may not eliminate its structural deficit and meet its obligations under the Trust Agreement, including, but not limited to, its obligation to pay debt service on Senior Indebtedness, including the 2020 Senior Bonds.

The Authority may not meet its obligations under the 2015 EPA Consent Decree or the 2006 Drinking Water Settlement Agreement (each as defined herein). Failure of the Authority to comply with the terms of these regulatory agreements may subject the Authority to additional monetary penalties and other expenses, that may prevent the Authority from meeting its obligations under the Trust Agreement, including, but not limited to, its obligation to pay debt service on Senior Indebtedness, including the 2020 Senior Bonds.

The environmental aspects of the Authority's operations are regulated primarily by (a) EPA, (b) the Puerto Rico Department of Health ("**DOH**") and (c) DNER under federal and Puerto Rico statutes and associated rules and regulations. The CIP, including the items required by the 2015 EPA Consent Decree, is estimated to total approximately \$1.7 billion for fiscal years 2020 through 2025, of which approximately \$230 million are for projects required by the 2015 EPA Consent Decree and the 2006 Drinking Water Settlement Agreement. Additional capital expenditures may be required for this six-year period and will be required beyond it in order to comply with regulatory requirements and the settlement agreement and consent decree as described herein and in the Consulting Engineer's Report. See Section 6.5 of the Consulting Engineer's Report in *Appendix I*. The Authority currently estimates that the total cost in mandatory

compliance projects required by the 2015 EPA Consent Decree and the 2006 Drinking Settlement Agreement will amount to over \$412 million for fiscal years 2021-2033. The actual cost of compliance and the Authority's projected capital expenditures may vary substantially depending on, among other things, (i) the availability of an adequate pool of qualified contractors to carry out needed projects, (ii) the inflationary environment with respect to the costs of labor and supplies needed to implement the compliance program, (iii) weather conditions that could adversely affect construction schedules and consumption patterns, (iv) population trends and political and economic developments in Puerto Rico that could adversely affect the collection of Operating Revenues, (v) the willingness of the EPA, the DNER and DOH to cooperate with respect to various issues that may arise as the Authority implements required capital improvements and remedial plans required by these agencies, (vi) the possibility of new environmental legislation or regulations affecting the Systems, (vii) unanticipated costs or potential modifications to projects resulting from requirements and limitations imposed by environmental laws and regulations and (viii) the inherent uncertainty involved in capital improvement projects of the magnitude to be undertaken by the Authority. See "Consulting Engineer's Conclusions on the Condition of the Systems" under THE WATER AND WASTEWATER SYSTEMS. Following the Governor's Executive Order on the COVID-19 pandemic in March, 2020, construction projects and procurement processes at the time of the lockdown were delayed by at least two months. No construction projects have had to be suspended due to COVID-19 outbreaks in the contractor workforce. However, there are shortages of construction materials, delays in manufacturing of equipment and delays related to shipping constraints that may further delay the CIP implementation.

There can be no assurance that the actual cost of compliance will not be significantly higher than the Authority's or the Oversight Board's current estimate, nor can any assurance be given that the Authority will comply fully with the terms of the 2015 EPA Consent Decree or the 2006 Drinking Settlement Agreement and avoid the imposition of additional monetary or other penalties. In addition, to comply with these agreements and to implement the CIP, the Authority may need to incur additional indebtedness beyond the amounts currently projected if anticipated federal grants or loans prove insufficient to pay for the capital expenditures necessary to achieve such compliance. The burden of such additional debt and other obligations, while issued in compliance with the requirements of the Trust Agreement, may require increases in the Authority's rates or the implementation of further revenue raising or expense reduction measures to enable the Authority to comply with its Rate Covenant in the Trust Agreement. No assurance can be given that the Authority will be able to finance, through the issuance of Senior Indebtedness or otherwise, the estimated net cost of the CIP or of any additional capital improvement requirements that may be imposed on the Authority beyond the amounts provided by the federal government, or that rate increases will be implemented on a timely basis to support any such additional obligations or existing obligations, or even if so implemented, that such rate increases will support the additional or existing Authority obligations under the Trust Agreement.

There can be no assurance that EPA, DOH or DNER will not adopt stricter environmental standards, or bring additional enforcement actions under existing or future statutes, which could require additional unexpected and unbudgeted capital or operating expenditures. While the Authority would seek to obtain federal grants or loans or increase its rates and charges to support such additional costs, there can be no assurance that such increases could be implemented successfully and, even if successfully implemented, would generate the Operating Revenues needed. If the Authority is deemed not to be in compliance with the regulatory requirements

imposed by its regulators, it may be subject to a variety of sanctions that could prevent the Authority from meeting its obligation under the Trust Agreement, including, but not limited to, its obligation to pay debt service on Senior Indebtedness, including the 2020 Senior Bonds.

The Authority may be required to expand its CIP to fully address the requirements under the 2015 EPA Consent Decree, the 2006 Drinking Water Settlement Agreement or new environmental laws or regulations while the 2020 Senior Bonds are outstanding. Failure of the Authority to meet these requirements may prevent the Authority from meeting its obligations under the Trust Agreement, including the obligation of the Authority to pay debt service on Senior Indebtedness, including the 2020 Senior Bonds.

The Authority is bound by the terms of the 2015 EPA Consent Decree and the 2006 Drinking Water Settlement Agreement that collectively require the Authority to implement capital improvements and remedial plans to eliminate treatment plants' regulatory noncompliance and unpermitted discharges of untreated sewage, and sanitary sewer system overflows and to improve the quality of potable water and sludge treatment and disposal by the Water and Wastewater Systems. The 2015 EPA Consent Decree authorizes the use of a prioritization system to determine project scheduling by establishing relative priority of all projects required under that decree, taking into consideration the Authority's limited financial resources, except for certain mandatory, base list projects, which system helps ease the financial strain on the Authority to comply with these requirements. The 2006 Drinking Water Settlement Agreement does not provide for a prioritization system. Although the Authority has negotiated and will continue to negotiate with the DOH regarding the incorporation of the prioritization system in the 2006 Drinking Water Act Settlement Agreement, no assurance can be given that the Authority's actual cost of complying with requirements under this settlement agreement in conjunction with the requirements of the 2015 EPA Consent Decree will not exceed the expense levels included in the CIP. Also, should the 2015 EPA Consent Decree be terminated, due to Authority's default or otherwise, or upon its stated expiration, there is no assurance that any future regulatory environmental compliance agreements will take into consideration available funding and prioritize projects, as is currently done. To date, the Authority has invested over \$1.6 billion in mandatory capital projects and planning to maintain compliance with the 2015 EPA Consent Decree and the 2006 Drinking Water Settlement Agreement. The Authority is presently unable to determine the total cost and economic impact on the Authority of the current capital improvements and remedial plans to be required to bring the Wastewater and Water Systems into regulatory compliance, but the total cost may be significant. In addition, the Authority may be subject to additional requirements under new environmental laws and regulations that may be passed or promulgated in the future. These future regulatory requirements may provide for a limited period of time to achieve compliance with, or provide a plan to comply with, such regulatory requirements or may require additional capital improvements. It is not possible for the Authority to determine at this point the magnitude of such expenditures, but it is possible that the Authority may not be in a position to fund such additional expenditures in the absence of sufficient federal funding. See "Consulting Engineer's Conclusions on the Condition of the Systems" under THE WATER AND WASTEWATER SYSTEMS.

In addition to the aforementioned possibility of additional environmental legislation or regulation, the Authority is also subject to any other legislation or regulatory action passed or promulgated from time to time with respect to its operations. Although, as discussed above, PROMESA and the Constitution of Puerto Rico provide protection against enactment of legislation by the Puerto Rico Legislative Assembly following the issuance of the 2020 Senior Bonds that

would have the effect of substantially impairing the Authority's obligations under the Trust Agreement, including the obligation to pay debt service on the 2020 Senior Bonds, among other Indebtedness, no assurance can be given that future Puerto Rico legislative or regulatory actions will not occur, which actions may adversely affect the ability of the Authority to establish the rates and charges necessary to generate sufficient Authority Revenues to meet its obligations under the Trust Agreement, including, but not limited to, payment of debt service on the 2020 Senior Bonds. In addition, as discussed above, the U.S. Congress is not subject to the same Constitutional limitations as the Puerto Rico Legislative Assembly.

Over the last six years, the Authority has been unable to fund capital expenditures in an amount necessary to prevent significant physical deterioration of many of the Systems' most critical capital assets. The Authority does not currently expect to be able to increase its capital expenditures to a level sufficient to prevent further deterioration of the Systems. Further deterioration of the Systems may prevent the Authority from meeting its obligations under the Trust Agreement, including the obligation of the Authority to pay debt service on Senior Indebtedness, including the 2020 Senior Bonds.

The Authority's capital program, through which the Authority maintains the Systems, has been underfunded for at least the last six years as a result of the Authority's inability during this period to obtain financing through the capital markets. Since fiscal year 2016, the Authority has funded its CIP mostly on an on-going basis with Authority Operating Revenues, which resulted in CIP funding from fiscal year 2016 through fiscal year 2020 at levels significantly lower than in prior five-year capital improvement programs. The Authority's limited ability to fund capital projects resulted in the cancelation or delay of many projects critical to maintain the physical condition of the Systems. See "Consulting Engineer's Conclusions on the Condition of the Systems" under THE WATER AND WASTEWATER SYSTEMS. As set forth in table 2.4 in the Fiscal Plan, the Authority expects to increase its average annual capital spending between fiscal years 2021 and 2025 to approximately \$320 million per year, which is closer to the average annual capital spending by the Authority in prior five-year capital improvement programs and to fund at least a portion of it with additional federal assistance in the form of additional Senior Indebtedness or assistance under FEMA programs. See Chapter 2 of the Fiscal Plan in *Appendix III*. This projected level of capital spending may not be possible, however, if the Authority does not realize the level of Authority Operating Revenues and federal funding projected in the Fiscal Plan. No assurance can be provided that the Authority will fund its CIP in any year at a level sufficient to maintain the operating effectiveness of the Systems. In addition, even if the projected capital spending set forth in the Fiscal Plan is realized by the Authority through fiscal year 2025, no assurance can be provided that such capital expenditures will be sufficient to prevent further deterioration of the operating effectiveness of the Systems. Any further deterioration may prevent the Authority from being able to deliver services to customers, which, in turn, would prevent the Authority from being able to meet its obligations under the Trust Agreement, including the obligation of the Authority to pay debt service on Senior Indebtedness, including the 2020 Senior Bonds.

The impact of COVID-19 on the Authority's operations and finances may impair the Authority's ability to meet its obligations under the Trust Agreement, including, but not limited to, its obligation to pay debt service on Senior Indebtedness, including the 2020 Senior Bonds. It is uncertain as to the duration of the impact of COVID-19 and if additional pandemics and health-related issues will not continue to impair the Authority's operations and finances.

In addition to reduced Operating Revenues and increased operating expenses, the COVID-19 pandemic has caused delays in the implementation of the CIP. On March 15, 2020, the Governor issued Executive Order 2020-023, which implemented social distancing measures such as the closure of all businesses in Puerto Rico, a curfew for all residents, and penalties to enforce compliance. The Governor has issued several extensions of Executive Order 2020-023 with various modifications to Puerto Rico's social distancing measures. On April 9, 2020, the Government approved Act 39-2020, which prevented the Authority from disconnecting customers' water services due to non-payment. This prohibition will extend for as long as the public emergency with respect to COVID-19 continues in Puerto Rico, as determined by the Government of Puerto Rico through executive order, plus two additional billing cycles. The Authority cannot predict when such emergency will end or what long-term impact the pandemic will have on the Authority's billings and collections or on demand for the Authority services. If the COVID-19 pandemic continues, the economic impact on the Authority's finances and operations may prevent the Authority from being able to execute its CIP as planned and pay debt service on the Senior Indebtedness, including the 2020 Senior Bonds. See "COVID-19" under THE AUTHORITY. Also, if the pandemic continues or worsens, Authority employees may resist working outside their homes. Although the Authority has taken measures, such as acquiring laptop computers to increase the number of employees that can work remotely, key personnel, such as plant operators cannot perform their work remotely. Any unavailability of employees in these key positions may have a negative impact on the Authority's operations.

If the Authority cannot effectively manage, administer and operate the Systems, and retain professional expertise, the Authority may be unable to meet its obligations under the Trust Agreement, including, but not limited to, its obligation to pay debt service on Senior Indebtedness, including the 2020 Senior Bonds.

As set forth in the Consulting Engineer's Report and described in the Fiscal Plan, Authority management has undertaken certain operational initiatives, including better administration and supervision of operating expenses in the area of payroll costs, as well as revenue enhancing or expense control measures that, in the opinion of the Consulting Engineer, should result in improving the performance of the Authority's Systems and its fiscal condition. There can be no assurance, however, that the Authority will continue to successfully implement revenue enhancing measures or that the Authority's projections of Current Expenses will not be substantially exceeded. Also, there can be no assurance given as to how long senior management personnel will remain in their current positions nor whether the current policies and programs being implemented by this management team in response to various regulatory and other imperatives will continue should management positions change. Any such changes may have an adverse effect on the ability of the Authority to provide water and wastewater services to its customers or on the Operating Revenues of the Authority.

The Authority may not continue to have the engineering expertise to adequately maintain the Systems or to provide service to its customers on a basis that complies with environmental and public health standards. The Authority may also not continue to have the ability to accurately monitor or control its financial and material resources or maintain its capital assets or the financial and administrative expertise to maintain its accounts and records in accordance with accounting principles generally accepted in the United States.

The Authority has in place tools to prevent and detect cyberattacks but there remain risks related to its software, and its communications and data management systems, which include, but

are not limited to, cybercrimes, obsolescence, and licensing, that could impair the ability of the Authority management to control or monitor the Systems, as well as charge and collect charges from customers.

In addition, the Authority may not continue to have the management or administrative capacity to undertake or successfully execute the capital projects necessary to modernize or replace assets of the Systems that are beyond their estimated useful life. Failure of the Authority to complete such projects may impair the ability of the Systems to function.

The Authority's ability to operate the Systems is also dependent on the Authority's unionized workforce. If the Authority does not maintain a productive relationship with its unionized workforce the Authority may be unable to maintain and operate the Systems and meet its obligations under the Trust Agreement, including, but not limited to, its obligation to pay debt service on Senior Indebtedness, including the 2020 Senior Bonds.

The Authority is subject to a variety of risks related to its relationship with its unionized work force. While the Authority considers its relations with its main labor unions to be satisfactory at this time, current Puerto Rico law has suspended the enforceability of clauses with economic impact on all collective bargaining agreements in Puerto Rico. See "Employees and Labor Relations" under THE AUTHORITY. In addition, implementation of the Fiscal Plan may complicate or erode the strength of such relationships. In the past, the Authority experienced episodes of labor unrest that included work stoppages and protests, as opposition grew in the labor force in connection with the measures that the Puerto Rico government implemented to mitigate and begin addressing the fiscal condition of the Commonwealth and its pension systems. The ability of the Authority and its labor unions to continue the current spirit of cooperation and consultation will facilitate the Authority's meeting its financial and operating objectives and projections. Should these relations deteriorate, however, and recurrent work stoppages occur, this may have an adverse effect on the ability of the Authority to provide water and wastewater services to its customers or on the Operating Revenues of the Authority. Any deterioration in the fiscal or economic condition of Puerto Rico could increase the threat of labor unrest, work stoppages, strikes, and sabotage, among others, and prevent the Authority from being able to maintain or operate the Systems. If the Authority does not properly maintain or operate the Systems, the Authority may not be able to deliver services to customers, which, in turn, would prevent the Authority from being able to meet its obligations under the Trust Agreement, including the obligation of the Authority to pay debt service on Senior Indebtedness, including the 2020 Senior Bonds.

The Authority provides a vital public service to a customer base made up predominantly of households, many of which have limited ability to pay for services, and political subdivisions and other governmental entities of the Commonwealth. The Authority's ability to collect the rates it charges to these customers, or to disconnect these customers from services, is limited by the public policy of the Commonwealth, which may operate to prevent the Authority from meeting its obligations under the Trust Agreement, including, but not limited to, its obligation to pay debt service on Senior Indebtedness, including the 2020 Senior Bonds.

Approximately 95% of the Authority's accounts are residential households, but households account for only 59% of the Authority's revenues. Given the prevailing economic circumstances in Puerto Rico, many of these households have limited ability to pay for the services provided by the Authority. In 2019, according to the U.S. Census Bureau, approximately 43.5% of the

population of Puerto Rico lived below the poverty level. The median household income in Puerto Rico in 2018 was \$20,296, according to the U.S. Census Bureau, while the median household income for the United States in 2018 was \$63,179. The services provided by the Authority are essential for the public health and long-term economic capacity of Puerto Rico. Public policy of the Puerto Rico government in the past has limited the ability of the Authority to charge and collect the full cost of its services from those customers that are unable to pay the full cost of the Authority's services, and such policies may continue to be implemented. Any reform to the Authority's methods and procedures related to billing, collections, and service disconnection requires taking such policy and legal limitations into consideration, and in those circumstances the Authority's ability to implement practices and procedures that are contrary to such public policy laws will prevent the Authority from charging and collecting all its costs from these customers. This may result in the Authority being limited in its ability to meet its obligations under the Trust Agreement, including, its obligation to pay debt service on Senior Indebtedness, including the 2020 Senior Bonds.

Approximately 20% of the Authority's Operating Revenues is collected from political subdivisions or other government entities in Puerto Rico, including municipalities and federal agencies. Under current Puerto Rico law, the ability of the Authority to collect from such governmental customers is limited by Act 39-2020 and may be further limited by future legislation. If the Authority does not fully collect Operating Revenues for the services it provides to these customers the Authority may not be able to meet its obligations under the Trust Agreement, including, but not limited to, its obligation to pay debt service on Senior Indebtedness, including the 2020 Senior Bonds.

Certain of the Authority's most critical operations are dependent upon a small number of third-party contractors. If these contractors are unable or unwilling to perform the services they have historically performed for the Authority, the Authority may not be able to meet its obligations under the Trust Agreement, including, but not limited to, its obligation to pay debt service on Senior Indebtedness, including the 2020 Senior Bonds.

Certain of the Authority's contractors provide vital services to the operation of the Systems. In the event that these contractors should for any reason be unable or unwilling to provide such services to the Authority, no assurance can be provided that the Authority will find alternative providers of such services. Failure to identify and contract alternative providers of such services may prevent the Authority from being able to properly maintain or operate the Systems. If the Authority does not maintain or operate the Systems adequately, the Authority may not be to meet its obligations under the Trust Agreement, including, but not limited to, its obligation to pay debt service on Senior Indebtedness, including the 2020 Senior Bonds.

AUTHORITY OVERSIGHT

Federal

The Commonwealth's Fiscal Decline. Over the last several decades, several factors have contributed to the steep fiscal downturn of the Commonwealth and its instrumentalities, including a contracting economy, population decline, and changes in the tax status and available credits under the Internal Revenue Code of 1986, as amended (the "**Code**"). Despite various measures undertaken in recent years to stimulate economic growth, reduce government expenses, and increase revenues, the Commonwealth has been unable to reverse this decline, which has resulted

in years of economic recession, recurring budget deficits for the Commonwealth and its instrumentalities (including the Authority), the financing of recurrent expenses with long-term debt and the failure to adequately fund legacy obligations such as pensions. These fiscal problems were made worse by the devastation caused by recent natural disasters.

The Commonwealth's balance sheet deterioration, combined with continued structural imbalances between revenues and expenditures and the Commonwealth's inability to access the capital markets after 2014, resulted in the Commonwealth and certain of its instrumentalities becoming unable to make scheduled debt payments while continuing to provide government services.

Enactment of PROMESA. Due to the Commonwealth's fiscal decline and related challenges, on June 30, 2016, the U.S. Congress enacted PROMESA to address the fiscal and humanitarian crisis in Puerto Rico. PROMESA created the Oversight Board as an independent entity within the territorial government of the Commonwealth that is not considered to be a department, agency, establishment, or instrumentality of the federal government. The Oversight Board is statutorily charged with restoring to the Commonwealth fiscal responsibility and capital market access. The Authority has been designated by the Oversight Board as a covered territorial instrumentality.

Main Components of PROMESA

The following summary is qualified in its entirety by the terms of PROMESA codified at 48 U.S.C.A. §§ 2101–2241. In general, PROMESA seeks to provide Puerto Rico with fiscal and economic discipline through, among other things: (i) the establishment of the Oversight Board, whose responsibilities include the certification of fiscal plans and budgets for the Government of Puerto Rico and its instrumentalities and (ii) two alternative methods to adjust its debt: (a) a voluntary, out-of-court financial debt modification process under Title VI of PROMESA, through which modifications to such debt can be accepted by a supermajority of creditors; and (b) an in court, quasi-bankruptcy proceeding under Title III of PROMESA, which is substantially based upon incorporated provisions of Title 11 of the United States Code (the "*Bankruptcy Code*"). Each of these elements is divided among PROMESA's seven titles, as briefly discussed below.

Title I – Establishment of Oversight Board and Administrative Matters. PROMESA established the Oversight Board for Puerto Rico. As stated in PROMESA, "the purpose of the Oversight Board is to provide a method for a covered territory to achieve fiscal responsibility and access to the capital markets." On August 31, 2016, the President of the United States announced the appointment of the initial Oversight Board members. Each member is required to have "knowledge and expertise in finance, municipal bond markets, management, law, or the organization or operation of business or government." The Oversight Board is expressly not an entity of the federal government, but it was also established to act independently from the Government of Puerto Rico, such that neither the Governor nor the Legislature may: "(1) exercise any control, supervision, oversight, or review over the Oversight Board or its activities; or (2) enact, implement, or enforce any statute, resolution, policy, or rule that would impair or defeat the purpose of PROMESA, as determined by the Oversight Board."

Title II – Fiscal Plan and Budget Certification Process and Compliance. PROMESA governs the development, certification and enforcement of fiscal plans and budgets for the Commonwealth and its covered territorial instrumentalities, including the Authority. Title II sets forth the requirements for proposing and certifying fiscal plans and budgets. Fiscal plans are intended to be short-term and long-term planning tools, covering a period of at least five fiscal years, while budgets cover at least one fiscal year. Each fiscal plan “serves as the cornerstone for structural reforms the Oversight Board deems necessary to ensure the territory, or instrumentality, will be on a path towards fiscal responsibility and access to capital markets.” Budgets must be consistent with the fiscal plan then in effect.

Under PROMESA, after the Oversight Board has certified a fiscal plan, the Governor may submit a fiscal year budget to the Oversight Board for confirmation that the budget complies with the certified fiscal plan. Once approved by the Oversight Board, the Governor may submit the budget to the Legislature. Upon receiving the budget, the Legislature will retain its constitutional right to modify the budget, so long as the budget continues to be consistent with the certified fiscal plan. PROMESA grants the Oversight Board the power to develop, modify, and certify its own fiscal plans and budgets if the government of the Commonwealth or management of a covered territorial instrumentality does not submit a proposed fiscal plan or budget that the Oversight Board determines, in its sole discretion, complies with PROMESA’s requirements.

In furtherance of the foregoing duties, PROMESA provides the Oversight Board with powers to monitor compliance with certified fiscal plans and budgets and undertake certain actions to promote budgetary compliance.

Title III – In-Court Restructuring Process. Title III of PROMESA establishes an in-court process for restructuring the debts of Puerto Rico and other United States territories that is modeled after the process under Chapter 9 of the Bankruptcy Code. The Oversight Board has sole authority, upon the request of the Governor, to file a voluntary petition seeking protection under Title III of PROMESA, subject to the prerequisites therein. In a Title III case, the Oversight Board acts as the debtor’s representative and prosecutes the Title III case. Immediately upon filing the Title III petition, all litigation against the debtor is automatically stayed. A Title III case culminates in the confirmation by the federal court overseeing the Title III case (the “*District Court*”) of a plan of adjustment of the debts of the debtor. The Oversight Board has the exclusive authority to file and modify a plan of adjustment prior to court confirmation. To the date of this Limited Offering Memorandum, one Title III plan of adjustment, for Puerto Rico Sales Tax Financing Corporation, has been confirmed by the District Court.

Title IV – Government Reporting and Other Miscellaneous Provisions. Title IV of PROMESA contains several miscellaneous provisions, including a temporary stay of litigation related to all “Liability Claim” litigation commenced against the Commonwealth of Puerto Rico and its instrumentalities after December 18, 2015 (the “*Title IV Stay*”), relief from certain wage and hours laws, the establishment of a Congressional Task Force on Economic Growth in Puerto Rico (the “*Task Force*”) within the legislative branch of the U.S. federal government, the requirement that the Comptroller General of the United States through the Government Accountability Office (the “*GAO*”) submit two reports to Congress regarding the public debt levels of the U.S. territories, and expansion of the federal government’s small business HUBZone program in Puerto Rico. The Task Force submitted its report to Congress on December 20, 2016.

Title IV of PROMESA also required several federal government reports in addition the Task Force report referred to above. PROMESA requires the U.S. Comptroller General, through the Government Accountability Office (GAO), to submit a report to the House and Senate by December 30, 2017, regarding: (i) the conditions that led to Puerto Rico’s current level of debt; (ii) how government actions improved or impaired its financial condition; and (iii) recommendations on new fiscal actions or policies that the Commonwealth could adopt. The GAO published this report on May 9, 2018.

PROMESA also required the U.S. Comptroller General, through the GAO, to submit to Congress by June 30, 2017, a report on public debt of the U.S. territories. In addition to its initial report, the GAO must submit to Congress updated reports on the public debt at least once every two years. The GAO published its initial report on October 2, 2017. On June 28, 2019, the GAO published its latest biannual report on the public debt of the U.S. territories.

Title V – Infrastructure Revitalization. Title V of PROMESA establishes the position of Revitalization Coordinator under the Oversight Board and provides a framework for infrastructure revitalization through an expedited permitting process for “critical projects” as identified by the Revitalization Coordinator.

Title VI – Consensual, Out-of-Court Debt Modification Process. Title VI of PROMESA establishes a consensual, out-of-court process for modifying Puerto Rico’s debts. Any government issuer may propose voluntary agreement to any bondholder or bondholder group to modify one or more series of bonds. Under PROMESA section 601(d), the Oversight Board, in consultation with the government related issuer, is authorized to establish “pools” of bonds issued by such issuer based upon relative payment priorities. The Oversight Board must certify that the voluntary agreement conforms to the issuer’s certified fiscal plan, provides for a sustainable level of debt, or is limited to an extension of principal and interest payments for one year. The Oversight Board must also certify that the agreement is a “Qualifying Modification,” which requires that that each bondholder in a pool is offered the same consideration and is supported by a majority of such holders. A “Qualifying Modification” is then solicited to all bondholders for approval and is approved by bondholders if: (i) at least a majority of the principal amount of each bondholder pool votes in favor; and (ii) of those who actually vote, at least 2/3 vote in favor. The “Qualifying Modification” only becomes effective after (i) the Oversight Board certifies voting requirements have been met and (ii) District Court enters an order approving it and determining that the transaction meets the requirements of section 601 of PROMESA. Once approved and implemented, the restructuring transaction is not subject to any collateral attack or challenge in any court of other forum. The Title VI process was successfully implemented to restructure the debts of the GDB in November 2018. See “Source of Payment” under SECURITY FOR THE BONDS.

Title VII – Sense of Congress. Title VII of PROMESA sets forth the sense of Congress that “any durable solution for Puerto Rico’s fiscal and economic crisis should include permanent, pro-growth fiscal reforms that feature, among other elements, a free flow of capital between possessions of the United States and the rest of the United States.”

The Oversight Board. The Oversight Board operates from offices located in San Juan, Puerto Rico and New York, New York. It consists of seven voting members appointed by the

President of the United States from a bipartisan list of nominees and a non-voting *ex officio* member appointed by the Governor of Puerto Rico. The appointment process for the seven voting members was challenged by a group of creditors of the Commonwealth and validated on June 1, 2020, by the Supreme Court of the United States in the case of *Financial Oversight and Management Board for Puerto Rico v. Aurelius Investment*, No. 18-1334. Each member of the Oversight Board serves a three-year term without any compensation, may continue to serve until a successor is appointed, and may be appointed to an unlimited number of consecutive terms. The terms of the initial seven voting members of the Oversight Board expired on August 31, 2019. Three of the initial Board members, David A. Skeel, Andrew Biggs and Ana J. Matosantos, have continued in their positions, despite the expiration of their terms. The President of the United States appointed one additional member, Justin Peterson, on October 7, 2020. Thus, there are currently four appointed Board members and three vacancies.

Certification of the Authority's Fiscal Plans and Budgets. The Fiscal Plan in effect as of the date of this Limited Offering Memorandum and attached hereto as *Appendix III* was certified by the Oversight Board on June 29, 2020. On June 30, 2020, the Oversight Board certified the fiscal year 2021 budget prepared by the Authority, as modified by the Oversight Board. Since the enactment of PROMESA, the Oversight Board has certified six fiscal plans for the Authority and has certified the Authority's budgets for fiscal years 2018, 2019, 2020 and 2021. The Authority has submitted its fiscal plans when required, and the Oversight Board has revised them prior to certification. Of the four budgets certified by the Oversight Board, all were prepared by the Authority but modified by the Oversight Board prior to certifying them. See "Authority Disagreements with the Oversight Board Regarding Fiscal Plan" under THE AUTHORITY'S FISCAL PLAN for a discussion of the disagreements that the Authority has respecting the current Fiscal Plan. See also "Certain Risks Related to the Political and Economic Circumstances of Puerto Rico" under CERTAIN RISK FACTORS AND INVESTMENT CONSIDERATIONS.

Fiscal Agent for Government of Puerto Rico

AAFAF's Predecessor. GDB, AAFAF's predecessor and a public corporation and governmental instrumentality of the Commonwealth, was created by the Legislature of the Commonwealth in 1948 to aid the government of the Commonwealth in performing its fiscal duties. Historically, its principal functions were to (i) act as fiscal agent, paying agent and financial advisor to the Commonwealth and its instrumentalities and political subdivisions, (ii) provide interim and long-term financing to the Commonwealth and its instrumentalities and political subdivisions, and to private parties for economic development and (iii) act as depository of funds for the Commonwealth and its instrumentalities and political subdivisions.

AAFAF. AAFAF was created by Act No. 21 of 2016 (the "*Moratorium Act*") as an independent corporation and government instrumentality with separate legal existence, fiscal and administrative autonomy, and independence from the Government of Puerto Rico to act as fiscal agent, principal financial advisor and reporting agent of the Commonwealth and its instrumentalities, and to assist such entities in confronting the fiscal and economic emergency that Puerto Rico is experiencing. AAFAF assumed the fiscal agency and financial advisory responsibilities that were previously held by GDB. Act No. 2-2017 expanded AAFAF's powers to include, among other things, sole responsibility to renegotiate, to restructure and to reach an agreement with creditors on all or part of the public debt or any other debt issued by any

instrumentality of the Commonwealth, and to place AAFAF in charge of the collaboration, communication, and cooperation efforts between the Puerto Rico Government and the Oversight Board.

The Board of Directors of AAFAF is composed of five members: (1) AAFAF’s Executive Director, appointed by the Governor, (2) a representative of the Senate of Puerto Rico, (3) a representative of the House of Representatives of Puerto Rico, appointed by the President of each Legislative Body, and (4) two other members appointed by the Governor. The members can only be replaced or removed by the person or entity that appointed them. The members of AAFAF’s Board of Directors select a President, Vice-President and Secretary among them. AAFAF does not currently have legal authority to issue bonds, notes or any other debt instrument.

In accordance with its statutory responsibilities, AAFAF has acted as principal financial advisor to the Authority in connection with the issuance of the 2020 Senior Bonds and approved the issuance of the 2020 Senior Bonds on October 28, 2020.

PLAN OF REFUNDING

General

The 2020 Senior Bonds are being issued pursuant to the Trust Agreement to provide funds to redeem the Refunded Bonds on either December 29, 2020, or January 12, 2021 (each, a “*Redemption Date*”), and at a redemption price equal to the par amount thereof, plus accrued interest to the applicable Redemption Date, as set forth below:

<u>Refunded Bonds</u>	<u>Principal Amount to be Refunded</u>	<u>Interest Rate</u>	<u>Maturity Date (July 1)</u>	<u>Redemption Date</u>	<u>CUSIP No. (Base Number: 745160)</u>
Revenue Bonds, Series A (Senior Lien)	\$25,240,000	5.00%	2025	12/29/2020	PY 1
Revenue Bonds, Series A (Senior Lien)	83,555,000	5.00	2028	12/29/2020	PZ 8
Revenue Bonds, Series A (Senior Lien)	381,945,000	6.00	2038	12/29/2020	QA 2
Revenue Bonds, Series A (Senior Lien)	383,475,000	6.00	2044	12/29/2020	QB 0
Revenue Bonds, Series A (Senior Lien)	246,150,000	5½	2047	12/29/2020	QC 8
Revenue Bonds, Series B (Senior Lien)	21,095,000	6.15	2038	12/29/2020	QG 9
Revenue Bonds, Series B (Senior Lien)	1,350,000	6.15	2038	1/12/2021	QG 9
Revenue Refunding Bonds, 2008 Series A	16,915,000	5.80	2023	12/29/2020	QD 6
Revenue Refunding Bonds, 2008 Series A	1,090,000	5.80	2023	1/12/2021	QD 6
Revenue Refunding Bonds, 2008 Series A	49,385,000	6.05	2028	12/29/2020	QE 4
Revenue Refunding Bonds, 2008 Series A	3,165,000	6.05	2028	1/12/2021	QE 4
Revenue Refunding Bonds, 2008 Series A	83,180,000	6.10	2034	12/29/2020	QF 1

<u>Refunded Bonds</u>	<u>Principal Amount to be Refunded</u>	<u>Interest Rate</u>	<u>Maturity Date (July 1)</u>	<u>Redemption Date</u>	<u>CUSIP No. (Base Number: 745160)</u>
Revenue Refunding Bonds, 2008 Series A	5,320,000	6.10	2034	1/12/2021	QF 1
Revenue Refunding Bonds, 2008 Series B	13,365,000	5.80	2023	12/29/2020	PP 0
Revenue Refunding Bonds, 2008 Series B	865,000	5.80	2023	1/12/2021	PP 0
Revenue Refunding Bonds, 2008 Series B	39,030,000	6.05	2028	12/29/2020	PQ 8
Revenue Refunding Bonds, 2008 Series B	2,500,000	6.05	2028	1/12/2021	PQ 8
Revenue Refunding Bonds, 2008 Series B	65,730,000	6.10	2034	12/29/2020	PR 6
Revenue Refunding Bonds, 2008 Series B	4,210,000	6.10	2034	1/12/2021	PR 6

On the date of delivery of the 2020 Senior Bonds, the Authority will enter into (i) an escrow agreement with respect to the 2008 Senior Bonds and (ii) a separate escrow agreement with respect to the Guaranteed Bonds (collectively, the “**Escrow Agreements**”), each by and between the Authority and the applicable trustee for the Refunded Bonds, in its capacity as escrow agent thereunder, to provide for the refunding of each series of the Refunded Bonds. Each Escrow Agreement will create an irrevocable escrow fund, to be held by the applicable trustee for the Refunded Bonds to which such Escrow Agreement relates, the moneys to the credit of which fund will be applied to the payment of, and pledged solely for the benefit and security of, the applicable Refunded Bonds.

The Authority will deposit a portion of the proceeds from the sale of the 2020 Senior Bonds into the escrow fund for the portion of the 2008 Senior Bonds that are Refunded Bonds, in amounts that will be retained as cash or invested, at the direction of the Authority, in Defeasance Obligations, as defined in the Trust Agreement, for the portion of the 2008 Senior Bonds that are Refunded Bonds, that mature or are subject to redemption at the option of the holder in amounts and bearing interest at rates sufficient, without reinvestment, (i) to redeem the 2008 Senior Bonds that are Refunded Bonds on the applicable Redemption Date at their redemption price and (ii) to pay the interest on the 2008 Senior Bonds that are Refunded Bonds to the applicable Redemption Date.

The Authority will deposit a portion of the proceeds from the sale of the 2020 Senior Bonds into the escrow fund for the Guaranteed Bonds, in amounts that will be retained as cash or invested, at the direction of the Authority, in Defeasance Obligations, as defined in the Trust Agreement, for the Guaranteed Bonds, that mature or are subject to redemption at the option of the holder in amounts and bearing interest at rates sufficient, without reinvestment, (i) to redeem the Guaranteed Bonds on the applicable Redemption Date at their redemption price and (ii) to pay the interest on the Guaranteed Bonds to the applicable Redemption Date.

The Authority has directed the Trustee to send by registered or certified mail or overnight express delivery to the Holder of each Refunded Bond a conditional notice of redemption at least 30 days prior to the applicable Redemption Date, as permitted by the Trust Agreement. Upon issuance of the 2020 Senior Bonds, the Refunded Bonds will be irrevocably designated for

redemption as described above and the Refunded Bonds shall not be redeemed other than as described above.

By virtue of the provision for payment of the Refunded Bonds upon redemption, together with the irrevocable deposit and application of moneys and securities in the trust fund and certain other provisions of the Escrow Agreements, the 2008 Senior Bonds being refunded will be deemed to be no longer Outstanding under the Trust Agreement and the 2008 Commonwealth Guaranteed Bonds will be deemed to be no longer Outstanding under the Guaranteed Bond Resolution, and, in both cases, except for purposes of any payment from such moneys and securities, shall no longer be secured by or entitled to the benefits and security of the Trust Agreement or the Guaranteed Bond Resolution, as the case may be.

Sources and Uses of Funds

The proceeds of the 2020 Senior Bonds are expected to be used as follows:

Sources

Principal Amount of the 2020 Senior Bonds	\$1,370,075,000.00
Original Issue Premium	101,027,419.35
Total Sources	<u>\$1,471,102,419.35</u>

Uses

Deposit to Escrow Fund for 2008 Senior Bonds.....	\$1,174,554,983.59
Deposit to Escrow Fund for 2008 Commonwealth Guaranteed Bonds.....	286,132,287.67
Underwriting discount and estimated legal, printing and financing expenses	10,415,148.09
Total Uses.....	<u>\$1,471,102,419.35</u>

TRANSFER RESTRICTIONS

The 2020 Senior Bonds are to be initially offered to, and will be sold to not more than 35, Qualified Institutional Buyers (as defined under Rule 144A of the Securities Act), all of whom have signed an Investor Letter substantially in the form of *Appendix IV*, and copies of all of which are on file with the Trustee. The Eighth Supplemental Agreement contains provisions limiting secondary market transfers of the 2020 Senior Bonds and beneficial ownership interests in the 2020 Senior Bonds only to Qualified Institutional Buyers and requiring that the Authorized Denominations of the 2020 Senior Bonds be \$250,000 of principal and any multiple of \$5,000 of principal in excess thereof. In addition, the face of each 2020 Senior Bond will contain a legend indicating it may only be registered in the name of, or transferred to, Qualified Institutional Buyers, and that by acceptance of such Bond, the holder represents that it is a Qualified Institutional Buyer.

SECURITY FOR THE BONDS

The summary under this heading does not take into account the amendments to the Trust Agreement proposed to be made by the Second Amended and Restated Trust Agreement. See PROPOSED AMENDMENTS TO TRUST AGREEMENT and “Certain Risks Related to the Authority’s Eligibility under PROMESA” and “Certain Risks Related to the Limited Source of Payment and Security for the Senior Indebtedness and Remedies Under the Trust Agreement” under CERTAIN RISK FACTORS AND INVESTMENT CONSIDERATIONS.

Source of Payment

The principal of and premium, if any, and interest on Bonds and Other System Indebtedness that the Authority is required, or has elected, to treat as payable on a parity with Bonds (including the 2020 Senior Bonds and the Senior RUS Indebtedness and the Senior Revolving Fund Indebtedness), are secured by a lien on and payable solely from Authority Revenues, except for the portion of Authority Revenues consisting of moneys received from the Commonwealth for the payment of principal and interest on Commonwealth Guaranteed Indebtedness and Commonwealth Supported Obligations, which portion is not subject to the lien of the Trust Agreement and may only be used to make such payments.

The Trust Agreement provides that the Authority may incur debt to finance its capital expenditures and for any other lawful purpose of the Authority, which debt may be secured by different priority claims on Authority Revenues. The 2020 Senior Bonds will be issued as Senior Indebtedness under the Trust Agreement, which Indebtedness includes Senior Bonds and Other System Indebtedness incurred on a parity with Senior Bonds, including currently the Senior RUS Indebtedness and the Senior Revolving Fund Indebtedness. Senior Indebtedness has a first claim on Authority Revenues (other than that portion of Authority Revenues consisting of moneys received from the Commonwealth for the payment of principal and interest on Commonwealth Guaranteed Indebtedness and Commonwealth Supported Obligations, which are not subject to the lien of the Trust Agreement and can only be used to make such payments). The Fiscal Plan contemplates that the Indebtedness to finance the CIP, if any, will be incurred as Senior Indebtedness in the form of additional Senior Revolving Fund Indebtedness and Senior RUS Indebtedness (see table 3-7 and the text related thereto in the Fiscal Plan in *Appendix III*).

The Authority is also able to incur “Senior Subordinate Indebtedness,” which has a claim on Authority Revenues subordinate to the claim of Senior Indebtedness, and “Subordinate Indebtedness,” which has a claim on Authority Revenues (other than that portion of Authority Revenues consisting of moneys received from the Commonwealth for the payment of principal and interest on Commonwealth Guaranteed Indebtedness and Commonwealth Supported Obligations, which are not subject to the lien of the Trust Agreement and can only be used to make such payments) subordinate to the claim of Senior Subordinate Indebtedness. There is no Senior Subordinate Indebtedness or Subordinate Indebtedness currently Outstanding under the Trust Agreement.

In addition, the Authority is able to incur Commonwealth Guaranteed Indebtedness and Commonwealth Supported Obligations, which are payable from Authority Revenues after payment of debt service on the Bonds and Other System Indebtedness and payment of Current

Expenses and other deposits required by the Trust Agreement, including the Operating Reserve Fund and the Capital Improvement Fund. Commonwealth Guaranteed Indebtedness and Commonwealth Supported Obligations are not, however, secured by a pledge of Authority Revenues under the Trust Agreement, and failure to pay principal of or interest on Commonwealth Guaranteed Indebtedness or Commonwealth Supported Obligations is not an Event of Default under the Trust Agreement. No legislation is currently effective that authorizes the Authority to issue Indebtedness that is guaranteed by the Government of Puerto Rico (*i.e.*, Commonwealth Guaranteed Indebtedness).

In 2012, to assist the Authority with cash flow needs during the transition period after amending and restating the Trust Agreement in connection with the issuance of 2012 Senior Bonds, the Authority entered into a loan agreement with GDB (the “*Loan Agreement*”) in the maximum amount of \$150 million. In 2014, the Loan Agreement was amended and restated and the outstanding principal amount under the Loan Agreement (\$72.8 million) was converted into a term loan (the “*Amended and Restated Loan Agreement*”). In 2015, the Authority stopped making payments under the Amended and Restated Loan Agreement because its revenues were insufficient to cover any obligations subordinated to the Authority’s obligations under the Trust Agreement.

The Amended and Restated Loan Agreement was subsequently transferred to the GDB Debt Recovery Authority, a statutory public trust and governmental instrumentality created pursuant to Act 109-2017, as amended (“*GDB-DRA*”) upon consummation of the GDB Qualifying Modification under Title VI of PROMESA on November 29, 2018 (the “*GDB-DRA Loan Agreement*”). The Authority’s obligation under the GDB-DRA Loan Agreement was subordinate in all respects to its outstanding Trust Agreement obligations. At the time of the transfer to GDB-DRA, the outstanding principal amount under the GDB-DRA Loan Agreement was \$57.5 million, plus accrued and unpaid interest.

The Fiscal Plan contained no amounts to make payments to satisfy the Authority’s obligation under the GDB-DRA Loan Agreement. On November 10, 2020, the Authority, AAFAF, GDB-DRA and the collateral monitor for GDB-DRA reached an agreement in principle, contingent on Oversight Board approval, to resolve and settle in full all Authority obligations under the GDB-DRA Loan Agreement by a one-time Authority payment in the amount of \$20.5 million. On November 20, 2020, the Oversight Board approved the settlement, the Authority made that payment in full, the GDB-DRA Loan Agreement was terminated, and the Authority has no further obligation under it. See “Notes” under DEBT.

Flow of Funds

The Trust Agreement provides for a pledge of Authority Revenues (other than that portion of Authority Revenues consisting of moneys received from the Commonwealth, if any, for the payment of principal and interest on Commonwealth Guaranteed Indebtedness and Commonwealth Supported Obligations, which are not subject to the lien of the Trust Agreement and can only be used to make such payments) to secure the payment of debt service on Bonds and Other System Indebtedness. Debt service on Senior Indebtedness, Senior Subordinate Indebtedness and Subordinate Indebtedness, together with required deposits, if any, to the related debt service reserve funds under the Trust Agreement (all as described in more detail below), will

be made from Authority Revenues prior to payment of the Authority's Current Expenses, except, however, upon the occurrence and continuation of an Event of Default and an acceleration of the Bonds, in which case the Trustee shall pay Current Expenses prior to the payment of debt service on any Bonds. See "Acceleration" under SECURITY FOR THE BONDS and "Certain Risks Related to the Limited Source of Payment and Security for the Senior Indebtedness and Remedies Under the Trust Agreement" under CERTAIN RISK FACTORS AND INVESTMENT CONSIDERATIONS.

Under the Trust Agreement all Operating Revenues are deposited into the Operating Revenue Fund upon receipt. Authority Revenues consisting of governmental (including federal) grants or appropriations available to pay the Authority's Current Expenses, are deposited directly in the Current Expense Fund. Authority Revenues consisting of grants or appropriations received by the Authority for the purpose of paying principal of and interest on Bonds or Other System Indebtedness are deposited directly in the applicable debt service fund. Authority Revenues constituting amounts received from the Commonwealth on account of Commonwealth Guaranteed Indebtedness or Commonwealth Supported Obligations are deposited directly in the Commonwealth Payments Fund, are not subject to the lien of the Trust Agreement and may only be applied to the payment of principal and interest on Commonwealth Guaranteed Indebtedness or Commonwealth Supported Obligations, as applicable.

Beginning on the first business day of each month, the Trustee is required to transfer the Operating Revenues on deposit in the Operating Revenue Fund in the following order of priority:

First, to the credit of the various accounts in the Senior Bond Fund, an amount equal to one-sixth (1/6) of the interest due on all Outstanding Senior Indebtedness on the next interest payment date and one-twelfth (1/12) of the principal (or sinking fund) installments due on all Outstanding Senior Indebtedness on the next principal payment (or mandatory sinking fund redemption) date (with appropriate adjustment to the amount so deposited if the period between interest payment dates is less than six months and the period between principal payment (or mandatory sinking fund redemption) dates is less than 12 months);

Second, to the credit of the various accounts in the Senior Debt Service Reserve Fund, one-twelfth (1/12) of the respective amounts necessary in order to cause the amounts then on deposit in said accounts to equal the corresponding Senior Reserve Requirements (provided, that if a deposit is made to one of said accounts because the required balance therein has increased on account of the issuance of additional Senior Bonds, the required monthly deposit amount will equal one-sixtieth (1/60) of the increase in the applicable Senior Reserve Requirement on account of said issuance);

Third, to the credit of the various accounts in the Senior Subordinate Bond Fund, an amount equal to one-sixth (1/6) of the interest due on all Outstanding Senior Subordinate Indebtedness on the next interest payment date and one-twelfth (1/12) of the principal (or sinking fund) installments due on all Outstanding Senior Subordinate Indebtedness on the next principal payment (or mandatory sinking fund redemption) date (with appropriate adjustment to the amount so deposited if the period between interest payment dates is less than six months and the period between principal payment (or mandatory sinking fund redemption) dates is less than 12 months);

Fourth, to the credit of the various accounts in the Senior Subordinate Debt Service Reserve Fund, one-twelfth (1/12) of the respective amounts necessary in order to cause the amounts then on deposit in said accounts to equal the corresponding Senior Subordinate Reserve Requirements (provided, that if a deposit is made to one of said accounts because the required balance therein has increased on account of the issuance of additional Senior Subordinate Bonds, the required monthly deposit amount will equal one-sixtieth (1/60) of the increase in the applicable Senior Subordinate Reserve Requirement on account of said issuance);

Fifth, to the credit of the various accounts in the Subordinate Bond Fund, an amount equal to one-sixth (1/6) of the interest due on all Outstanding Subordinate Indebtedness on the next interest payment date and one-twelfth (1/12) of the principal (or sinking fund) installments due on all Outstanding Subordinate Indebtedness on the next principal payment (or mandatory sinking fund redemption) date (with appropriate adjustment to the amount so deposited if the period between interest payment dates is less than six months and the period between principal payment (or mandatory sinking fund redemption) dates is less than 12 months);

Sixth, to the credit of the various accounts in the Subordinate Debt Service Reserve Fund, one-twelfth (1/12) of the respective amounts necessary in order to cause the amounts then on deposit in said accounts to equal the corresponding Subordinate Reserve Requirements (provided, that if a deposit is made to one of said accounts because the required balance therein has increased on account of the issuance of additional Subordinate Bonds, the required monthly deposit amount will equal one-sixtieth (1/60) of the increase in the applicable Subordinate Reserve Requirement on account of said issuance);

Seventh, to the credit of the Current Expenses Fund, after taking into account any funds transferred from the Budgetary Reserve Fund, an amount equal to the amount set forth in the most recently delivered Disbursement Schedule to pay Current Expenses of the Systems for the current month and, at the Authority's discretion, up to two additional months.

Eighth, to the credit of the Operating Reserve Fund, an amount equal to one-sixtieth (1/60) of the amount, if any, necessary to restore the amount on deposit in said Fund to the Operating Reserve Fund Requirement and to pay interest on any reimbursement obligations due with respect to an Operating Reserve Facility;

Ninth, to the credit of the Capital Improvement Fund, an amount equal to one-twelfth (1/12) of the amount necessary to cause the amount then on deposit in said Fund to equal the Capital Improvement Fund Requirement, as included in the Annual Budget;

Tenth, to the credit of the Commonwealth Payments Fund, to the extent the payment of debt service described in this paragraph has not been satisfied from Authority Revenues deposited directly into this fund, first, an amount equal to one-sixth (1/6) of the interest due on all Outstanding Commonwealth Guaranteed Indebtedness on the next interest payment date and one-twelfth (1/12) of the principal (or sinking fund) installment due on all Outstanding Commonwealth Guaranteed Indebtedness on the next principal payment (or mandatory sinking fund redemption) date and second, an amount equal to one-sixth (1/6) of the interest due on all Outstanding Commonwealth Supported Obligations on the next interest payment date and one-twelfth (1/12) of the principal (or sinking fund) installment due on all Outstanding Commonwealth Supported

Obligations on the next principal payment (or mandatory sinking fund redemption) date (with, in each case, appropriate adjustment to the amount so deposited if the period between interest payment dates is less than six months and the period between principal payment (or mandatory sinking fund redemption) dates is less than 12 months); and

Eleventh, all remaining amounts to the Surplus Fund. From the amounts deposited in the Surplus Fund, there should be credited to the Rate Stabilization Account, an amount equal to the one-twelfth (1/12) of the amount, if any, necessary to fund the Rate Stabilization Account at the amount set forth in the applicable Annual Budget.

A simplified schematic of the above flow of funds is contained in the diagram included under PROPOSED AMENDMENTS TO TRUST AGREEMENT under the caption “Flow of Funds under the Current Trust Agreement;” it is provided only to guide readers and does not purport to be complete, and is qualified in its entirety by reference to the form of the Trust Agreement in *Appendix II*.

Reserve Funds

Under the Trust Agreement, separate debt service reserve funds may be established for each lien created thereunder (and within such funds separate debt service reserve accounts are allowed to be set up for individual Series of Bonds). The Authority is not obligated, however, to establish a debt service reserve account for a Series of Bonds. A Senior Debt Service Reserve Account has not been established for the 2012 Senior Bonds and will not be established for the 2020 Senior Bonds. The Authority may also elect that multiple Series of Bonds have the benefit of the same debt service reserve account.

If not otherwise specified in a Supplemental Agreement authorizing the issuance of a particular Series of Bonds, the Debt Service Reserve Requirement applicable to its corresponding Debt Service Reserve Account shall be the lesser of (x) maximum Annual Debt Service on the Outstanding Bonds secured by such Account, (y) 10% of the proceeds, calculated in accordance with the Code, of the Outstanding Bonds secured by such Account and (z) 125% of average Annual Debt Service for the payment of the principal of and interest on the Outstanding Bonds secured by such Account.

Senior Debt Service Reserve Accounts. Upon the issuance of Senior Bonds, the Authority may establish one or more Senior Debt Service Reserve Accounts related thereto. Each Senior Debt Service Reserve Account would be established under the Trust Agreement as security for the Outstanding Senior Bonds to which such Account relates. Upon the occurrence of any deficiency in any Senior Debt Service Reserve Account, the Authority must cure the deficiency within 12 months (and no less frequently than monthly within such period). In addition, from the date of issuance of Additional Senior Bonds, the Authority has 60 months (and no less frequently than monthly within such period) to fund the increase, if any, in the Senior Reserve Requirement from Authority Revenues as described in “Flow of Funds” above. Subject to certain conditions in the Trust Agreement, in lieu of the required deposits, the Authority may cause a Debt Service Reserve Facility to be deposited into any Senior Debt Service Reserve Account. Moneys in a Senior Debt Service Reserve Account, including moneys drawn under any such Debt Service Reserve Facility, are available to pay principal of and interest on the Series (or multiple Series pro rata) of Senior

Bonds to which it relates on any interest payment date whenever moneys in the Senior Bond Fund, the Surplus Fund, the Commonwealth Payments Fund, the Capital Improvement Fund, the Current Expense Fund and the Operating Reserve Fund are insufficient for such purpose. The 2012 Senior Bonds do not have, and the 2020 Senior Bonds will not have, the benefit of a Senior Debt Service Reserve Account.

Senior Subordinate Debt Service Reserve Accounts. Upon the issuance of Senior Subordinate Bonds, the Authority may establish one or more Senior Subordinate Debt Service Reserve Accounts related thereto. Each Senior Subordinate Debt Service Reserve Account would be established under the Trust Agreement as security for the Outstanding Senior Subordinate Bonds to which such Account relates. Upon the occurrence of any deficiency in any Senior Subordinate Debt Service Reserve Account, the Authority must cure the deficiency within 12 months (and no less frequently than monthly within such period). In addition, from the date of issuance of Additional Senior Subordinate Bonds, the Authority has 60 months (and no less frequently than monthly within such period) to fund the increase, if any, in the Senior Subordinate Reserve Requirement as described in “Flow of Funds” above. Subject to certain conditions in the Trust Agreement, in lieu of the required deposits, the Authority may cause a Debt Service Reserve Facility to be deposited into any Senior Subordinate Debt Service Reserve Account. Moneys in the Senior Subordinate Debt Service Reserve Account, including moneys drawn under any such Debt Service Reserve Facility, are available to pay principal of and interest on the Series of Senior Subordinate Bonds to which it relates on any interest payment date whenever moneys in the Senior Subordinate Bond Fund, the Surplus Fund, the Commonwealth Payments Fund, the Capital Improvement Fund, the Current Expense Fund and the Operating Reserve Fund are insufficient for such purpose.

Subordinate Debt Service Reserve Accounts. Upon the issuance of Subordinate Bonds, the Authority may establish one or more Subordinate Debt Service Reserve Accounts related thereto. Each Subordinate Debt Service Reserve Account would be established under the Trust Agreement as security for the Outstanding Subordinate Bonds to which such Account relates. Upon the occurrence of any deficiency in any Subordinate Debt Service Reserve Account, the Authority must cure the deficiency within 12 months (and no less frequently than monthly within such period). In addition, from the date of issuance of Additional Subordinate Bonds, the Authority has 60 months (and no less frequently than monthly within such period) to fund the increase, if any, in the Subordinate Reserve Requirement as described in “Flow of Funds” above. Subject to certain conditions in the Trust Agreement, in lieu of the required deposits, the Authority may cause a Debt Service Reserve Facility to be deposited into any Subordinate Debt Service Reserve Account. Moneys in the Subordinate Debt Service Reserve Account, including moneys drawn under any such Debt Service Reserve Facility, are available to pay principal of and interest on the Series of Subordinate Bonds to which it relates on any interest payment date whenever moneys in the Subordinate Bond Fund, the Surplus Fund, the Commonwealth Payments Fund, the Capital Improvement Fund, the Current Expense Fund and the Operating Reserve Fund are insufficient for such purpose.

Other Reserves. As the above discussion of the flow of funds shows, immediately after monthly deposits are made for debt service, associated reserves on the Authority’s Bonds (other than Commonwealth Guaranteed Indebtedness and Commonwealth Supported Obligations) and Current Expenses, the Authority makes deposits into an Operating Reserve Fund and a Capital

Improvement Fund. The moneys in these funds will be used by the Authority to provide reserves for covering normal operating expenses of the Systems as well as for providing “internally generated funds” for a portion of its CIP. Moneys in these two funds are also available, prior to the use of any moneys in the various debt service reserve funds (see “Reserve Funds” above), to cover debt service shortfalls relating to the Senior, Senior Subordinate and Subordinate Bonds, and serve as additional reserves for those purposes.

Rate Covenant

General. The Authority covenants that it will fix, charge and collect rates, fees and other charges for the use of and the services furnished by the Systems and shall, from time to time and as often as necessary, revise such rates, fees and other charges so as to meet the following four independent requirements (which will be calculated annually no later than six months after the beginning of each Fiscal Year based upon the Operating Revenues and Authority Revenues set forth in the Authority’s most recent audited financial statements):

(1) Operating Revenues shall be at least equal to 250% of Annual Debt Service with respect to Senior Indebtedness for the current Fiscal Year;

(2) Operating Revenues shall be at least equal to 200% of Annual Debt Service with respect to Senior Indebtedness and Senior Subordinate Indebtedness for the current Fiscal Year;

(3) Operating Revenues shall be at least equal to 150% of Annual Debt Service with respect to all Bonds and Other System Indebtedness for the current Fiscal Year; and

(4) Authority Revenues shall be sufficient to be equal at least 100% of (A) Annual Debt Service on Indebtedness, (B) Current Expenses, (C) the amounts, if any, necessary to be deposited in any Debt Service Reserve Account to restore the amount on deposit therein to the amount of the applicable Debt Service Reserve Requirement (provided that each such Account will be deemed to be funded at its applicable Debt Service Reserve Requirement for so long as the deposits required by the Trust Agreement are being made), (D) the amount, if any, necessary to be deposited in the Operating Reserve Fund to maintain the balance therein at the Operating Reserve Requirement and (E) the amount, if any, necessary to be deposited in the Capital Improvement Fund and the Rate Stabilization Account of the Surplus Fund in accordance with the Annual Budget for the current Fiscal Year.

Operating Revenues include, among other things, all moneys received by or on behalf of the Authority, including (i) the moneys derived by or on behalf of the Authority from the sale of water produced, treated or distributed by, or the collection, transmission, treatment or disposal of sewage by the Systems, (ii) any proceeds of use and occupancy insurance on the Systems or any part thereof, (iii) any income from the investments made under the Trust Agreement (with certain exceptions), (iv) any special assessments, including assessments in the nature of impact fees, (v) amounts, if any, paid from the Rate Stabilization Account into the Operating Revenue Fund in any Fiscal Year minus the amounts, if any, paid from the Operating Revenue Fund into the Rate Stabilization Account during the same Fiscal Year; and (vi) regularly scheduled payments received under any Qualified Swap or Hedge Agreement during such period.

Operating Revenues do not include (i) income from the investment of moneys on deposit to the credit of the Construction Fund, proceeds of insurance (except use and occupancy insurance) or condemnation awards (which are required to be deposited directly to the credit of the Capital Improvement Fund), (ii) proceeds of sales of property constituting a part of the Systems (which are required to be deposited directly to the credit of the Capital Improvement Fund), (iii) the proceeds of Bonds or other Indebtedness, (iv) any governmental grants or appropriations available to pay Current Expenses of the Authority, including grants or appropriations received by the Authority and specifically made for the payments of principal of and interest on obligations of the Authority or for reimbursing the Authority for such payments, (v) any amounts received from the Commonwealth on account of Commonwealth Guaranteed Indebtedness (which is required to be deposited directly in the Commonwealth Payments Fund) or Commonwealth Supported Obligations (which is required to be deposited in the Commonwealth Payments Fund), (vi) any amounts transferred from the Budgetary Reserve Fund to the Trustee, and (vii) termination or similar payment under any interest rate swap or similar hedge agreement received by the Authority (which are required to be deposited directly to the credit of the Capital Improvement Fund).

The Authority shall immediately retain a Consultant to submit a written report and recommendations with respect to increases in the Authority's rates, fees and other charges and improvements in the operations of and the services rendered by the Systems and the Authority's accounting and billing procedures necessary to bring the Authority into compliance with the Rate Covenant if (i) at the end of any Fiscal Year the Authority is not in compliance with the Rate Covenant for such Fiscal Year, (ii) the Authority fails for three consecutive months to make the required deposits to any Bond Fund, (iii) there is a deficiency in any Debt Service Reserve Account for longer than three consecutive months (provided no such deficiency shall be deemed to exist so long as the deposits required by the Trust Agreement are being made), or (iv) there is a deficiency in the Operating Reserve Fund for longer than six consecutive months. The report and recommendations shall be filed with the Trustee and the Authority within 120 days from the date the Consultant is retained, and the Authority shall promptly revise its rates, fees and charges, and alter its operations and services to conform with the report and recommendations of the Consultant to the extent permitted by law.

If the Authority promptly revises its rates, fees, charges, operations, services and procedures in conformity with the report and recommendations of the Consultant and otherwise follows such recommendations to the extent permitted by law so that the Authority is expected to be, when its actions become fully effective, in compliance with the Rate Covenant, then any failure to meet the Rate Covenant will not constitute an Event of Default under the Trust Agreement.

In the event that the Authority shall fail to pursue diligently an adjustment of the schedule of rates, fees and charges in accordance with the provisions of the preceding paragraph, the Trustee shall, upon the request of the Holders of not less than 10% in principal amount of all Senior Bonds then Outstanding and upon being indemnified to its satisfaction, institute and prosecute an appropriate suit, action or proceeding to compel the Authority to adjust such schedule in accordance with the requirements of the Trust Agreement, and the Authority has covenanted in the Trust Agreement that it will adopt and charge rates and charges in compliance with any judgment, order or decree entered in any such suit, action or proceeding.

Proposed Amendments to the Rate Covenant. For a discussion of the proposed amendments to the Rate Covenant and changes to key definitions, see PROPOSED AMENDMENTS TO TRUST AGREEMENT.

Additional Bonds

General. The Authority may issue Bonds in addition to those currently Outstanding thereunder for any lawful purpose, such as to finance Improvements to the Systems or to refinance other Authority Indebtedness and for making deposits to the corresponding Debt Service Reserve Fund (or any Account therein), and paying any costs of issuance if the Authority satisfies at the particular time of issuance the following tests:

Senior Bonds. Additional Senior Bonds may be issued under the Trust Agreement, provided that, among other conditions, the amount of the Operating Revenues for any twelve consecutive calendar months out of the eighteen calendar months immediately preceding the date of issuance of such Senior Bonds, adjusted to give effect for such twelve month period to any increase or decrease in rates, fees, rentals or other charges for which all legal conditions to effectiveness have been met as of the date of issuance of such additional Senior Bonds, shall be not less than (A) 250% of the maximum aggregate Annual Debt Service for any Fiscal Year thereafter on the Outstanding Senior Indebtedness and the Senior Bonds then to be issued (and other Senior Indebtedness incurred together with said Senior Bonds), and (B) 150% of the maximum aggregate Annual Debt Service for any Fiscal Year thereafter on all Bonds and Other System Indebtedness then Outstanding, the Additional Senior Bonds to be issued and any other Bonds and Other System Indebtedness to be issued or incurred simultaneously therewith, plus the amounts required to be deposited in the Senior Debt Service Reserve Fund, the Senior Subordinate Debt Service Reserve Fund and the Subordinate Debt Service Reserve Fund from Authority Revenues pursuant to the Trust Agreement. The 2020 Senior Bonds will be issued in compliance with the tests set forth in this paragraph.

Senior Subordinate Bonds. Senior Subordinate Bonds may also be issued under the Trust Agreement, provided that, among other conditions, the amount of the Operating Revenues for any twelve consecutive calendar months out of the eighteen calendar months immediately preceding the date of issuance of such Senior Subordinate Bonds, adjusted to give effect for such twelve month period to any increase or decrease in rates, fees, rentals or other charges for which all legal conditions to effectiveness have been met as of the date of issuance of such additional Senior Subordinate Bonds, shall be not less than (A) 200% of the maximum aggregate Annual Debt Service for any Fiscal Year thereafter on the Outstanding Senior and Senior Subordinate Indebtedness and the Senior Subordinate Bonds then to be issued (and other Senior or Senior Subordinate Indebtedness incurred together with said Senior Subordinate Bonds), and (B) 150% of the maximum aggregate Annual Debt Service for any Fiscal Year thereafter on the Bonds and Other System Indebtedness then Outstanding, the Additional Senior Subordinate Bonds to be issued and any other Bonds and Other System Indebtedness to be issued or incurred simultaneously therewith, plus amounts required to be deposited in the Senior Debt Service Reserve Fund, the Senior Subordinate Debt Service Reserve Fund and the Subordinate Debt Service Reserve Fund from Authority Revenues pursuant to the Trust Agreement.

Subordinate Bonds. Subordinate Bonds may be issued under and secured by the Trust Agreement provided that, among other conditions (i) the amount of the Operating Revenues for any twelve consecutive calendar months out of the eighteen calendar months immediately preceding the date of issuance of such Subordinate Bonds, adjusted to give effect for such twelve month period to any increase or decrease in rates, fees, rentals or other charges for which all legal conditions to effectiveness have been met as of the date of issuance of such additional Subordinate Bonds, shall be not less than 150% of the maximum aggregate Annual Debt Service for any Fiscal Year thereafter on the Bonds and Other System Indebtedness then Outstanding, the additional Subordinate Bonds to be issued and any other Bonds and Other System Indebtedness to be issued or incurred simultaneously therewith plus amounts required to be deposited in the Senior Debt Service Reserve Fund, the Senior Subordinate Debt Service Reserve Fund, and the Subordinate Debt Service Reserve Fund from Authority Revenues pursuant to the Trust Agreement and (ii) the projected Operating Revenues for each of the three Fiscal Years after the issuance of such Subordinate Bonds shall be not less than 150% of the maximum aggregate Annual Debt Service for any Fiscal Year thereafter on the Bonds and Other System Indebtedness then Outstanding, the Additional Subordinate Bonds to be issued and Other System Indebtedness to be issued or incurred simultaneously therewith, plus amounts required to be deposited in the Senior Debt Service Reserve Fund, the Senior Subordinate Debt Service Reserve Fund, and the Subordinate Debt Service Reserve Fund from Authority Revenues pursuant to the Trust Agreement.

Refunding Bonds. In addition to issuing Bonds, as aforesaid, for financing Improvements to the Systems and related purposes, the Authority is also permitted under the Trust Agreement to issue Bonds to refinance all or any part of its then outstanding obligations. If, after the issuance of such refunding Bonds and the provision for the refunding of the obligations in question, (A) Annual Debt Service on such refunding Bonds for each applicable Fiscal Year following the issuance thereof is not greater than the Annual Debt Service for such Fiscal Year on the obligations to be refunded or (B) maximum aggregate Annual Debt Service for any Fiscal Year thereafter on Indebtedness Outstanding after the issuance of such refunding Bonds is not greater than the maximum aggregate Annual Debt Service for any Fiscal Year thereafter on the Indebtedness Outstanding prior to the issuance of such refunding Bonds, then the Authority need not establish compliance with the financial tests that it must otherwise meet in order to issue a particular class of Bonds under the Trust Agreement as described under “Additional Bonds” above. If, however, such is not the case, then prior to issuing any such refunding Bonds, the Authority must demonstrate to the Trustee written compliance with the applicable financial tests outlined above under “Additional Bonds” (treating, for purposes of demonstrating such compliance, the obligations being refunded as not Outstanding under the Trust Agreement). For purposes of this paragraph, applicable Fiscal Year means any Fiscal Year in which such refunding Bonds are outstanding.

Other. The Authority may enter into agreements with issuers of any credit facility or liquidity facility securing any Series of Bonds which involve parity liens on Authority Revenues (other than that portion of Authority Revenues consisting of moneys received from the Commonwealth for the payment of principal and interest on Commonwealth Guaranteed Indebtedness and Commonwealth Supported Obligations, which are not subject to the lien of the Trust Agreement and can only be used to make such payments) to the extent that the Series of Bonds or portion thereof which is supported by such credit facility or liquidity facility is issued under the conditions described above. The Authority may also incur Other System Indebtedness

secured on a parity with the claim of Bonds (Senior, Senior Subordinate or Subordinate, as the case may be) on Authority Revenues (other than that portion of Authority Revenues consisting of moneys received from the Commonwealth for the payment of principal and interest on Commonwealth Guaranteed Indebtedness and Commonwealth Supported Obligations, which are not subject to the lien of the Trust Agreement and can only be used to make such payments), provided the applicable conditions above for the issuance of Additional Bonds are met, including obligations to counterparties under interest rate exchange agreements and similar derivative instruments.

Proposed Amendments to Additional Bonds Tests. For discussion of the proposed amendments to the additional bond requirements, see PROPOSED AMENDMENTS TO TRUST AGREEMENT.

Events of Default

Under the Trust Agreement, certain actions or inactions of the Authority, such as not paying its Bonds and Other System Indebtedness when due (including Other System Indebtedness incurred under contracts other than the Trust Agreement), not meeting covenants and instituting bankruptcy or insolvency proceedings, are Events of Default that will subject the Authority to breach of contract and similar lawsuits and, in certain cases (involving nonpayment of debt or its initiation of insolvency proceedings) to having the principal of its Bonds being declared due and payable immediately upon the happening of such default, among the remedies set forth in the Trust Agreement. The failure, however, by the Authority to make payments in respect of any Commonwealth Guaranteed Indebtedness or Commonwealth Supported Obligations (such as the PFC Bonds) will not be considered Events of Default under the Trust Agreement, and the above remedies, absent such failure also being such an event of default (as would be the case if such failure also caused a violation of a Trust Agreement covenant), would not be available to the Trustee or Bondholders upon any such nonpayment. See *Appendix II* and “Certain Risks Related to the Limited Source of Payment and Security for the Senior Bonds and Remedies Under the Trust Agreement” under CERTAIN RISK FACTORS AND INVESTMENT CONSIDERATIONS.

Acceleration

Upon the occurrence and continuation of an Event of Default, except for certain specified Events of Default, the Trustee may (and if requested by the Holders of not less than a majority in aggregate principal amount of Senior Indebtedness (or if no Senior Indebtedness is then Outstanding, of Senior Subordinate Indebtedness) then Outstanding shall) by written notice to the Authority, declare the entire unpaid principal of the Bonds due and payable and, thereupon, the entire unpaid principal of the Bonds shall forthwith become due and payable. Upon any such declaration, on the first Business Day of each month, the Trustee shall pay to (i) the Authority, an amount of Authority Revenues equal to the amount set forth in the applicable Annual Budget to pay Current Expenses of the Systems for such month and (ii) the Holders of the Bonds and Other System Indebtedness, but only from the remaining Authority Revenues and other moneys in the Trust Agreement specifically pledged for payments of Bondholders, the entire unpaid principal of and premium, if any, and accrued interest on the Bonds and Other System Indebtedness. If at any time after such a declaration and before the entry of a final judgment or decree in any suit, action

or proceeding instituted on account of such default or before the completion of the enforcement of any other remedy under the Trust Agreement, the principal of all Bonds and Other System Indebtedness that have matured or been called for redemption pursuant to any sinking fund provision and all arrears of interest have been paid and any other Events of Default which may have occurred have been remedied, then the Trustee may, by written notice to the Authority, rescind or annul such declaration and its consequences. No such rescission or annulment shall extend to or affect any subsequent default or impair any right consequent thereon. Senior Subordinate Indebtedness may not be accelerated if any Senior Indebtedness is Outstanding. Subordinate Indebtedness may not be accelerated if any Senior Indebtedness or Senior Subordinate Indebtedness is Outstanding. See *Appendix II* and “Certain Risks Related to the Limited Source of Payment and Security for the Senior Bonds and Remedies Under the Trust Agreement” under CERTAIN RISK FACTORS AND INVESTMENT CONSIDERATIONS.

PROPOSED AMENDMENTS TO TRUST AGREEMENT

In connection with the issuance of the 2020 Senior Bonds, the Authority and the Trustee will execute a Ninth Supplemental Agreement authorizing the amendment of certain provisions of the Trust Agreement, subject to and effective upon compliance with Section 9.02 of the Trust Agreement. The Proposed Amendments, which are summarized below, are contained in the form of the Second Amended and Restated Master Agreement of Trust (the “***Second Amended and Restated Trust Agreement***”) attached hereto as *Appendix VII*. Such amendments will only become effective upon the receipt of the written consent of the Holders of all Outstanding Bonds of each lien priority under the Trust Agreement and the holders of certain other Outstanding Senior Indebtedness. See “Conditions to Effectiveness of the Proposed Amendments” below under this heading. Each purchaser of the 2020 Senior Bonds, by its purchase of the 2020 Senior Bonds and execution of its Investor Letter, will consent to the Proposed Amendments.

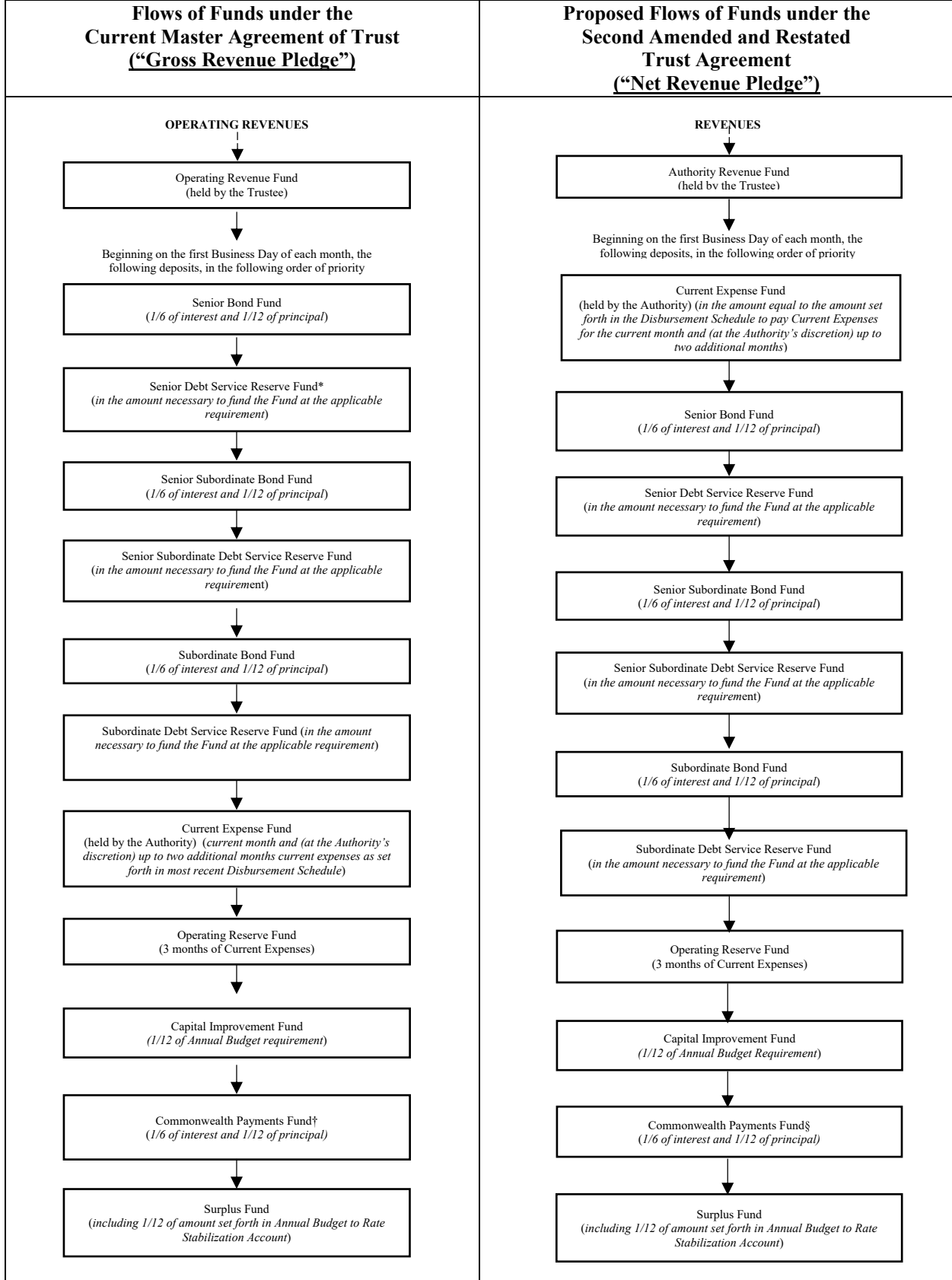
The Proposed Amendments, as set forth in the Second Amended and Restated Trust Agreement, among other things, would:

- (1) revise the pledge of the Authority Revenues from a “gross revenue pledge” to a “net revenue pledge” by changing the order of monthly deposits of Revenues with the Trustee, such that the order of monthly deposits in the flow of funds to provide for the payment, both before and after the occurrence of an Event of Default, of Current Expenses prior to the Authority making monthly deposits for debt service on Bonds and Other System Indebtedness and the maintenance of debt service reserve funds for such all such Indebtedness, if any, with amounts on deposit in the Current Expense Fund not being available to make up shortfalls in the balance required to be on deposit in the Bond Funds to pay debt service on the Senior Bonds, the Senior Subordinate Bonds and the Subordinate Bonds, respectively;
- (2) revise the definition to “Annual Debt Service” to clarify that, consistent with the Authority’s historical calculation thereof, Annual Debt Service is calculated based on when the Authority is required to make deposits to the respective Bond Funds rather than when the date on which principal and interest is due and payable;

- (3) change the term “Operating Revenues” to “Revenues” and clarify that such term does not include (a) revitalization charges imposed pursuant to Act 68-2018 or similar mandatory, non-bypassable charge imposed by law to secure securitization bonds and (b) any funds received from the federal government required to be used to pay Current Expenses or Costs of Improvements, or required to reimburse the Authority for Current Expenses or for Costs of Improvements.
- (4) amend the Rate Covenant coverage levels as set forth in the chart below;
- (5) amend the tests for the issuance of additional Bonds to require that Revenues provide the coverage levels set forth in the chart below;
- (6) eliminate the references in the Trust Agreement to Commonwealth Supported Obligations, which obligations are not indebtedness of the Authority, not payable from Revenues and would not cause the occurrence of an Event of Default if not paid;
- (7) clarify the timing of delivery of audit reports to the Trustee and the Consulting Engineer;
- (8) eliminate references to the Term Loan Fund and Budgetary Reserve Fund, which no longer exist; add a force majeure definition and modify the Current Expense Fund and Cost of Improvement definitions; and
- (9) amend the definition of Debt Service Reserve Facility to require that a provider of any such facility be rated in one of the two highest long-term rating categories by at least two nationally recognized statistical rating organizations instead of by two such organizations then rating the Authority’s bonds.

The diagrams below illustrate the flow of funds under the Trust Agreement prior to the effectiveness of the Proposed Amendments and after the Proposed Amendments are approved, as described under “Conditions to Effectiveness of the Proposed Amendments.”

FLOW OF FUNDS COMPARISON



* The 2020 Senior Bonds are not secured by the Senior Debt Service Reserve Fund.

† Includes the Commonwealth Guaranteed Indebtedness Account and the Commonwealth Supported Obligations Account. PFC Bonds are Commonwealth Supported Obligations. The Authority does not have an obligation to pay the PFC Bonds if no Commonwealth appropriations have been made. The Authority has not paid the PFC Bonds since 2011.

§ Includes Commonwealth Guaranteed Indebtedness. The Second Amended and Restated Trust Agreement will not include Commonwealth Supported Obligations.

The chart below illustrates the proposed changes to the additional Bonds tests and the rate covenant under the Trust Agreement prior to the effectiveness of Proposed Amendments and after the Proposed Amendments are approved, as described under “Conditions to Effectiveness of the Proposed Amendments” below under this heading.

Covenant	Current Trust Agreement	Proposed Second Amended and Restated Agreement
Additional Bonds Test	<p>Operating Revenues for any 12 consecutive calendar months out of the 18 calendar months immediately preceding issuance are at least:</p> <ul style="list-style-type: none"> • <u>For Senior Bonds</u>: 250% of maximum aggregate Annual Debt Service on Senior Indebtedness for any Fiscal Year and 150% of maximum aggregate Annual Debt Service on all Bonds and Other System Indebtedness Outstanding. • <u>For Senior Subordinated Bonds</u>: 200% of maximum aggregate Annual Debt Service on Senior Indebtedness and Senior Subordinate Indebtedness for any Fiscal Year and 150% of maximum aggregate Annual Debt Service on all Bonds and Other System Indebtedness Outstanding. • <u>For Subordinate Bonds</u>: 150% of maximum aggregate Annual Debt Service on all Bonds and Other System Indebtedness Outstanding. <p><u>Alternative Test for Subordinate Bonds</u>-Projected Operating Revenues for each of the next three full Fiscal Years is at least 150%.</p>	<p>Net Revenues for any 12 consecutive calendar months out of the 18 calendar months immediately preceding issuance are at least:</p> <ul style="list-style-type: none"> • <u>For Senior Bonds</u>: 120% of maximum aggregate Annual Debt Service on Senior Indebtedness for any Fiscal Year and 100% of maximum aggregate Annual Debt Service on all Bonds and Other System Indebtedness Outstanding. • <u>For Senior Subordinated Bonds</u>: 110% of maximum aggregate Annual Debt Service on Senior Indebtedness and Senior Subordinate Indebtedness for any Fiscal Year and 100% of maximum aggregate Annual Debt Service on all Bonds and Other System Indebtedness Outstanding. • <u>For Subordinate Bonds</u>: 100% of maximum aggregate Annual Debt Service on all Bonds and Other System Indebtedness Outstanding. <p><u>Alternative Test for Subordinate Bonds</u>-Projected Net Revenues for each of the next three full Fiscal Years is at least 100%</p>
Rate Covenant	<p>Operating Revenues shall be sufficient in each Fiscal Year to be at least equal to:</p> <ul style="list-style-type: none"> • 250% of Annual Debt Service on Senior Indebtedness for the current Fiscal Year; • 200% of Annual Debt Service on Senior Indebtedness and Senior Subordinate Indebtedness for the current Fiscal Year; and • 150% of Annual Service on all Bonds and Other System Indebtedness for the current Fiscal Year; and Authority Revenues shall be at least equal to 100% of all required deposits under the Trust Agreement, including Current Expenses. 	<p>Net Revenues shall be sufficient in each Fiscal Year to be at least equal to:</p> <ul style="list-style-type: none"> • 120% of Annual Debt Service on Senior Indebtedness for the current Fiscal Year; • 110% of Annual Debt Service on Senior Indebtedness and Senior Subordinate Indebtedness for the current Fiscal Year; and • Sufficient to pay 100% of all required deposits under the Second Amended and Restated Trust Agreement, excluding Current Expenses.

The current definition of “Operating Revenues” under the Trust Agreement is:

“Operating Revenues” means all moneys received by or on behalf of the Authority, including (i) the moneys derived by or on behalf of the Authority from the sale of water produced, treated or distributed by, or the collection, transmission, treatment or disposal of sewage by the Systems, (ii) any proceeds of use and occupancy insurance on the Systems or any part thereof, (iii) except as provided in the following sentence, any income from the investments made under the Trust Agreement, (iv) any special assessments, including assessments in the nature of impact fees, (v) amounts, if any, paid from the Rate Stabilization Account into the Operating Revenue Fund in any Fiscal Year minus the amounts, if any, paid from the Operating Revenue Fund into the Rate Stabilization Account during the same Fiscal Year; and (vi) regularly scheduled payments received under any Qualified Swap or Hedge Agreement during such period. In no event shall Operating Revenues include (i) income from the investment of moneys on deposit to the credit of the Construction Fund, proceeds of insurance (except use and occupancy insurance) or condemnation awards (which are required to be deposited directly to the credit of the Capital Improvement Fund), (ii) proceeds of sales of property constituting a part of the Systems (which are required to be deposited directly to the credit of the Capital Improvement Fund), (iii) the proceeds of Bonds or other Indebtedness, (iv) any governmental grants or appropriations available to pay Current Expenses of the Authority, including grants or appropriations received by the Authority and specifically made for the payments of principal of and interest on obligations of the Authority or for reimbursing the Authority for such payments, (v) any amounts received from the Commonwealth of Puerto Rico on account of Commonwealth Guaranteed Indebtedness (which is required to be deposited directly in the Commonwealth Payments Fund) or Commonwealth Supported Obligations (which is required to be deposited in the Commonwealth Payments Fund), (vi) any amounts transferred from the Budgetary Reserve Fund to the Trustee and (vii) any termination or similar payment under any interest rate swap or similar hedge agreement received by the Authority (which are required to be deposited directly to the credit of the Capital Improvement Fund).

The proposed definition of “Revenues” in the Second Amended and Restated Trust Agreement is:

“Revenues” means all moneys received by or on behalf of the Authority, including (a) the moneys derived by or on behalf of the Authority from the sale of water produced, treated or distributed by, or the collection, transmission, treatment or disposal of sewage by the Systems, (b) any proceeds of use and occupancy insurance on the Systems or any part thereof, (c) except as provided in the following sentence, any income from the investments made under this Agreement, (d) except as provided in the following sentence, any governmental grants or appropriations available to pay the principal of and interest on obligations of the Authority, (e) except as provided in the following sentence, any governmental grants or appropriations available to pay Current Expenses of the Authority, including grants or appropriations received by the Authority and specifically made for reimbursing the Authority for such payments, (f) any special assessments, including assessments in the nature of impact fees, (g) amounts, if any, paid from the Rate Stabilization Account into the Authority Revenue Fund in any Fiscal Year minus the amounts, if any, paid from Revenues deposited into the Rate Stabilization Account during the same Fiscal Year; (h) regularly scheduled payments received under any Qualified Swap or Hedge Agreement during such period; and (i) any amounts received by the Authority from any source of funding that

does not otherwise constitute Revenues as reimbursement for Costs of Improvements paid by the Authority in the current or the immediately preceding three fiscal years from Revenues. In no event shall Revenues include (i) income from the investment of moneys on deposit to the credit of the Construction Fund, proceeds of insurance (except use and occupancy insurance) or condemnation awards (which are required to be deposited directly to the credit of the Capital Improvement Fund), (ii) proceeds of sales of property constituting a part of the Systems (which are required to be deposited directly to the credit of the Capital Improvement Fund), (iii) any amounts received from the Commonwealth of Puerto Rico on account of Commonwealth Guaranteed Obligations (which is required to be deposited in the Commonwealth Payments Fund), (iv) the proceeds of Bonds or other Indebtedness, (v) any termination or similar payment under any interest rate swap or similar hedge agreement received by the Authority (which are required to be deposited directly to the credit of the Capital Improvement Fund), (vi) any separate revitalization charge or fee imposed pursuant to Act 68-2018 or similar mandatory non-bypassable charge imposed by law to secure securitization bonds, and (vii) any funds received by the Authority from the federal fund government (i) required to be used to pay Current Expenses or Cost of Improvements or (ii) as a reimbursement for prior Current Expenses or Costs of Improvements paid by the Authority.

The proposed definition of “Net Revenues” under the Second Amended and Restated Trust Agreement means, for any particular period, the amount of the excess Revenues over Current Expenses for such period.

See *Appendix VII* - Proposed Form of Second Amended and Restated Trust Agreement.

Conditions to Effectiveness of the Proposed Amendments

The Proposed Amendments would be made pursuant to Section 9.02 of the Trust Agreement. AAFAF, by resolution adopted October 28, 2020, and the Oversight Board on November 20, 2020, approved the proposed amendments to the Trust Agreement. The Proposed Amendments will not become effective unless and until all Holders of Outstanding Bonds and the Federal Lenders have consent thereto. Currently the Authority has \$3,078.7 million aggregate principal amount of Senior Bonds Outstanding, which amount includes the portion of the 2008 Senior Bonds to be refunded with the proceeds of the 2020 Senior Bonds. Any outstanding 2008 Senior Bonds after the issuance of the 2020 Senior Bonds will not have consented to the Proposed Amendments. The current intention of the Authority is to request the consent of the Federal Lenders after it has received the consents of the holders of all Outstanding Bonds. The Authority cannot give any assurance whether it will continue to seek all such consents, when all such consents will be obtained or if such consents can be obtained at all. Until all the required consents have been obtained, the Trust Agreement will remain in effect without the Proposed Amendments, except that the Proposed Amendments described in clauses (2), (3(b)) (except that such change would be made to the current definition of Operating Revenues), (7) and (8) in the paragraph that starts “The Proposed Amendments, as set forth in the Second Amended and Restated Trust Agreement, among other things, would:” under this heading, may be made without the consent of Holders of Outstanding Indebtedness in accordance with Section 9.01 of the Trust Agreement. The Authority may decide to implement such amendments in accordance with Section 9.01 of the Trust Agreement or other amendments permitted thereby prior to Second Amended and Restated Trust Agreement becoming effective. See SECURITY FOR THE BONDS.

THE 2020 SENIOR BONDS

General

The 2020 Senior Bonds will be dated, bear interest at such rates, be payable at such times, and mature on the dates and in the principal amounts set forth on the cover and inside cover page of this Limited Offering Memorandum. Certain of the Bonds are subject to redemption at the times and at the prices set forth below. The 2020 Senior Bonds will initially be represented by one 2020 Senior Bond for each maturity of a Series of the 2020 Senior Bonds, registered in the name of DTC, New York, New York, or its nominee. DTC will act as securities depository for the 2020 Senior Bonds. Beneficial Owners of the 2020 Senior Bonds will not receive physical delivery of the 2020 Senior Bonds. See *Appendix V – DTC*. The 2020 Senior Bonds will be sold in denominations of \$250,000 or any integral multiple of \$5,000 in excess thereof.

Optional Redemption

The 2020A Senior Bonds maturing after July 1, 2030, may be redeemed at the option of the Authority prior to maturity, upon not less than 30 days' prior notice, either in whole, or in part, in such order of maturity as directed by the Authority, from any available moneys, but not from moneys held by the Trustee in respect of a Sinking Fund Requirement, on any date not earlier than July 1, 2030, at the principal amount of the 2020A Senior Bonds to be redeemed, plus accrued interest to the redemption date, without premium.

The 2020B Senior Bonds are not subject to optional redemption.

Sinking Fund Requirements

2020A Senior Bonds. The 2020A Senior Bonds maturing July 1, 2030, July 1, 2035, and July 1, 2047, shall be redeemed in part commencing on July 1, 2026, July 1, 2031, and July 1, 2036, respectively, and each July 1 thereafter in the principal amounts equal to the respective Sinking Fund Requirements (less the principal amount of any 2020A Senior Term Bonds retired by purchase) from moneys in the Senior Sinking Fund Account at par plus accrued interest in the years and amounts set forth below:

**Annual Sinking Fund Requirements
for 2020A Senior Bonds due July 1,**

Year	2030	2035	2047
2026	\$44,935,000		
2027	47,170,000		
2028	49,545,000		
2029	51,990,000		
2030	54,935,000 [‡]		
2031		\$57,695,000	
2032		60,550,000	
2033		63,590,000	
2034		66,790,000	
2035		42,205,000 [‡]	
2036			\$44,310,000
2037			46,530,000
2038			49,060,000
2039			51,390,000
2040			53,960,000
2041			56,655,000
2042			59,495,000
2043			62,465,000
2044			65,585,000
2045			68,865,000
2046			72,310,000
2047			75,930,000 [‡]

[‡] Final maturity.

2020B Senior Bonds. The 2020B Senior Bonds shall be redeemed in part commencing on July 1, 2021, and each July 1 thereafter in the principal amounts equal to the respective Sinking Fund Requirements (less the principal amount of any 2020B Senior Term Bonds retired by purchase) from moneys in the Senior Sinking Fund Account at par plus accrued interest in the years and amounts set forth below:

**Annual Sinking Fund Requirements
for 2020B Senior Bonds due July 1, 2024**

Year	
2021	\$725,000
2022	955,000
2023	1,025,000
2024	16,070,000 [‡]

[‡] Final maturity.

Notice of Redemption; Selection of 2020 Senior Bonds

At least thirty (30) days prior to any redemption, notice thereof will be sent by registered or certified mail or overnight express delivery to the Holder of each 2020 Senior Bond to be redeemed at the address as it appears on the registration books kept by the Trustee and all organizations registered with the Securities and Exchange Commission (the “*SEC*”) as securities depositories and to the MSRB. Whenever provision is made in the Trust Agreement for the optional redemption of the 2020 Senior Bonds and less than all outstanding 2020 Senior Bonds of a maturity are to be redeemed, the Trustee shall select the 2020 Senior Bonds for redemption in the principal amount or amounts as directed by the Authority. The Trustee shall select the 2020 Senior Bonds to be redeemed from the outstanding 2020 Senior Bonds of a maturity not previously called for redemption on the basis of a pro rata pass-through distribution of principal in accordance with DTC procedures and provided that, so long as the 2020 Senior Bonds are held in book-entry form, the selection for redemption of such 2020 Senior Bonds shall be made in accordance with the operational arrangements of DTC then in effect. If, however, the DTC operational arrangements do not allow for redemption on the basis of a pro rata pass-through distribution of principal, the 2020 Senior Bonds will be selected for redemption, in accordance with DTC procedures, by lot. The portion of any 2020 Senior Bond to be redeemed in part shall be in the principal amount of \$250,000 and any multiple of \$5,000 in excess thereof.

It is the Authority’s intent that allocations for maturities of 2020 Senior Bonds redeemed in part and made by DTC be made on the basis of a pro rata pass-through distribution of principal as described above. However, none of the Authority, the Trustee or the Underwriters can provide any assurance that DTC, DTC's Direct and Indirect Participants or any other intermediary allocate the partial redemption of a maturity of 2020 Senior Bonds on such basis. If the DTC operational arrangements do not allow for the redemption of the 2020 Senior Bonds on the basis of a pro rata pass-through distribution of principal as described above, then the 2020 Senior Bonds will be selected for partial redemption, in accordance with DTC procedures, by lot. See *Appendix V – DTC*.

If the 2020 Senior Bonds are not registered in book-entry-only form, any redemption of less than all of a maturity of the 2020 Senior Bonds shall be allocated among the registered owners of such 2020 Senior Bonds on a pro-rata basis.

Each notice of redemption shall contain, among other things, the CUSIP identification number and the number of the 2020 Senior Bonds (or portion thereof) being called for redemption, the redemption date and price and the address at which 2020 Senior Bonds are to be surrendered for payment of the redemption price. Any defect in such notice or the failure so to mail any such notice to registered owner of any 2020 Senior Bond will not affect the validity of the proceedings for the redemption of any other 2020 Senior Bond. Any defect in such notice or the failure so to mail any such notice to any such national information service will not affect the effectiveness of a call for redemption. Notices of optional redemption may be given with the condition that the effectiveness of such optional redemption is dependent upon the Trustee having in its possession on the date of redemption moneys sufficient to enable it to pay the applicable redemption price on the corresponding 2020 Senior Bonds, and in the absence of such possession by the Trustee, such redemption will not take place.

Purchase of 2020A Senior Bonds

The Authority may purchase or cause to be purchased any 2020A Senior Bonds of any maturity in lieu of redemption of such Bonds (in which event any 2020A Senior Bonds so purchased shall be cancelled and shall cease to bear interest pursuant to the provisions of the Trust Agreement) or for any other purpose pursuant to written instructions given by the Authority to the Trustee. Such purchases shall be made in such manner as directed by the Authority. The Authority or the Trustee shall pay the purchase price of such Bonds together with accrued interest thereon from such funds as may be available therefor pursuant to the Trust Agreement, any Supplemental Agreement, or as otherwise may be made available by the Authority.

THE AUTHORITY

The Authority is a body corporate and politic constituting a public corporation and governmental instrumentality of the Commonwealth created by the Act. The Authority owns and operates the public water supply and wastewater systems of the Commonwealth. The executive offices of the Authority are located at 604 Barbosa Avenue, Hato Rey, Puerto Rico 00916. Its telephone number is (787) 620-2277.

Powers

The Authority has broad powers under the Act, including the power to make contracts, to acquire properties by any lawful means, to exercise eminent domain, to hold, operate and administer its properties, to borrow money and issue bonds for any of its corporate purposes, to secure the payment of its bonds and all other obligations by pledge of its revenues, to determine, revise, charge and collect rates, fees, rentals and other charges for the use of its facilities and to have complete control and supervision of its properties and activities.

Management

Under the Act, the Governing Board of the Authority (the “**Board**”) is composed of seven (7) members, and pursuant to Act No. 2-2017, while the Authority maintains its status as a “covered territorial instrumentality,” AAFAF’s Executive Director or his/her designee, is a full member of the Authority Board, for a total current composition of eight (8) members (the “**Board members**”). Four of the seven Board members are independent directors, selected and appointed by the Governor of Puerto Rico from a list prepared by a recognized executive search firm for board of director recruitment for institutions of similar size, complexity, and risks as the Authority, with the advice and consent of the Senate, as follows: one engineer authorized to practice engineering in Puerto Rico with at least ten years of engineering experience; one attorney with at least ten years of legal experience in Puerto Rico; one person with extensive knowledge and experience in corporate finance; and one professional with expertise in any of the fields related functions delegated to the Authority. The remaining three Board members consist of one customer representative selected by vote of the Authority’s customers conducted under rules promulgated by the Department of Consumer Affairs; and the other two members are the Executive Director of the Mayors Association and the Executive Director of the Mayors Federation. The consumer representative serves a three-year term. The current Board members appointed by the Governor serve staggered five-year terms. Under the Act, none of the four members appointed by the

Governor may hold such office for more than three terms. The Mayors Association and Mayors Federation members and the AAFAF member serve on the Board *ex officio*. There currently are two vacancies on the Board. The current members of the Board are:

<u>Members</u>	<u>Professional Background</u>	<u>Term Ends</u>
Héctor J. Del Río Jiménez, Independent director— Chairman of the Board	Finance	July 12, 2022
Alberto J. Castañer Padró, Independent Director	Legal	July 12, 2021
Memphis Cabán Rodríguez, Independent Director	Engineer	July 12, 2021
Vacant, Independent Director		
Hector Sánchez Cardona	Customer Representative	June 19, 2020 (holding over)
Vacant	Executive Director of the Mayors Federation	<i>Ex-Officio</i>
José A. Rivera Rodríguez	Executive Director of the Mayors Association	<i>Ex-Officio</i>
Gerardo Lorán Butrón,	Executive Director of AAFAF Representative	<i>Ex-Officio</i>

The Board is responsible for making or approving all major decisions taken by the Authority, including overall institutional policies, the Authority’s strategies and programs, executive and key management manpower recruitments and removals, approval of union contracts, services and other contracts (or contract amendments) beyond the limits accorded to the Executive President.

The Board is assisted by an Internal Audit Unit, that conducts internal audits for the Board, and by a Board Secretary, who maintains Board records, among other responsibilities. Act 15-2017 established a new central Office of Inspector General (“**OIG**”) for the Government of Puerto Rico providing for the transfer of all internal audit personnel, equipment, records, documentation and others of all governmental entities, including the Authority, as well as their budgets to centralize government internal audit functions. The Authority takes the position that Act 15-2017 is not applicable to it, and no transfer of Authority functions or personnel is contemplated or has been effected.

In 2004, the Authority’s management structure was changed by law and additional powers to improve its operational and financial management were enacted, including (i) decentralizing the administration of the Authority into regions and an autonomous Infrastructure Directorate, with respective Executive Directors, to provide greater efficiency in, and financial control of, the day-to-day administration and operational decision-making process and for the development, implementation and management of all capital improvement projects; and (ii) providing for six-year appointments for each of the Executive Regional Directors, Executive Director for Infrastructure and Executive President in order to provide longer-term continuity of top management. In 2016, the appointment term for the Executive President, the Infrastructure Director and the Executive Regional Directors was changed to five years by Act 68-2016.

The Board appoints the Executive President, who is the chief executive officer of the Authority responsible for its day-to-day operations. Each of the Authority's five geographical and operational regions is run by a regional executive director who reports to the Vice President for Operations. Key leadership positions in other areas are the Corporate and Strategic Planning Vice President, Operations Vice President, Administration Vice President and Department Directors. Set forth below are brief biographical descriptions of the Executive President and certain key members of the Authority's senior management staff.

Doriel Pagán Crespo, A.E., is the Authority's Executive President. Her term expires on February 27, 2025. Ms. Pagán is a Chemical Engineer graduated from the University of Puerto Rico, Mayaguez campus. She started in the Authority in 1992 as water plant supervisor, holding subsequently the positions of Area Director in Arecibo (1998-2008), Deputy Director of Compliance and Quality Control for the North Region (2008-2009), Deputy Regional Executive Director North Region (2009-2013), Regional Executive Director for the North Region (2012-2017), and Vice President for Operations (2017-2020). In February 2020, she assumed the position of Executive President. Among the recognitions for her performance, Ms. Pagán received the Vanguard Woman award from the Puerto Rico College of Engineers and Surveyors for her achievements in the engineering field, as well as for being the first woman to occupy each of the operational managerial positions within the Authority. Ms. Pagán also holds a professional coach certificate with specialization in resilience, which consists of guiding individuals, teams and organizations in the development and effective achievement of their individual or institutional goals.

José Javier Rivera-Sanabria, P.E., M.E.C.E., is the Authority's Interim Executive Director for Infrastructure. Mr. Rivera-Sanabria joined the Authority in 2012. He holds a Civil Engineer B.S. degree from Bradley University (Peoria, IL) and a Master's degree in Civil Engineer from University of Florida (Gainesville, FL) with concentrations in water resources and geotechnical engineering. Mr. Rivera-Sanabria is recipient of the 2014 Puerto Rico Environmental Engineering Institute's Leadership Award and was a Construction Materials and Laboratory Procedures professor in 2014 at the University of Puerto Rico, Bayamón Campus. He has over 20 years of experience including work in water and wastewater engineering design and project management in the private sector as well as Director of Engineering and Procurement for the Authority.

Luis Reinaldo González Delgado, P.E., B.S.C.E., was appointed the Authority's Interim Executive Vice President for Operations in March 2020. Mr. González Delgado has been employed by the Authority since 2012. He holds a Civil Engineering, B.S. degree from the University of Puerto Rico, Mayagüez Campus. He has approximately 20 years of experience, including geotechnical engineering, materials testing in the private sector and water and wastewater engineering design evaluations and project management for the Authority. He started his career at the Authority as a Technical Manager (2012-2018) and became Deputy Director of Infrastructure Metro Region in 2018.

Keralia María Moreda Rodríguez, Esq., was appointed the Authority's Interim Executive Vice President of Administration in 2018. Mrs. Moreda Rodríguez started in the Authority in 2017. She holds a Bachelor of Business Administration and a Juris Doctor from the University of Puerto Rico, Rio Piedras Campus. She has approximately 14 years of experience in areas such as executive-level leadership, strategic direction, day-to-day operations, and Administrative, Legal

and Human Resources affairs. She started her career at the Authority as an Executive Advisor to the President in 2017.

Ryan Arrieta Hallberg, PE, has been the Authority's Vice President of Corporate & Strategic Planning since April 2017. He holds both a Bachelor and Master of Science in Civil Engineering from the Georgia Institute of Technology and a Master of Business Administration from the Kenan-Flager Business School of the University of North Carolina. From 2012 to 2017, Ryan worked as a management consultant in Atlanta, Georgia focusing on project management, process analysis and improvement and organization design across several industries, including utilities. Previously, he worked as an engineer for various construction and development firms supporting several projects including heavy civil, commercial, and residential developments. He is a former President of the Puerto Rico Georgia Tech Alumni Association, and a mentor member of the Georgia Tech Mentor Jackets Program.

Deises Soler-Pérez is the Authority's Interim Finance Director. Ms. Soler-Pérez was appointed to such position in August 2020. Prior to this appointment, Ms. Soler-Pérez occupied several positions at the Authority such as North Region Finance Director and Senior Finance Director. Prior to joining the Authority, Ms. Soler-Pérez held various accounting positions in the private manufacturing industry and also worked as analyst for the implementation at the Authority of the SAP Financial Module for Ondeo de Puerto Rico. Ms. Soler-Pérez holds a bachelor's degree in Business Administration with a major in accounting from the University of Puerto Rico and a Master's degree in Human Resources from Phoenix University.

Raquel Matos Rolón, Esq., General Legal Counsel, assumed such position in November 2006 after having served as the Authority's Internal Auditor for almost two years. Prior to that, she served as Legal Counsel to the Office of the Comptroller of the Commonwealth for two years. Ms. Matos holds a Juris Doctor from the University of Puerto Rico School of Law and a Bachelor's Degree in Business Administration, with a major in accounting, from the University of Puerto Rico, Río Piedras Campus. She is also a CPA.

Irma M. López Santos, Executive Director of Environmental Compliance and Quality Control, was appointed to such position in May 2012, after having worked since 2002 in different positions in the Authority, first with the administration of the management contract between Ondeo de Puerto Rico and the Authority, and subsequently as Director of Drinking Water Area and as Executive Sub-Director of the Environmental Compliance and Quality Control Department. Prior to that Mrs. López worked for more than 12 years in the private sector in various technical and management positions for multinational manufacturing firms. She holds a Bachelor's Degree in Science with major in Chemistry from the University of Puerto Rico, Mayagüez Campus.

The Authority's regional executive directors, who report to the Vice President for Operations, are responsible for administration and operation of water and wastewater facilities within each region. These positions are currently held by the following interim Regional Executive Directors: Joel Lugo Rosa, P.E. M.E.C.E. (West Region), Enrique Rosario Agosto, P.E. (East Region), Cheryl Ortiz McCormick (South Region), José Rivera Ortiz (North Region), and Roberto W. Martínez, E.I.T. (Metro Region).

Employees and Labor Relations

The Authority had 4,593 regular and temporary employees as of June 30, 2019. At that date, 3,049 employees were represented by two unions, the Independent Authentic Union (the “*UIA*” by its Spanish acronym) and the *Hermandad de Empleados Profesionales de la Autoridad de Acueductos y Alcantarillados* (the “*HIEPAAA*”), the largest of which is the *UIA* with approximately 3,000 members. The remaining Authority employees consist of (i) appointed employees, (ii) management employees and (iii) temporary employees. From the total employees, 321, as of June 30, 2020, were eligible under the preretirement program established by Act 211-2015. This program provides government agencies and municipalities in Puerto Rico, such as the Authority, with a mechanism to help them generate savings in employee costs (payroll and fringe benefits), as well as to afford employees who enrolled in the Employees Retirement System prior to April 1, 1990, the opportunity to receive certain benefits until they reach the optional retirement age, which for most people is 61 years. See, “Voluntary Early Retirement Programs” below.

During 2012, the Authority entered into new Collective Bargaining Agreements (each a “*CBA*” and together, the “*CBAs*”) with *UIA* and the *HIEPAAA*. The termination dates of these *CBAs* were December 31, 2015, and June 30, 2016, respectively. Following the enactment of Act 66-2014, the Fiscal Sustainability Act, the Authority and its unions agreed to amend the respective *CBAs*. In the case of *UIA*, these amendments generally provide for (i) the elimination of the Authority’s contribution to the unionized employees savings plan, (ii) the elimination of liquidation of vacation and sick leave in excess of 30 days and 45 days, respectively, (iii) reductions of vacation and sick leave days, (iv) a 50% reduction in the amount of employees’ retirement bonus, and (v) a reduction of a previously negotiated salary raises. In addition, the *UIA* agreed to the implementation of performance metrics, the incorporation of computerized handheld meter readers, and flexible work shifts and functions in certain areas, as well as the conversion of certain temporary employees to regular positions during the period, who will not be entitled to the benefits granted under the *CBA*. These measures and amendments remained in place through July 1, 2017. However, under the current legislation, all the economic clauses under the *CBAs* are on hold and some of these amendments were modified.

HIEPAAA’s *CBA* was also amended to (i) reduce union members’ Christmas and summer bonuses, (ii) reduce previously negotiated salary increases, and (iii) eliminate liquidation of accumulated vacation and sick days in excess of 60 days and 45 days, respectively, subject to the retention of the right to accumulate vacation and sick leave days in excess of 60 and 90 days, respectively, among other similar agreements.

Applicability of CBAs since 2017

Several laws that affect the Authority’s labor relations have been enacted or amended since 2017, which have supremacy over any other law or agreement regarding employment matters. The aspects of these laws that affect the Authority are discussed below:

On June 17, 2014, Act 66-2014, known as “Fiscal Sustainability Act” was passed, declaring an island-wide state of emergency and implementing special fiscal and operational measures to allow the government and its instrumentalities more flexibility to achieve budgetary balance and

phase out the financing of budget deficits. Chapters II and III of Act 66-2014 were in effect until July 1, 2017.

Act 3-2017, effective January 23, 2017, declared an island-wide fiscal emergency and requires that Puerto Rico's government instrumentalities, including the Authority, reduce operating and other expenses. Act 3-2017 also requires government agencies, but not Puerto Rico's public corporations, to reduce electric and water consumption by at least 5% per year and 15% for three years, which may result in a reduction in Authority revenues. Total government agency water consumption has declined since the effectiveness of Act 3-2017, but due to the September 2017 Hurricanes, the 2020 earthquakes, and COVID-19, the Authority has not been able to determine whether the normalized, annual decline in such consumption has met or exceeded the above 15% threshold.

Act 3-2017 (A) prohibits (i) increases in economic benefits to employees, with minor exceptions, (ii) monetary liquidation of vacation days and no monetary liquidation of vacation days in excess of 60 days for employees who are separating from service, (iii) liquidation of sickness days, except for employees separating from service and only in relation to sickness days accrued before January 23, 2017, at the rate of their salary as of June 30, 2014, and (iv) negotiation of CBAs through June 30, 2021, (B) suspends effectiveness of non-economic clauses under existing CBAs that have an economic impact on the operating budgets, and (C) reduces positions of trust or appointed employees (*empleados de confianza*) by 20% unless specifically approved by the Puerto Rico Office of Management and Budget ("**OMB**").

Act 3-2017 extends until June 30, 2021, the termination date of any CBA (including the Authority's CBAs) in respect of its non-economic clauses and those clauses not affected by Act 3-2017. Non-economic clauses that have a direct or indirect economic impact on the Authority's operational budget are suspended, except for certain terms relating to on-the-job safety. After the expiration of Act 3-2017, those unions that represented employees as of July 1, 2014, may begin negotiating new CBAs. Government entities are required to negotiate based on the legal framework applicable during the negotiations and consider, primarily, the fiscal and economic situation of the entity and of the government in general.

On April 29, 2017, Act 26-2017 known as "Act to Comply with the Fiscal Plan" was enacted, further amending labor benefits. Some of the changes resulting from Act 26-2017 are as follows:

- Elimination of all bonuses, except the Christmas Bonus, which was reduced to \$600 for all employees.
- Maximum overtime factor 1.5 times.
- Maximum annual accrual of 15 days and 18 days for vacation and sick leave, respectively for employees hired prior to February 4, 2017, and 15 days and 12 days for employees hired after February 3, 2017.
- Reduction of the employer contributions for medical insurance.

On December 16, 2019, Act 176-2019 was enacted, increasing vacation and sick leave benefits to 30 and 18 days, respectively.

The Oversight Board has included the elimination of the Christmas bonus in the Fiscal Plan to achieve estimated cost savings of \$15.6 million from fiscal year 2021 through fiscal year 2025 (\$3.1 million per year). The policy of the Government of Puerto Rico, however, is to retain this bonus for public employees, including the Authority's. As a result, the Authority does not expect to eliminate the Christmas bonus for its employees and will seek, as in previous years, reductions in other expense categories to be able to pay such benefit to its employees. The Christmas bonus is an important component of overall compensation for Authority employees and has been paid in each year in which the Oversight Board has been in place. In light of the ongoing COVID-19 pandemic, Authority management believes that additional reductions in employees' compensation are not appropriate or advisable. The Authority expects to provide for the Christmas bonus payment notwithstanding anything to the contrary in future Authority fiscal plans. By letter, dated November 20, 2020, the Oversight Board permitted the payment of the 2020 Christmas bonus to Authority employees. See "Certain Risks Related to the Political and Economic Circumstances of Puerto Rico" under CERTAIN RISK FACTORS AND INVESTMENT CONSIDERATIONS.

Relations with Labor Unions

The Authority considers its current relations with its main labor unions to be satisfactory. These may be adversely affected by labor disputes, including those that may arise as a result of the implementation of the Fiscal Plan, fiscal control acts previously discussed or other laws which could be enacted in the future, if the same were to become applicable to the Authority. Changes to benefits under Act 26-2017 have driven labor unions, specifically UIA, to express disagreement with such amendments and changes, in particular those concerning overtime payment during holidays, medical insurance benefits, and leave for union activities. No negotiation of these key issues is currently occurring because Act 3-2017 prohibits collective bargaining negotiations of clauses with direct or indirect economic impact on the applicable government employer. UIA has also sued the Authority claiming that the Authority owes payment for UIA members for accrued vacation days not used by such members for the period between 1995-2001. Although the amount of the final judgment has not been conclusively determined, an initial determination of such alleged liability was performed by a court-appointed "commissioner", ruled against the Authority. Although the Authority has deposited \$10.4 million in escrow with the Court, the Authority anticipates that its likely liability will be lower than such amount.

Recent events, such as hurricanes, earthquakes and the COVID-19 pandemic have resulted in numerous grievance claims before the Bureau of Arbitration and Conciliation of the Labor and Human Resources Department of Puerto Rico regarding the reduction of the overtime factor to 1.5 times. UIA and HIEPAAA have also suffered declines in membership since the United States Supreme Court handed down its *Janus* decision prohibiting automatic wage deduction of compulsory union fees for non-union workers. UIA brought suit in Puerto Rico Federal District Court regarding this issue. Briefs were filed by the parties and oral arguments were made to the court. The court has not issued its ruling.

The Authority has several initiatives addressing employees' turnover. These initiatives include a revision of its compensation plan and an expansion of employees eligible for remote

working. The Authority also considers its current employee headcount too low for effective operations and has requested that the Oversight Board approve an increase in headcount. See “Authority Disagreements with Oversight Board Regarding Fiscal Plan” under THE AUTHORITY’S FISCAL PLAN and Section 3.2.3 of the Consulting Engineer’s Report in *Appendix I*.

The ability of the Authority and its labor unions to continue to enjoy satisfactory relations will assist the Authority in achieving its financial and operating objectives and projections. Should these relations deteriorate, however, and if as a result strikes and walkouts occur, such work stoppages may have an adverse effect on the Authority’s ability to provide water and wastewater services to its customers or impair its ability to collect Operating Revenues.

Senior Management Personnel

There can be no assurances given as to how long senior management personnel will remain in their current positions nor whether the current policies and programs being implemented by current management in response to various regulatory and other imperatives will continue should management positions change. Any such changes may have an adverse effect on the ability of the Authority to provide water and wastewater services to its customers or on the Operating Revenues of the Authority.

Pension Benefits

Substantially all of the employees of the Authority are covered by the Employees Retirement System, a multi-employer, hybrid defined benefit plan consisting of different benefit structures. The Employees Retirement System covers substantially all employees of the departments and agencies of the Commonwealth, all members and regular employees of the Legislative Branch, and all employees of the public corporations (other than the University of Puerto Rico and the Puerto Rico Electric Power Authority) and municipalities, except for those employees that are covered by two other retirement systems of the Commonwealth.

On June 27, 2017, the Puerto Rico Treasury Department issued procedures for the implementation of a new “pay as you go” (“*PayGo*”) mechanism for the Employees Retirement System (among other public pension systems of the Commonwealth). Beginning on July 1, 2017, employer’s contributions, contributions ordered by any special law and all additional uniform contributions were eliminated. Pursuant to Act 106-2017, after July 1, 2017, covered employers, such as the Authority, pay a monthly PayGo charge to cover their current retirees and beneficiaries. Employees recruited after July 1, 2017, are only eligible to participate in a new defined contribution plan that will be managed by a private entity. Act 106-2017 creates the legal framework for the Commonwealth to guarantee payment to the Employees Retirement System pensioners through the system established therein.

For fiscal year ended June 30, 2017, the Authority implemented Statement No. 68 of the Governmental Accounting Standards Board (“*GASB*”), Accounting and Financial Reporting for Pensions - an amendment of GASB Statement No. 27 (GASB 68), which became effective for fiscal years ended June 30, 2015, and later. This Statement replaces earlier GASB requirements, as they relate to pensions that are provided through public pension plans administered as trusts or

equivalent arrangements that meet certain criteria, as is the case of the Employees Retirement System.

As of June 30, 2018, the Authority's share of the total net pension liability of Employees Retirement System in connection with the adoption of GASB 68 was \$1.4 billion. This share was determined by an actuarial valuation as of June 30, 2017, in a report, dated November 9, 2020, issued by Milliman, Inc (the "*Milliman Report*"). The Authority's share of the total net pension liability was 4.11269% as of June 30, 2017 (4.18031% as of June 30, 2016). The Authority's share was based on the actual required contribution of each participating employer reflecting each employer's projected long-term contribution effort as compared to the total projected long-term contribution effort of all employers as encouraged by GASB 68.

For fiscal year ended June 30, 2018, the Authority pension expense based on the Milliman Report was \$106.4 million. Actuarial reports from the Employees Retirement System for fiscal years 2019 and 2020 are not yet available to update the Authority's pension liability and expenses for these fiscal years.

The Employees Retirement System billed the Authority under the PayGo program \$93.6 million for fiscal year 2018, \$93.7 million for fiscal year 2019 and \$93.1 million for fiscal year 2020. In reviewing the bills submitted, the Authority disputed a portion of such bills, which have been partially adjusted by the Employees Retirement System. The amount related to the remaining disputed portion of the PayGo charges was \$3.2 million, as of October 31, 2020. The Authority has received some of the requested information from the Employees Retirement System, which information the Authority is analyzing to determine if the amount in dispute is correct, but the Authority will need to obtain the remaining additional information in order to validate the amount allegedly owed to determine if the balance should be paid by the Authority or further adjusted by the Employees Retirement System.

The Fiscal Plan includes a reduction in the Authority's pension payments made on a PayGo basis. The requirement is to reduce pension contributions by \$3 million in fiscal year 2022 and approximately \$6 million thereafter to achieve \$21 million in total Authority cost savings through fiscal year 2025. The Authority does not expect to comply with this requirement because it is contrary to the policy of the Government of Puerto Rico that public employees and retirees not bear a disproportionate burden as a result of the current Commonwealth restructuring being undertaken by the Oversight Board. The Authority expects to identify savings from other operating expense categories to cover the proposed reduction as set forth in the Fiscal Plan. See "Certain Risks Related to the Political and Economic Circumstances of Puerto Rico" under CERTAIN RISK FACTORS AND INVESTMENT CONSIDERATIONS.

Voluntary Early Retirement Programs

In recent years, the Government of Puerto Rico has implemented a number of early retirement programs for government workers, including employees of the Authority. These programs seek to reduce the public workforce progressively and voluntarily, along with associated payroll and other employee benefits, but requires that based on the employees that are eligible for the program and under consideration, payroll and employee benefit savings be achieved for the government agency affected, including the Authority. Besides the reduction of expenses,

applicable Puerto Rico law stipulates that positions that become vacant upon implementation of an early retirement program be eliminated, and that agencies take necessary measures to accommodate for these eliminated positions. Positions deemed critical may, however, be re-staffed. Some of the Authority employees eligible for early retirement occupy positions that are managerial or supervisory, which may result in organizational challenges. As noted above, as of June 30, 2020, 321 employees were under the preretirement program established by Act 211-2015.

Another window for early retirement with incentives was approved by the Legislature of Puerto Rico during 2020 (Act 80-2020). Under this program, that became effective in August 2020, retiring employees' pension calculation is based on 50% of the average annual salary during the last three years, and they are entitled to receive \$100 per month for their health plan cost until the age of 62 and the payment of the dollar value of their accrued sick leave and vacation leave. Positions that become vacant as a result of this retirement program will not be re-staffed unless approved by OMB or through transfer of other current public employees. The Authority has 1,131 eligible employees under Act 80-2020. An informal Authority survey indicated that a total of 729 employees are willing to participate under the program. The Oversight Board has stated that Act 80-2020 is not consistent with the Government of Puerto Rico's fiscal plan, and its passage has not been approved by the Oversight Board.

Other Post-Employment Benefits

In addition to the pension benefits, the Authority provides non-pension, post-employment benefits under a Healthcare Benefits Plan to retirees that consist of a fixed maximum monthly payment of \$125 to cover medical expenses for retired employees meeting the service eligibility requirements. Based on this Plan's features, it is treated as a single-employer, defined benefit healthcare plan. These benefits are funded by the Authority on a "pay-as-you-go basis," which means that there is no reserve or pool of assets against the benefit expenses that the Authority may incur in future years. For fiscal years 2018 and 2019 the Authority paid \$3.0 million and \$3.1 million, respectively for these non-pension post-employment benefits for its eligible retirees.

In accordance with the provisions of the Governmental Accounting Standards Board Statement No. 75, the Authority is required to quantify and disclose its obligations to pay non-pension post-employment benefits to current and future retirees. Based on the actuarial valuation report, as of June 30, 2017, the Authority's actuarial accrued liability with respect to these benefits as of that date was \$74.5 million, and the funding ratio is 0% since, as mentioned above, these benefits are now funded on a "pay-as-you-go" basis.

September 2017 Hurricanes

In September 2017, Hurricanes Irma and María struck Puerto Rico causing devastating damage to the island. Both Hurricanes badly damaged the electric power infrastructure, which in turn affected the continuity of water and sewer services to numerous customers throughout the island. The Hurricanes also caused widespread damage to the Authority's infrastructure island-wide. Some of the impacts affecting the Authority's financial condition are included below:

1. lower customer consumption during fiscal year 2018 (despite 90% of the Authority's service being restored by November 2017);

2. higher rate of uncollectible bills for all customer rate categories (residential, commercial, industrial and government);
3. lower revenues from other services and fees (i.e., disconnection/reconnection fees);
and
4. higher expense costs to normalize operations and to address response and recovery needs (i.e., diesel costs for generators operation, security, chemicals and overtime).

Many of the Authority's assets were damaged and in need of significant repair or replacement. The Authority reacted promptly and implemented emergency replacement and construction projects to restore services to its customers as soon as possible. Communications and access challenges were some of the difficulties that the Authority encountered during the recovery efforts after the hurricanes. In addition, the availability of construction materials, generators and diesel were among other hindrances adversely impacting the recovery process. Nevertheless, the Authority was able to restore service to most of its customers within two months after the events.

Based on a damage report prepared by the Authority's Consulting Engineer, the asset damage estimate is \$769 million, including a projection for potential additional unidentified damages of ancillary facilities, but excluding the unknown impact on buried assets. This estimate, however, only considers repairing and replacing the Systems to exactly (or similar to) their condition prior to the hurricanes, thereby excluding the implementation of any resiliency projects to mitigate or reduce future risks related to hurricanes or other natural disasters or enabling the Systems assets to comply with current regulatory standards. To increase the Systems' resilience and improve its condition, the Authority estimates that it will require at least \$3.7 billion in additional funding. There are also still uncertainties regarding the full extent of damages caused by the hurricanes as a significant portion of the Authority's infrastructure consists of buried, underground assets. Without the infusion of federal funds to cover a substantial portion of this cost, it is unlikely that the Authority will be able to recover or rebuild its infrastructure and increase the Systems' resilience.

The Authority estimates that, as a result of the 2017 Hurricanes, revenues declined by \$293 million and expenses incurred and committed amounted to \$220 million.

The Authority received the full amount covered by its \$300 million property insurance policy related to Hurricane María insurance. The insurance proceeds were received by the Authority during fiscal years 2018 and 2019. The Authority still has an outstanding claim related to Hurricane Irma. Also, the Authority expects to receive additional FEMA funds in the form of loans or grants for permanent infrastructure works for recovery and resiliency of its Systems. No assurance can be given as of when or if such additional funds will become available to the Authority or if they will be sufficient to cover the Authority Systems recovery and resiliency needs. See "Certain Risks Related to the Systems and Authority Operations" and "Risks Related to Natural Disasters" under CERTAIN RISK FACTORS AND INVESTMENT CONSIDERATIONS.

2020 Seismic Activity

On January 7, 2020, Puerto Rico was struck by a 6.4 magnitude earthquake causing significant damage to infrastructure in the southwestern portion of the island, an island-wide power outage and water shortages. In order to safeguard the health and public safety of its citizens, the Governor issued executive orders EO 2020-01 and EO 2020-02 declaring a state of emergency, activating an emergency purchasing protocol allowing emergency management agencies to acquire the necessary supplies and essential services to provide a timely and effective response and activating the National Guard to provide support during the emergency. In addition, the Oversight Board authorized through January 31, 2020, the utilization of Emergency Reserve funds from fiscal years 2019 and 2020, as needed by the Government of Puerto Rico, without the Board's prior approval of reapportionments. President Trump also approved an emergency declaration allowing direct federal assistance for emergency measures to protect lives, property and public health after the series of earthquakes.

Puerto Rico continues to experience numerous aftershocks that are not expected to stop any time soon. According to a January 29, 2020, report published by the United States Geological Survey, Puerto Rico is at risk of many potentially catastrophic earthquakes in the near term, a prediction borne out on May 2, 2020, when a 5.4 magnitude earthquake struck Puerto Rico's southwestern coast. This seismic event, which briefly knocked out power in some areas, hit near the city of Ponce where hundreds of structures remain damaged or destroyed from the January 2020 earthquake and its immediate aftershocks.

The Authority estimates that its Systems in the affected area incurred damages of approximately \$6.7 million, of which at least 75% is expected to be eligible for federal funding to offset the cost to the Authority of repairs. See "Certain Risks Related to the Systems and Authority Operations" and "Certain Risks Related to Natural Disasters" under CERTAIN RISK FACTORS AND INVESTMENT CONSIDERATIONS.

COVID-19

On January 31, 2020, U.S. Health and Human Services Secretary Alex M. Azar II declared a public health emergency for the entire United States as a result of COVID-19. On March 11, 2020, the World Health Organization declared the outbreak of COVID-19 to be a global pandemic. As a result of the health threat and to contain the COVID-19 spread across the island, the Governor issued executive order EO 2020-020 on March 12, 2020, declaring a state of emergency in Puerto Rico to concentrate all efforts and implement necessary measures to safeguard the health, well-being and public safety of the residents of Puerto Rico. The executive order authorizes the Puerto Rico Secretary of the Treasury and the Executive Director of OMB to set up a special budget, from any available funds, including the Emergency Fund, to cover all necessary costs for the containment of the virus throughout the island and sharing information with the municipalities.

The Governor has issued several extensions of the March order with various modifications to Puerto Rico's social distancing measures. The public emergency remains in effect. On April 9, 2020, Act 39-2020 became effective, which has prevented the Authority from disconnecting customers' water services due to non-payment during the public emergency and for two billing cycles after it is ended.

The Fiscal Plan notes that the COVID-19 pandemic, associated mitigation policies, and the resulting economic impact have presented certain challenges for the Authority, including:

Reduced collections: Leading up to March 15, 2020, the Authority had received 96% of forecasted collections in fiscal year 2020. After social distancing measures went into effect on March 15, 2020, weekly collection rates dropped as low as 40% in April. Authority collections for fiscal year 2020 were approximately \$40 million less than originally budgeted.

Increased costs: As of September 30, 2020, \$13 million was incurred to address and manage the emergency, including incremental costs for additional payments to essential workers—as required by current legislation—and for additional personal hygiene and protection equipment. As social distancing measures remain in effect, additional costs are expected to continue.

Shortage of supplies and interruption to contracted services: There has been a shortage in personal protection equipment (“*PPE*”) that allows for proper hygiene and prevention to protect the health of the Authority’s employees. Moreover, supply chain interruptions have also resulted in shortages of critical materials like chemicals, thus putting service continuity at risk. Finally, the Authority’s contractors and other service providers were often unable to deliver goods and services to the Authority.

Workforce issues: Some employees were unwilling to perform work due to concerns for their health and their families, leading to an increased work backlog and overtime expenses.

Delayed implementation of CIP: Crew operational limitations and restrictions on construction meant that the Authority had to temporarily suspend work on its CIP. Further sustained delays to CIP implementation could leave the Systems, potentially, at risk of additional safety, reliability, and water allocation issues.

The Authority has, however, taken steps to support its liquidity, including promoting alternative payment options to improve collections, drawing down on previously collected insurance proceeds, and temporarily suspending deposits to its Capital Improvement Fund during the last 4 months of fiscal year 2020.

The Authority also took steps to address operational challenges, including: (i) maintaining on-site employees at minimum required levels in order to ensure an adequate and uninterrupted service while minimizing exposure (e.g., suspension of meter readings to protect the health of employees and closing customer service offices); (ii) providing PPE to all employees required to report on-site; (iii) promoting remote work for administrative and support personnel, significantly expanding the number of virtual tasks performed, and increasing virtual communication among the Authority’s personnel; and (iv) in collaboration with its labor unions, developing plans that, among other things, establish prevention and control policies to manage confirmed cases or symptomatic personnel, and security measures specific to site types (e.g., plants, commercial agencies, lab). See Chapters 2 and 3 of the Fiscal Plan in *Appendix III* for additional information regarding the effect the pandemic has had on the Authority’s operations and finances. See also “Certain Risks Related to the Systems and Authority Operations” and “Certain Risks Related to Natural Disasters” under CERTAIN RISK FACTORS AND INVESTMENT CONSIDERATIONS.

The aftermath of the COVID-19 crisis poses unprecedented uncertainties for local, national, and global economies. While the societal and economic consequences cannot yet be accurately measured, the impact will be profound and widespread.

2020 Drought

According to the Drought Report 2014-2016 published by DNER, Puerto Rico has been experiencing atypical drought conditions since November 2013, especially in the southern part of the Island. Conditions worsened by the summer of 2014 as the central area of Puerto Rico began also to feel the effect of water scarcity. By April 2015, the drought intensified, affecting the whole Island, triggering water rationing that affected over 400,000 customers.

In 2020, about half the Island experienced moderate to severe drought conditions. A water rationing plan was implemented for approximately 140,000 customers served by the Carraízo system from July 2 to July 27, 2020. Additionally, approximately 23,000 customers served by the water treatment plants of Canóvanas, El Yunque, Jagual and Guzmán Arriba were also under water rationing as a result of declining water intake levels at the rivers serving the plants.

To minimize the impact of the 2020 drought and water rationing, the Authority took measures to manage water pressure, reduced water production and activated wells to protect and extend water source availability. Implementation of these measures began in December 2019, because of declining reservoir levels and other trends that indicated to the Authority the possibility of a drought, which occurred during the summer of 2020. Such actions helped the Authority to reduce the service impact and combined with system interconnections, allowed the Authority to avoid more drastic water rationing measures.

AUTHORITY CONSULTANTS

The Authority has contracted the Consulting Engineer to prepare the Consulting Engineer's Report on the state of the Authority's Systems, its CIP as presented in the Fiscal Plan and its financial condition and projections, as required under the Trust Agreement. The Consulting Engineer's Report for fiscal year 2019 is attached to this Limited Offering Memorandum as *Appendix I* and should be read in its entirety (along with the Fiscal Plan attached hereto as *Appendix III*) for a more complete description of the Authority's operations and facilities and for the conclusions reached by the Consulting Engineer about the state of the Authority's Systems, its CIP and its financial condition and projections. Certain of these conclusions are referenced in other sections of this Limited Offering Memorandum.

The Authority's current legal advisor for PROMESA related matters is O'Melveny & Myers LLP, and its financial advisor is Ankura Consulting Group, LLC. The Authority's Bond Counsel is Nixon Peabody LLP.

In fiscal year 2019, the Authority began a procurement process to select firms or teams of firms (the "**Program Management Consultants**" or "**PMC**") to support the Authority in project management and deployment of the CIP. One PMC contract has been executed, and the Authority anticipates executing similar additional contracts with up to three other recognized engineering firms interviewed by the Authority after an RFQ/RFP process. The Program Management Consultants are expected to collaborate with the Authority in the management of the CIP and in

all phases of the life cycles of the projects included therein. They also will assist the Authority in the management of key tasks such as defining project scopes, negotiating consultant contracts for studies and design services, and preparation of project construction cost estimates; design activities and constructability reviews; during bid processes; and developing tools to measure CIP execution. The Program Management Consultants are expected to work closely with the Authority’s infrastructure management and its operations teams.

THE WATER AND WASTEWATER SYSTEMS

Introduction

The island of Puerto Rico is about 100 miles long and 35 miles wide. According to data from the U.S. Census Bureau, the population of Puerto Rico was 3,193,694 in 2019. The Municipality of San Juan, on the north coast, is Puerto Rico’s capital, and is the center of the metropolitan area with a 2019 U.S. Census Bureau population of 318,441. Most of the remaining population is located on the coastal plains. The island’s central land area is rugged and mountainous and less heavily populated. Smaller cities and towns in the coastal plains are linked with each other and the larger population centers by an extensive highway system.

The Authority operates the public water supply and wastewater systems in Puerto Rico. The Authority’s Systems are island-wide, with an estimated 96% of the population served by the Water System and about 59% of the population served by the Wastewater System.

The Authority’s facilities are diverse. Large facilities serve metropolitan San Juan. Major facilities also serve other urban centers, and some large regional facilities have also been constructed or planned to serve several communities in a single area. In many parts of the island, especially in small municipalities located in mountainous terrain, however, the Authority’s facilities are small and must be operated and maintained separately from the principal urban and regional components of the Systems. The differences in size of the communities the Authority serves, the fact that these communities are widely dispersed throughout the island, and the resulting diversity and disparity in the Authority’s facilities, make its Systems highly complex and atypical when compared to water and wastewater utilities in the United States. See Section 1.1 of the Consulting Engineer’s Report in *Appendix I*.

Number of Customer Accounts by Type of Service (as of June 30 of the years indicated below)

Type	Water Only		Sewer Only		Water and Sewer		TOTAL	
	2018	2019	2018	2019	2018	2019	2018	2019
Residential	453,333	451,588	268	259	721,714	721,149	1,175,315	1,172,996
Commercial	14,391	15,365	58	57	35,038	34,919	49,487	50,341
Government	3,235	3,123	7	7	6,455	6,209	9,697	9,339
Industrial	167	222	63	63	562	533	792	818
Total	471,126	470,298	396	386	763,769	762,810	1,235,291	1,233,494

The Systems’ operation is divided into five regions (North, South, East, West and Metro). Set forth below is a map that illustrates the operational regions:



The Systems are highly complex and vary from new facilities to some requiring capital improvements and some requiring significant upgrades, replacement, additions or rehabilitation, due to compliance issues and changes in the regulatory requirements. Nevertheless, the facilities are generally producing and delivering potable water and conveying and treating wastewater adequately.

The Authority’s core mission is to provide high-quality, safe, reliable, and affordable water and wastewater services to the people of Puerto Rico, protecting their health and the environment. To accomplish its mission, the Authority has adopted as its goal to become a top-performing utility while continuously exceeding customer expectations and ensuring sustainable water resources management.

The Water System

The Water System provides drinking water to almost all (96%) residences, businesses, government and industries throughout Puerto Rico. The Water System is made up of water supply facilities, including reservoirs, dams, wells and pump stations, 113 water treatment plants and an extensive drinking water distribution system, including over 14,700 miles of pipe (all data provided is as of June 30, 2019).

The Authority’s raw water supply is drawn both from surface water sources and wells. Although historically raw water sources have been adequate to meet Water System demand, increasing temperatures, prolonged and recurrent dry periods and further sedimentation of surface water sources are resulting in more frequent drought conditions across the island. Based on current projections of the Puerto Rico Planning Board, water demand is expected to decrease over the next 30 years. The need for additional water sources will depend on actual population growth rates, demand per capita, the Authority’s actions for controlling and reducing its NRW, and the condition and quality of its water sources.

Surface water sources—small dams, weirs, regulated dams, lakes, rivers and streams—account for approximately 90% of the Authority’s raw water supply. While Puerto Rico’s average rainfall of over 54 inches a year is not evenly distributed across the island, rainfall levels are adequate (together with the Authority’s system of aqueducts) to maintain sufficient raw water resources for the surface water facilities. However, during severe drought conditions that have caused intermittent raw water deficiencies, the Authority has implemented operational controls to manage the System (raw water sources and treated water supply). The balance of the System’s raw water supply is drawn from several hundred groundwater wells. For the San Juan metropolitan area, water supply is provided by an interconnected system of reservoirs and rivers. The largest water supply facility is Lake Carraízo, providing approximately 100 MGD of capacity. Although Lake Carraízo was dredged in 1997-1998 (a \$60 million investment), most of the recovered capacity has again been lost due to high erosion at the watershed and sediments transported into the reservoir (the erosion has not affected the ability of the Authority to extract 100 MGD from Lake Carraízo). Recovery of capacity of this reservoir will depend on additional dredging. The Fiscal Plan includes approximately \$1 billion for reservoir dredging, including for Lake Carraízo, but carrying out this project by the Authority will be subject to receipt of sufficient federal funds. See “Certain Risks Related to the Systems and Authority Operations” under CERTAIN RISK FACTORS AND INVESTMENT CONSIDERATIONS.

Water supply for the San Juan area is augmented by water piped from the Dos Bocas reservoir through the 41.5-mile North Coast Superaqueduct System (the “NCS”) completed in 2000. The NCS provides an additional 100 MGD on average from Arecibo to Bayamon, San Juan and other metropolitan area communities. Until May 2011, the NCS was operated and maintained by Thames-Dick Superaqueduct Partners under a master agreement that also covered its construction. The NCS is currently being operated by a private operator under the supervision of the Authority’s personnel. All purchasing and logistics, as well as maintenance and repair scheduling, have been integrated with the Authority’s systems.

In contrast to the supply systems in the San Juan area and some of the other large population centers, many smaller systems rely entirely on local water supply sources and, because of distance and terrain, are not linked with any other supply system.

The Authority’s drinking water production and treatment facilities treat and filter raw water before it flows into the distribution system. Preliminary results for both water treatment facilities and drinking water wells show that island-wide the Authority’s average water production was approximately 508 MGD during fiscal year 2018 and 542 MGD during fiscal year 2019. Preliminary results for the fiscal year ended June 30, 2020, for both water treatment facilities and drinking water wells show that island-wide the Authority’s average water production was approximately 540 MGD. The two large and five small treatment plants located in the San Juan metropolitan area and the transmission from the NCS and the related Santiago Vázquez Water Treatment Plant have a combined production capacity of approximately 240 MGD, about 45% of the Water System total. Altogether, as of June 30, 2019, there are 113 treatment plants for surface water supplies, all of which provide treatment consisting of coagulation, sedimentation and filtration and disinfection. Well supplies are disinfected with chlorine.

The water supply distribution systems utilize approximately 14,700 miles of transmission and distribution mains to deliver water to customers from wells and treatment plants. Since the

implementation of the SAP PM database system in 2007, which is used by the Authority for operation, maintenance, and management activities, the tracking and reporting of water pipeline leaks has improved. Despite computer system upgrades over the past ten years, however, the Authority's rate of leak occurrence continues to be very high compared to other utilities in the United States and Canada. This high rate of occurrence contributes to the Authority's significant amount of NRW, discussed below. See Section 4.3.3 of the Consulting Engineer's Report in *Appendix I* and "Certain Risks Related to the Systems and Authority Operations" under CERTAIN RISK FACTORS AND INVESTMENT CONSIDERATIONS.

Water quality generally meets the National Primary Standards established by EPA under the federal Safe Drinking Water Act of 1974, as amended (the "*SDWA*"), except for certain facilities of the Water System that have recurrent parameter exceedances, mostly with respect to applicable Disinfectants and Disinfection Byproducts standards. The 2006 Drinking Water Settlement Agreement addresses these and other non-compliances. The Authority will seek an amendment of this agreement to address certain future pending requirements. See "Regulatory Compliance" under ENVIRONMENTAL MATTERS and "Certain Risks Related to the Systems and Authority Operations" under CERTAIN RISK FACTORS AND INVESTMENT CONSIDERATIONS.

The 2006 Drinking Water Settlement Agreement requires the implementation of remedial measures of the water treatment systems classified as short, mid and long-term remedial measures. As of June 30, 2019, the Authority had completed all short-term and mid-term remedial measures related to the water treatment plants, made up of 540 short-term and 115 mid-term remedial measures.

The 210 long-term remedial measures contained in the 2006 Drinking Water Settlement Agreement are divided into three terms: Term 1 refers to measures that were to be completed by December 31, 2011, Term 2 refers to measures that were to be completed by December 31, 2016, and Term 3 refers to measures that are to be completed by December 31, 2021. All long-term remedial measures under Term 1 have been completed. Fourteen (14) of the eighteen (18) Term 2 measures have been completed. At the joint request of the Authority and DOH, and with the concurrence of the overseeing court, the remaining four measures have been converted into the Term 3 category. There are thirteen (13) Term 3 measures, seven (7) of which have been completed. With respect to the remaining six (6) remedial measures, the Authority and the DOH filed an additional joint motion requesting time extensions for four of these and the elimination of the remaining two (2), which motion was also granted by the court. The time frame for the completion of the remaining Term 3 long-term remedial measures remains December 31, 2021, but the Authority has asked DOH to start negotiations to amend the 2006 Drinking Water Settlement Agreement to provide for revised time frames consistent with those in the 2015 EPA Consent Decree, which revised time frames would provide more flexibility in completing the projects based on a prioritization system approved by EPA.

Based on the most recent facility inspections and system condition assessments conducted by the Consulting Engineer between February and August of 2019, the Consulting Engineer has concluded that the Authority's water treatment plants, dams, pump stations, storage tanks and wells (while aging and showing signs of deterioration when compared with assessment results from prior years) are generally in adequate condition. Water facility ratings, however, slightly

decreased across most evaluation criteria compared to the prior fiscal year assessment. This decline in ratings is most likely a result of the lack of investment in capital improvements and the slowing of the renewal and replacement program due to the Authority's fiscal situation and budget limitations. The Consulting Engineer mentions as a concern the physical condition of the facilities, which conditions continue to deteriorate and were damaged during Hurricanes Irma and Maria. See the discussion of physical condition of facilities in Sections 4 and 9.1 of the Consulting Engineer's Report, included in *Appendix I* and "Certain Risks Related to the Systems and Authority Operations" under CERTAIN RISK FACTORS AND INVESTMENT CONSIDERATIONS.

A number of water treatment plants, including those that serve the San Juan metropolitan region, have had compliance challenges, specifically as a result of the implementation of EPA's Stage 2 Disinfectants and Disinfection By-Products Rule which has more restrictive monitoring requirements and compliance determination. The Authority acknowledges that it has some challenges ahead to bring these facilities into compliance with this rule. Future regulations may require additional capital improvements to achieve higher levels of treatment at certain facilities depending on the characteristics of the source water and the distribution system. As of the date of this Limited Offering Memorandum, the Authority is conducting evaluations, modeling water quality, developing action plans and implementing remedial actions to minimize non-compliance events under this rule. The Authority expects to bring the performance of non-compliant plants to material compliance with regulatory requirements either through the renewal and replacement program, scheduled capital improvements, additional staff training and revised operation and maintenance practices or through decommissioning.

Additionally, many of the water treatment plants have inadequate sludge treatment systems ("*STS*") and the discharges from these plants are out of compliance with their National Pollutant Discharge Elimination System ("*NPDES*") permit effluent limits issued pursuant to the Clean Water Act (defined below). These compliance issues are addressed in the 2015 EPA Consent Decree. See "Regulatory Compliance" under ENVIRONMENTAL MATTERS.

The Consulting Engineer also found that, to the extent the physical structures and operational/process controls are maintained or improved, water treatment plants are expected to continue to serve their intended purposes of providing potable water supply in compliance with applicable regulations, and to deliver potable water adequately. See Section 9.1 of the Consulting Engineer's Report in *Appendix I*. The Authority continues, to the extent possible, to take corrective actions to minimize these challenges and correct the Water System's shortcomings.

The CIP devoted to the Water System is principally directed at (i) compliance with the 2006 Drinking Water Settlement Agreement and the 2015 EPA Consent Decree, (ii) System recovery after the impact of the 2017 Hurricanes Irma and Maria, (iii) expanding raw water supply and protecting the capacity of existing reservoirs against loss from silting, (iv) upgrading and expanding treatment plant capacity to increase water production and improve treated water quality, and (v) improving distribution systems, especially to reduce NRW. The CIP also addresses Water System needs identified in the Authority's Master Plan, see "2020-2025 CIP" under CAPITAL IMPROVEMENT PROGRAM. The Authority's current Water and Wastewater Master Plan (the "*Master Plan*") was completed in 2010 and most recently revised in 2014 to account for adjusted population projections. The Authority plans to update its Master Plan after information from the

2020 census becomes available. The Authority will adjust the CIP based on the updated Master Plan to address climate and population changes. The Authority believes that the projects included in the Water System CIP will enable it to meet its necessary goals and compliance requirements and meet its potable water supply demands, although no assurance can be given that the Authority will meet these goals and compliance requirements. After completion of these projects, additional major improvements not included in the CIP may be necessary to maintain and improve reliable operation of the Water System and may be required to meet proposed water quality regulations developed by EPA under the SDWA.

For information concerning the principal federal and Commonwealth regulations to which the Water System is subject, see “Water System Regulation” under ENVIRONMENTAL MATTERS.

In order to review the Authority’s buried infrastructure, the Consulting Engineer analyzed the data collected on water leaks, including reported leaks and the Authority’s attention time to repair, but did not inspect such buried infrastructure. Reported active leaks and sewer overflows remain at high levels when compared to other utilities in the United States and Canada. As discussed in the Consulting Engineer’s Report, in connection with the Authority’s buried systems infrastructure, an analysis of the Authority’s renewal and replacement needs and budget has been recommended by the Consulting Engineer in order to develop a sound renewal and replacement program that will allow the Authority to improve and extend the useful life of the Water System, and possibly reduce its high rate of water leaks. See Sections 4.3.3, 6.7 and 9.1 of the Consulting Engineer’s Report in *Appendix I*.

Customers of the Water System. The following table sets forth the number and types of customer accounts served by the Water System during the five fiscal years ended June 30, 2019:

Number of Customer Accounts with Water Service

Fiscal Year	Residential	Commercial	Industrial	Government	Total
2015	1,175,072	51,869	864	10,334	1,238,139
2016	1,174,435	50,944	779	10,202	1,236,360
2017	1,175,344	50,188	741	10,053	1,236,326
2018	1,175,315	49,487	792	9,697	1,235,291
2019	1,172,737	50,284	755	9,322	1,233,108

Water Production and Sales

In 2012, the Authority adopted the water balance methodology recommended by AWWA for estimating water losses and measuring NRW. Following AWWA and the industry recommendations noting that the using a performance indicator of NRW as a percentage of water production may show confusing and misleading results and the Authority’s NRW data analysis, the Authority is no longer using the NRW as a percentage of water production performance indicator. Instead, AWWA recommends using other performance indicators for measuring NRW such as the volume of commercial and physical losses per connections per day and an infrastructure

leakage index. The foregoing change in methodology and annual water audits have allowed the Authority to better understand the components affecting water loss estimates, and has resulted in more accurate and reliable estimates.

Performing this exercise of measuring NRW with reasonable precision, however, presupposes meter reading accuracy. In this regard, the reliability of the information the Authority can generate to evaluate NRW has been negatively affected by damage to meters from hurricanes and earthquakes, including on the production side (master meters) and on the consumption side (customer meters) and meter degradation due to limited investment in meter replacement during recent years. The Consulting Engineer's Report in *Appendix I* provides data through fiscal year 2019 (in table 4-11 of the Report), showing that the NRW has increased during the two years after the 2017 Hurricanes. Also, recent information on water production and consumption includes a high level of estimates, making the information not representative of the actual level of NRW. To address this production side information gap, the Authority has been implementing a Master Meters Replacement Program with the goal of replacing meters that would cover 80% of the Authority's estimated water production by February 2021. This program remains on schedule.

On the consumption side, a public-private partnership project that aims to improve customer service, replace meters to increase accuracy of billed water consumption and to allow for remote meter reading has been bid and negotiations conducted by the Puerto Rico Public-Private Partnership Authority with a preferred bidder are ongoing. This project has not yet been awarded, and no assurance can be provided that this program will be implemented or, that if implemented, will achieve the expected results. The Authority intends to continue its meter replacement program to reduce as much as possible meter misreads and other inaccurate water consumption data. After gaining better data on the actual level of water produced by the Authority and on customer consumption, a more reliable estimate of NRW level can be determined. See "Certain Risks Related to the Systems and Authority Operations" in CERTAIN RISK FACTORS AND INVESTMENT CONSIDERATIONS and the discussion of meter replacement in Section 4.3 of the Consulting Engineer's Report in *Appendix I*.

Many other variables also affect the amount of NRW, including aging infrastructure, which is a usual problem for water utilities nationwide and for which the Authority is not an exception, although the rate of leak occurrence in the Authority's Water System continues to be much higher than that of mainland United States and Canadian water systems and contributes to the high volume of NRW. The Fiscal Plan contains estimates of the Authority's NRW from fiscal year 2015 (see, for example, page 1-29 of the Fiscal Plan). With time, however, the Authority's actions in obtaining reliable production data, replacing customer's meters and pipes, identifying and repairing leaks, and addressing commercial losses are expected to reduce the volume of NRW. The Fiscal Plan projects a 41 MGD reduction in NRW during the period covered by the Fiscal Plan. No assurance can be provided that this NRW reduction will be realized. Refer to Section 1.6.1.2 of the Fiscal Plan. See "Certain Risks Related to the Systems and Authority Operations" under CERTAIN RISK FACTORS AND INVESTMENT CONSIDERATIONS.

The Authority's Management recognizes that the amount of NRW must be reduced and has designated this as a priority. The Authority also recognizes that if it can reduce NRW, it may increase its revenues, reduce operation and maintenance costs, and reduce the need for certain capital improvements to increase water supply capacity (as needed).

The Wastewater System

The Wastewater System is made up of sewage collection and conveyance systems (including trunk and lateral sewers) and treatment plants. The basic collection and conveyance systems consist of approximately 6,000 miles of lateral, trunk and interceptor sewers and transmission mains which carry wastewater to the 51 treatment plants from the points of connection with the Authority's customers. Over 800 manned or unmanned pumping stations aid these wastewater flows. The most significant collection systems serve the San Juan metropolitan area, with interceptor or trunk sewers as large as ten feet in diameter and an extensive network of large and small pumping stations. Elsewhere, the collection systems depend on the size and topography of the community served. As a result, in many localities the wastewater collection systems are less extensive than the Authority's water supply systems. About 59% of the population is connected to the Authority's Wastewater System, with the remainder reliant on septic systems for wastewater disposal.

The Authority's 51 wastewater treatment plants are located throughout the island (all data provided is as of June 30, 2019). As with the Water System, some serve large municipalities, and some serve very small municipalities. Island-wide, the Authority's wastewater treatment plants average treatment for fiscal years 2018 and 2019 was approximately 206 MGD and 209 MGD, respectively. Total aggregate capacity of the treatment plants is approximately 402.8 MGD. The ten largest plants account for 78% of total Wastewater System capacity. By level of treatment, seven plants are designed to provide tertiary treatment, 38 plants are designed to provide secondary treatment, and the remaining six facilities (aggregating 230 MGD of capacity) provide advanced primary treatment. The Authority intends to maintain operation of wastewater treatment plants providing advanced primary treatment as long as it is allowed by EPA under EPA's Clean Water Act Section 301(h) waiver program. Should EPA require installation of secondary treatment systems for any of these plants (primarily activated sludge processes and bio filters), additional, unbudgeted capital and operating expenses will be incurred by the Authority that are not included in the Fiscal Plan's CIP or operating projections. No assurance can be given that funds will be available to cover such capital expenditures.

There is great variation in the size, age and condition of the wastewater treatment plants. The largest plant, the Puerto Nuevo facility in the San Juan metropolitan area, is an 80 MGD primary treatment plant commissioned in 1957. This plant was substantially rehabilitated and upgraded in 1999, 2008 and 2009, and will be undergoing additional rehabilitation and capital improvements, which costs are included in the CIP as included in the Fiscal Plan. Other plants serve other portions of the San Juan metropolitan area, including the 45 MGD Carolina plant, commissioned in 1986, and the 52 MGD Bayamon plant, commissioned in 1983. Ponce is served by an 18 MGD plant commissioned in 1974 which was upgraded and expanded in 1990. The Mayagüez plant, a 22.5 MGD plant commissioned in 1987, serves the Mayagüez area. This plant was upgraded to 28 MGD in 2002. Major new regional plants have also been constructed to replace obsolete smaller facilities. Other regional plants, in addition to those mentioned above, with their capacity and year of original start-up, include Caguas (24 MGD, 1996), Guayama (10 MGD, 1939), Barceloneta (8.33 MGD, 1972), and Arecibo (10 MGD, 1976); all of these facilities have been upgraded and renovated since the respective original commission years.

Wastewater treatment plants with small treatment capacity typically serve small and sometimes remote communities. About 37 of the 51 plants in operation have capacities of less than 8 MGD, and 16 of these smaller plants have capacities of less than 1 MGD (all data provided is as of June 30, 2019). While some of these plants will eventually be replaced by regional facilities, connection to larger plants is not possible in many areas because of such areas' rugged terrain and the particular connection project's financial feasibility based on the potential associated costs (e.g., new pipelines or pumping requirements).

All wastewater treatment plants have outfalls which discharge treated wastewater effluent to a nearby stream or pond or to the ocean. Sewage sludge extracted from wastewater in the treatment process is processed through onsite sludge treatment facilities and disposed of at sludge disposal facilities, usually a local landfill, except at Mayagüez, where a composting facility serves this plant as well as the Aguadilla wastewater treatment plant; Arecibo, where a composting facility serves this and several other plants, including Barceloneta; and at the Puerto Nuevo wastewater treatment plant.

The Authority approves sewer connections in accordance with the Authority's capacity management policy agreed to by EPA under the 2015 EPA Consent Decree. Under its capacity management policy, the Authority may not approve or add new sewer connections to any existing wastewater treatment facility if the average monthly flow for the specific facility exceeds 105% of the average permitted monthly flow for such facility for three consecutive months. As a result, in many instances, proposed connections for industries, businesses, and residential subdivisions and multi-family buildings have been denied when the Authority cannot divert or otherwise offset any excess flow. The Authority's current capacity management policy permits authorization of new connections to the extent existing flows are reduced by 110% of the flow to be produced by new connections or diverted to other facilities. Sewer connection limitations imposed pursuant to the Authority's capacity management policy may be lifted once the Authority submits to EPA documentation certifying that measures have been implemented such that the average monthly flow to the subject wastewater treatment plant is less than 100% of the monthly average permitted flow for two consecutive months. This provision is also applied to flow exceedances caused by extended periods of rainfall. In most cases this has resulted in relocation of the projects to other areas not affected by the sewer connection limitation, or, in some cases (chiefly residential projects), the delay or cancellation of such projects. In fiscal years 2018 and 2019, none of the plants comprising the Wastewater System capacity was affected by this limitation.

The condition of the Authority's existing Wastewater System facilities varies widely, although the Consulting Engineer's Report noted that overall, the condition of the facilities had declined when compared to its prior report. The Consulting Engineer inspects a portion of the wastewater treatment plants periodically and makes its independent rating of these facilities (i.e., unacceptable, poor, adequate and good), which rating takes the following four criteria into account: regulatory compliance, operations/process control, equipment/maintenance and staffing/training. In fiscal year 2019, the Consulting Engineer inspected 20 of the 51 wastewater treatment plants currently owned by the Authority and a sample of wastewater pump stations and concluded that their condition ranged from poor to adequate. See Section 4.2.2.2 of Consulting Engineer's Report and its conclusions in Section 9 in *Appendix I*. According to the Consulting Engineer's Report, the greatest current concern is the physical condition of the facilities, which continues to deteriorate due to the impact of the 2017 hurricanes on the Wastewater System, the slowdown and

suspension of the CIP and significant reduction in renewal and replacement expenditures, as well as equipment being out of operation for prolonged periods of time. See Sections 4.2.2.1 and 9.1 of the Consulting Engineer's Report in *Appendix I*. Process control continues to be a challenge in some of the facilities. In comparison with the prior fiscal year inspection results, regulatory compliance and staffing also significantly decreased, while the equipment/maintenance and operations/process control criteria scores decreased only slightly. The recent decrease in the regulatory compliance and equipment/maintenance criteria can be attributed in part to projects not being executed or being postponed due to the Authority's and Puerto Rico's financial situation, which was further exacerbated by the impact of the 2017 hurricanes. Also, future regulations may require additional capital improvements to comply with stricter levels of NPDES discharge parameters as per new wastewater treatment plant NPDES permits, related Water Quality Certificates and the agreements in the 2015 EPA Consent Decree. For more details on the Consulting Engineer's assessments and ratings of the wastewater treatment plants, see Chapter 4 in the Consulting Engineer's Report in *Appendix I*. See also, "Certain Risks Related to the Political and Economic Circumstances of Puerto Rico" and "Certain Risks Related to the Systems and Authority Operations" under CERTAIN RISK FACTORS AND INVESTMENT CONSIDERATIONS.

In order to review the Authority's buried infrastructure, the Consulting Engineer analyzed the data collected on sewer overflows including reported overflow occurrences and the Authority's attention time to repairs, but did not inspect such buried infrastructure. The Authority's sanitary sewer system overflows per 100 miles of sewer and their duration continue to be higher than for comparable United States or Canadian wastewater systems by a significant amount. The Authority is required under the 2015 EPA Consent Decree to implement sanitary sewer evaluations and has thus far complied with the 2015 EPA Consent Decree's milestones in this regard. The Consulting Engineer has noted that from fiscal year 2017 to 2019, the number of reported overflows has decreased by about 4.4%, but the Authority's operational performance metrics regarding effectiveness in attending overflows decreased, as indicated by its average backlog achieving approximately 1.5 days of pending overflows and a backlog of 0.35 days of pending overflows with duration greater than seven days.

Finally, although the Consulting Engineer did not inspect the wastewater collection (sewer) system, the Consulting Engineer believes that a significant portion of the wastewater collection (sewer) system will continue to require structural repairs and rehabilitation in order to reduce inflow and infiltration and to meet regulatory requirements, considering the age of the Wastewater System and industry benchmarks for renewal and replacement of linear assets.

The 2015 EPA Consent Decree requires the Authority to provide an update to an existing preliminary Sewer System evaluation of potential Infiltration and Inflow ("*I/I*") conditions for all its sanitary sewer systems except for the seven sewer systems where I/I studies have already been completed. For these seven sewer systems, the study found necessary repairs with respect to five wastewater treatment plants. The schedule for these repairs is included in the prioritization system. The updated study was completed and submitted to EPA by its due date. As of the date of this Limited Offering Memorandum, the Authority has not received any input with connection to the updated study.

In addition, future regulatory requirements may require additional capital improvements which are not contemplated in the CIP. As stated in the Consulting Engineer's Report regarding the Authority's buried infrastructure (for the Systems), an analysis of the Authority's renewal and replacement needs and budget is recommended in order to develop a sound renewal and replacement program that will allow the Authority to improve and extend the useful life of the Wastewater System, and potentially reduce its high rate of sewer overflows. See Sections 4.3.3, 6.7 and 9.1 of the Consulting Engineer's Report in *Appendix I*. In order to address the foregoing for the Puerto Nuevo wastewater collection system serving the San Juan metropolitan area, the Authority has under the 2015 EPA Consent Decree undertaken the implementation of a comprehensive Sewer System Operation and Maintenance Program ("**S2OMP**"), that establishes how the Authority assesses the plant's collection system and implements the necessary maintenance and operation measures to comply with EPA regulations, reduce the occurrence of sanitary sewer overflows, manage the occurrence of combined sewer overflows and maintain acceptable levels of service. The S2OMP Implementation Plan was completed and submitted for EPA's review and approval on June 30, 2016, was approved by EPA in January 2017 and is now being implemented. In addition, the Authority is required to submit annual reports on the status of the implementation of the S2OMP. The first annual report was submitted to EPA in May 2017, and a consolidated annual report for 2017 and 2018 was submitted on May 31, 2019. As a result of the impact of COVID-19, EPA has agreed that subsequent annual reports will be due on November 1 of each year. The November 1, 2020, annual report was filed by the Authority with EPA.

The Wastewater System CIP is designed to comply with the 2015 EPA Consent Decree including the specific requirements for plant repair, improvement, expansions or plant decommissioning. See CAPITAL IMPROVEMENT PROGRAM and ENVIRONMENTAL MATTERS. In some of these cases, sewage flows will be diverted from an existing plant to facilities elsewhere. After completion of these projects, additional major improvements (not currently addressed in the CIP) will be necessary to continue to improve reliable operation of the Wastewater System and to provide advanced wastewater treatment at certain of the Authority's wastewater treatment plants and secondary treatment at any plant for which the Authority does not receive approval of a pending application for a waiver of the secondary treatment requirement (see "Other Regulatory and Compliance Matters" under ENVIRONMENTAL MATTERS). As of the date of this Limited Offering Memorandum, the Authority is unable to determine the total cost of the capital improvement projects to be required to bring the sanitary sewer systems into regulatory compliance.

Customer Accounts of the Wastewater System

The following table sets forth the number and type of wastewater customer accounts served by the Authority during the five fiscal years ended June 30, 2019:

<u>Fiscal Year</u>	<u>Residential</u>	<u>Commercial</u>	<u>Industrial</u>	<u>Governmental</u>	<u>Total</u>
2015	718,592	36,644	701	6,811	762,748
2016	720,491	36,081	679	6,728	763,979
2017	720,998	35,601	644	6,650	763,893
2018	721,975	35,098	625	6,462	764,160
2019	721,408	34,976	596	6,216	763,196

Wastewater Sales. Although some commercial and industrial customers have metered sewer discharges, the Authority generally meters water consumption but does not meter wastewater usage. Wastewater usage is estimated based on the consumption of water metered for customers with water and sewer services.

Operation and Maintenance

Since 2005, the Authority has increased and more efficiently applied the financial and labor resources devoted to operation and maintenance of the Systems and has put in place an integrated maintenance program, which includes planned (i.e., preventive, predictive and proactive) and corrective maintenance activities for the Systems' above ground assets. Much of this effort has been memorialized in requirements set forth for improving operating and maintenance practices in the 2015 EPA Consent Decree and the 2006 Drinking Water Settlement Agreement with hard deadlines imposed for meeting them and stipulated penalties imposed on the Authority for noncompliance.

The Consulting Engineer concludes in the Consulting Engineer's Report that the Authority's operation and maintenance practices are adequate. A common challenge identified throughout the Authority's five operating regions and departments was the unfilled operations and maintenance positions which are hindering the Authority's ability to address these functions in a timely and efficient manner. See Section 5.7 of the Consulting Engineer's Report in *Appendix I*. Currently, certain Authority operational and cost metrics (i.e., accounts per staff, cost per account, and cost per million gallons produced/treated) are comparable to the median values for utilities in the United States, a positive change when comparing the Authority's historical results with previously published benchmarks. However, these benchmark comparisons also show that the Authority has areas that could be improved and that represent large opportunities, especially with regards to the reduction of its NRW. The Authority continues to develop and implement operational initiatives with the ultimate goal of improving and optimizing its operations.

Consulting Engineer's Conclusions on the Condition of the Systems

On the basis of the Consulting Engineer's studies, analyses and investigations of the Systems, the Consulting Engineer has reached various relevant opinions regarding its review of the System, the CIP and financial projections as included in the Authority's fiscal plan certified by the Oversight Board on June 25, 2019. See Section 9 of the Consulting Engineer's Report in *Appendix I*.

RATES, BILLINGS AND COLLECTIONS

Rate Setting Powers

The Act requires the Authority to fix and revise rates and charges to be collected for its services and facilities. Under the Act, such rates and charges are required to be just and reasonable. The rates and charges are required to be determined and revised so as to provide funds at all times sufficient to:

- a. pay the cost of maintaining, repairing and operating the Systems, including reserves for such purposes, and for replacement and depreciation;
- b. pay the principal of and interest on revenue bonds issued under the Act as the same shall become due, and reserves therefore; and
- c. provide a margin of safety for making such payments.

Act No. 21 of the Legislature of Puerto Rico, approved on May 31, 1985 (“*Act No. 21*”), provides uniform procedures for public hearings and review of the actions of certain public corporations, including the Authority, in connection with changes in the rates set by such public corporations. The Authority, under the Act and Act No. 21, may change its rates and charges after holding a public hearing upon publication of reasonable notice. Act No. 21 also permits the Authority to impose temporary rate increases in case of a state of emergency for a period not to exceed one hundred eighty (180) days or for the duration of the state of emergency. Such emergency rate increase shall be made public before the date of commencement and the Authority must begin the public hearing process for such rate increase within thirty (30) days from the implementation of the rate increase. The Authority’s rates are not subject to regulation by the Commonwealth or any of its public agencies. Rate evaluation and approval processes are governed by Act No. 21, as indicated above, which also mandates engaging an independent examiner for the hearing process who will submit an independent report to the Board. Considerations regarding rate affordability and impact on Puerto Rico’s economy and consumers are taken into account to formulate public policy as an additional element in the decision to modify rates.

On July 3, 2013, and after complying with the process required by Act No. 21, the Board approved (under Board Resolution 2794) a revised rate structure (the “*Revised Rate Structure*”) which became effective on July 15, 2013. The Revised Rate Structure includes increases to the Authority’s base and volume charges, and it incorporates a new monthly charge, the Environmental Compliance and Regulatory Charge (“*ECRC*”), which varies by customer class and by either consumption or meter size. On December 18, 2013, the Board amended the ECRC for non-residential customers. The Revised Rate Structure also includes an additional \$2.00 monthly special charge for all customers, to facilitate the development of projects that focus on the sustainable management of water resources in accordance with the existing Environmental Public Policy Law (Act 416-2004, as amended) and the Puerto Rico Water Resources Comprehensive Plan (2008) as well as water and wastewater improvement projects in systems not operated by the Authority. The Revised Rate Structure provides for an annual rate adjustment of up to 4.5% (and a cumulative rate increase not to exceed 25%) through the use of an “Annual

Adjustment Coefficient” as included in Resolution 2794. Once that 25% cumulative rate increase cap is reached, a new Act No. 21 process has to be undertaken by the Authority.

Future Rate Increases as included in the Fiscal Plan. In 2017, the Oversight Board required the Authority to implement moderate, but consistent multi-year rate adjustments to ensure its costs are fully covered by service revenues. On August 1, 2017, the Authority’s Governing Board adopted Resolution 3042, which approved, within the Annual Adjustment Coefficient parameters and authorization of the rate setting process of 2013, a moderate rate adjustment schedule for five fiscal years ending June 30, 2022, as included in the table below (showing date of implementation and corresponding fiscal year):

Type of Customer	Jan 1, 2018 (FY 2018)	July 1, 2018 (FY 2019)	July 1, 2019 (FY 2020)	July 1, 2020 (FY 2021)	July 1, 2021 (FY 2022)
Residential	2.5%	2.5%	2.5%	2.5%	2.5%
Commercial	2.8	2.8	2.8	2.8	2.8
Industrial	3.5	3.5	3.5	3.5	3.5
Government	4.5	4.5	4.5	4.5	4.5

The four scheduled rate adjustments for fiscal years 2018 through 2021 have been implemented as planned. The next scheduled rate adjustment is expected to be implemented on July 1, 2021.

After the rate adjustment scheduled for July 1, 2021, and based on the Rate Resolution, the Authority will be required to follow the Act No. 21 process for subsequent Authority rate adjustments. The Authority expects to review its rate structure with the objective of simplifying it, incorporating feedback and recommendations from a third-party expert in utilities rates and implementing the new rate structure starting in fiscal year 2023. See “Rate Structure Review” below.

For Fiscal Plan projections, starting in fiscal year 2023, the Authority assumed rate increases of 2.5% per year across all customer categories. However, the Authority can provide no assurance that rate increases beyond fiscal year 2022 will be implemented.

Rate Structure and Current Rates

The Authority’s Revised Rate Structure became effective on July 15, 2013, and certain aspects were amended on December 18, 2013. The Revised Rate Structure contains five main components:

1. Base charge covering up to 10 cubic meters per month for residential customers and without a consumption allowance for the remaining customer categories.
2. Consumption charge, based on the water consumption, which is divided in up to four (4) tiers or blocks depending on the level of consumption.
3. Environmental Compliance and Regulatory Charge, varying based on the range of consumption (Base Charge and Blocks) or on meter diameter.

4. Special charge, consisting on a fixed monthly fee of \$2 per customer for water sustainability and non-Authority projects.
5. Fiscal Plan Adjustments, reflecting the impact of the annual rate increases as included in the Fiscal Plan.

1. Base Charge

Water. The Base charge is the monthly cost for customers to have water service available. For residential customers, the monthly base charge covers up to 10 cubic meters of consumption. The amount of the base charge is fixed for residential and non-residential customers and determined by the diameter of the service line. For example, the monthly base charge to residential customers with water service only and a 5/8-inch meter connection is \$10.60, while the corresponding charge to non-residential customers is \$24.37. If the service line diameter is 3/4-inch, the corresponding charges are \$18.40 and \$36.09, respectively. Larger diameter service lines have correspondingly higher charges.

Although all customers pay for service, the Authority provides a 35% subsidy to the base charge for customers eligible under certain government assistance programs. The Authority provided this 35% subsidy to approximately 80,000 customers as of September 30, 2020. Also, since fiscal year 2010, the Authority has been complying with the provisions of Act No. 69-2009 (repealed and replaced by Act 22-2016), which provides a subsidy to all public housing customers by limiting their monthly payments to the water and wastewater base charge. The Authority had approximately 50,400 customers who qualified for this subsidy as of June 30, 2020.

Wastewater. Wastewater service is billed together with water bills for those customers who have both services. The wastewater rate structure resembles the water rate structure, although the amounts are slightly lower. For example, the monthly base charge to wastewater residential customers with 5/8-inch water service is \$9.11 while the corresponding charge to non-residential customers is \$20.10. The consumption component is calculated by reference to the customer's water use, except for certain commercial and industrial customers that have metered sewer discharges. Premises not discharging substantially the entire volume of their water use into the Wastewater System are allowed an adjustment in the imputed consumption charge, provided the customer installs metering equipment which allows computation of actual discharge to the Wastewater System. Customers with private water supply must also provide the necessary installations to measure the amount of wastewater discharges.

Waste containing biological oxygen demand and total suspended solids concentrations in excess of 250 mg/l from industrial and commercial customers is subject to additional charges set forth in the Authority's regulations. Waste containing pollutants in excess of local limits established in the Authority's regulations may be subject to penalties and pretreatment requirements of the Authority.

Current monthly base charges by type of customer, meter diameter, and service are included below:

**Residential Monthly Base Charge per Account
(includes first 10 cubic meters of monthly consumption)**

Service Line	Water	Wastewater	Water & Wastewater
½" & ⅝"	\$10.60	\$9.11	\$19.71
¾"	18.40	15.86	34.26
1"	30.23	20.36	50.59
1½"	57.12	31.32	88.44
2"	97.24	53.56	150.8
3"	149.15	89.23	238.38
4"	335.5	156.69	492.19
6"	894.72	731.19	1,625.91
8"	1,431.55	835.64	2,267.19
10"	2,290.50	1,337.02	3,627.52
12"	3,664.80	2,139.25	5,804.05

**Non-Residential Monthly Base Charge per Account
(does not include consumption allowance)**

Service Line	Water	Wastewater	Water & Wastewater
½" & ⅝"	\$24.37	\$20.10	\$44.47
¾"	36.09	31.85	67.94
1"	61.10	44.85	105.95
1½"	122.43	75.23	197.66
2"	194.62	117.32	311.94
3"	436.87	243.86	680.73
4"	725.75	459.81	1,185.56
6"	1,858.58	1,474.93	3,303.51
8"	2,939.80	2,288.04	5,227.84
10"	4,703.70	3,660.87	8,364.57
12"	7,525.91	5,857.39	13,383.30

2. Consumption Charge

The consumption charge varies based on the customer's level of consumption. The applicable consumption charge per cubic meter varies depending on the customer category, meter diameter and consumption block, as included below:

Block	Consumption	Water	Wastewater	Water & Wastewater
Residential (charge per cubic meter)				
Block 1	> 10 - 15 m ³	\$1.25	\$1.02	\$2.27
Block 2	> 15 - 25 m ³	1.99	1.59	3.58
Block 3	> 25 - 35 m ³	2.69	2.14	4.83
Block 4	> 35 m ³	2.84	2.27	5.11
Non-Residential (Commercial and Government) (charge per cubic meter)				
Block 1	> 0 - 100 m ³	\$1.74	\$1.44	\$3.18
Block 2	> 100 - 200 m ³	2.16	1.73	3.89
Block 3	> 200 m ³	2.84	2.27	5.11
Non-Residential (Industrial) (charge per cubic meter)				
Block 1	> 0 m ³	\$2.27	\$1.82	\$4.09

3. Environmental and Regulatory Compliance Charge (“ERCC”)

The ERCC is intended to cover operating costs associated with environmental compliance and debt service for the Authority’s indebtedness incurred to cover mandatory environmental compliance projects in the Authority’s capital improvement program costs and the cost of other regulatory requirements. The ERCC, varies by customer class, consumption level (block) or meter size. The ERCC billing structure for non-residential customers varies based on the consumption block for customers with meters 2” in diameter or less and consists of a fixed charge based on the meter diameter for customers with meters greater than 2”.

The following table sets forth the current structure for the ERCC for residential customers and non-residential customers with meter of 2” or less (based on consumption block):

Block	Consumption	Water	Wastewater	Water & Wastewater
Residential				
Base	0-10 m ³	\$1.00	\$1.00	\$2.00
Block 1	> 10 - 15 m ³	6.50	6.50	13.00
Block 2	> 15 - 25 m ³	10.50	10.50	21.00
Block 3	> 25 - 35 m ³	17.50	17.50	35.00
Block 4	> 35 m ³	31.50	31.50	63.00
Non-Residential (Commercial and Government) - Meters <=2”				
Block 1	> 0 - 100 m ³	\$1.18	\$0.98	\$2.16
Block 2	> 100 - 200 m ³	1.22	1.01	2.23
Block 3	> 200 m ³	1.26	1.04	2.30
Non-Residential (Industrial) - Meters <=2”				
Block 1	> 0 m ³	\$1.54	\$1.22	\$2.76

The following table sets forth the approved structure for the ERCC for the Authority’s non-residential customers with meter of more than 2” diameter (based on meter size):

Service Line	Water	Wastewater	Water & Wastewater
Non-Residential (Commercial, Industrial and Government) - Meters >2"			
3"	482	\$482.00	\$964.00
4"	839.5	839.50	1,679.00
6"	2340	2,340.00	4,680.00
8"	3703	3,703.00	7,406.00
10"	5924	5,924.50	11,849.00
12"	9479.5	9,479.50	18,959.00

Revised Rates for Activities and Services

The following table sets forth the charges for residential and non-residential customers for certain activities and services, established pursuant to Resolution 2794 and in effect since fiscal year 2016. These revised rates are designed to cover the Authority’s cost of providing such services

Revised Rates for Activities and Services

<u>Type</u>	
Reconnection – Residential	\$40.00
Reconnection – Commercial	75.00
Reconnection – Industrial	75.00
Fire Control Systems 1”	38.17
Fire Control Systems 2”	57.26
Fire Control Systems 3”	85.90
Fire Control Systems 4”	128.86
Fire Control Systems 6”	193.29
Fire Control Systems 8”	289.94
Fire Control Systems 10”	434.91
Fire Control Systems 12”	652.37
New (tap) Connection 5/8”	800.00
Meter Testing 1/2” a 1 1/2”	30.00
Meter Testing >= 2”	80.00

In fiscal year 2019 a \$15 charge was implemented to recover the cost of disconnecting the service (in addition to the reconnection fee already in place as presented above).

Rate Structure Review

On October 19, 2020, the Authority issued a Request for Proposals for interested and qualified firms to (i) review and analyze the Authority’s current Revised Rate Structure,

(ii) perform a comprehensive utility system cost of service analysis and (iii) develop a rate study analysis and a new proposed rate design for the Authority water and wastewater rates. The Authority’s goal is to develop a new simplified rate structure reflecting the actual cost of service with the following objectives:

- Optimal cost recovery by type of service (water and wastewater)
- Affordability and protection for vulnerable customers
- Ease of implementation, understanding, and simplicity
- Fairness and equity between and within customer classes
- Incentivizing water conservation

The Authority received the proposals on November 16, 2020, and expects to select the preferred proponent by the end of December 2020 and complete the procurement process thereafter.

Billings and Collections

The Authority maintains its books and accounts and prepares its financial statements under the accrual method of accounting, which recognizes revenues when billed and expenses when incurred. For Trust Agreement purposes, Authority Revenues are recognized when collected. For further detail refer to the Trust Agreement in *Appendix II*.

Authority billings are processed using SAP-ISU. Adjustments due to meter reading input or due to estimates adjustments can be recorded. During the meter reading process, any reading found that is out of the customer’s regular consumption, requires an Authority employee to take a picture of the water meter showing the reading. That data is electronically transferred to and then evaluated by the Regional Supervision Center (“*CSR*”) for accuracy. Any discrepancy found by the CSR requires a new on-site meter read for validation.

The following table sets forth the annual water and wastewater billings of the Authority for each of the five fiscal years ended June 30, 2019, net of adjustments and subsidies (in millions of current dollars):

Water and Wastewater Billings					
	2015	2016	2017	2018*	2019*
Residential	\$697.3	\$633.2	\$640.8	\$567.1	\$630.0
Commercial	218.1	198.2	202.5	186.3	204.9
Industrial	53.0	48.4	49.1	44.1	49.3
Governmental	137.9	121.5	148.9	195.1	194.4
Total	\$1,106.3	\$1,001.3	\$1,041.3	\$992.6	\$1,078.6

**Information for fiscal year 2018 and fiscal year 2019 is preliminary, subject to material change.*

The reduction in service billings during fiscal year 2018 was due to the impact of the 2017 Hurricanes which caused service interruptions resulting in reduced water consumption across the island. See “September 2017 Hurricanes” under THE AUTHORITY.

Recently, based on the COVID-19 lockdown, consumption from March to June 2020 was mostly estimated due to measures taken to protect the health of the Authority’s meter readers and its customers. After in-person meter readings restarted in June, and based on actual meter readings and water usage, consumption was adjusted and billed. For some residential customers, some of the estimations based on historical water usage proved to be less than their actual consumption (as many families stayed home due to the lockdown, consuming more than the historical usage considered for the estimation). In some cases, when the increase in consumption was material, the water usage was normalized from the last actual pre-lockdown reading to the first reading post-lockdown, and customers received an adjustment to avoid changes in consumption blocks due to the estimated readings. This was an extraordinary situation. In the future, the Authority expects to be able to implement remote meter reading (fully remote or drive-by readings) which will eliminate or minimize water consumption estimation or reliance on physical reading only.

Neither the Government of Puerto Rico nor the Oversight Board should have any influence on the Authority’s billing process. However, the Government of Puerto Rico and the Legislature have the power to propose and authority to enact new legislation which may affect the Authority’s billing process and operations. The Government of Puerto Rico has covenanted in the Act that it will not materially impair the Authority’s ability to perform under its contracts, including the Trust Agreement and the Bonds.

The Authority’s policy is to treat accounts past due for thirty days or more as in arrears, and its collection policies for arrearages include account monitoring, contacting customers, service disconnection and service termination. All service disconnection procedures must comply with the provisions of Act 33-1985, which requires customer notification prior to service disconnection. The Authority provides its customers with the option to pay past due amounts under a payment plan.

For fiscal year 2016 onwards, reconnection charges for residential and for commercial and industrial accounts are \$40.00 and \$75.00, respectively. Also, a new disconnection cost recovery fee was implemented in an effort to reduce account collection risk.

The Authority’s collections rate for fiscal year 2017 was 98%. After the impact of the September 2017 hurricanes, and the on-going fiscal crisis affecting Puerto Rico, however, in fiscal year 2018 the Authority’s collections rate fell to about 91%. During fiscal year 2019, collections when compared to billings for such fiscal year exceeded 100%, reflecting recoveries of outstanding balances from prior years. Fiscal year 2020 collections have been affected by COVID-19 related measures.

Act 39-2020 (“*Act 39-2020*”), enacted on April 9, 2020, prevents the Authority from disconnecting customers’ water services due to non-payment. This legislation is part of several measures taken by the Government of Puerto Rico to address the impact of the COVID-19 pandemic. The Authority cannot predict when service disconnections can be reinitiated because such date is contingent upon a determination by the Governor that the emergency no longer exists

and the COVID-19 related Executive Orders, as amended, extended or superseded, expire or are cancelled. Based on Act 39-2020, disconnections will not occur before two billing cycles after the emergency declaration ends. Also, the Authority extended the payment term from 21 to 45 days through September 2020. Invoices issued beginning on October 1, 2020, revert to the 21 days payment terms.

For more information on Rate, Billings and Collections, please refer the Consulting Engineer's Report which is included as *Appendix 1*.

Authority Budgeting Process

The Authority's long-term financial projections, which are reviewed at least once a year, are the guide for each fiscal year's budget preparation. The Authority's annual detailed budgeting process begins in January or February when departments begin to prepare their budget requests (based on detailed budget guidelines and objectives outlined by the Finance Department and following the Fiscal Plan parameters), to be submitted to the Finance Department for inclusion in the preliminary consolidated budget, which is presented to the Executive President in March or April. The Executive President reviews this preliminary budget and recommends appropriate adjustments and changes and returns it to the departments for their further review. Final recommendations (generally made in April or May) are incorporated into a proposed budget prepared following the presentation requirements contained in the Trust Agreement. Finally, the proposed budget is submitted to the Board for approval generally during June.

Each approved budget is uploaded to the Authority's financial system, and each Department receives its final approved budget, which is used as a guideline and for monthly and annual financial analysis, reporting and measurement. Pursuant to the provisions of the Trust Agreement, the Authority is also required to provide to the Consulting Engineer a draft of its annual budget, a capital expenditure budget and a Disbursement Schedule (as defined in the Trust Agreement) no later than April 15. Final copies of the budget approved by the Board are required to be delivered to AAFAF and the Trustee no later than June 30 of each year. The Authority's budget for fiscal year 2021 was approved by the Board on June 23, 2020. The Authority is required to submit its proposed budget to the Oversight Board in compliance with the Oversight Board's approved schedule for developing, submitting, approving and certifying budgets, as such schedule is notified to the Governor pursuant to Section 202 of PROMESA. In addition, the Authority also provides a copy of its budget to the Consulting Engineer. The Oversight Board reviews and submits recommended changes to the proposed budget in accordance with its mandate under PROMESA. If such changes are included in the proposed budget to the Oversight Board's satisfaction, the final budget is then submitted to the Oversight Board for certification. If the budget, as revised by the Authority, is not approved by the Oversight Board, then, the Oversight Board has the power under PROMESA to impose and certify a budget for the Authority in a manner similar to its power to impose and certify a Fiscal Plan. The Authority's budget for fiscal year 2021 was approved and certified by the Oversight Board on June 30, 2020. See THE AUTHORITY'S FISCAL PLAN.

ENVIRONMENTAL MATTERS

Congress has provided that many federal environmental protection statutes, including the Clean Water Act and the SDWA, have the same application in Puerto Rico as in the fifty states. Also, like legislatures of most states, the Legislature of Puerto Rico has enacted local environmental protection laws. These federal and Puerto Rico environmental laws and regulations have important effects on the operations of the Systems. Some of the key areas covered by these regulations include: the quality and safety of drinking water; standards and limitations on water and air pollutants released into the environment; availability of water as a resource; handling and disposal of solid waste and wastewater; and health and safety standards for personnel. Compliance with these regulations in the ordinary course of operations requires significant operational and capital expenditures. Failure to comply with these regulations could have material adverse effects including the imposition of civil or criminal liability or fines by regulatory agencies or liability to private parties. See “Regulatory Compliance” below.

Water System Regulation

Safe Drinking Water Act

The SDWA requires EPA to establish national drinking water standards and maximum levels for contaminants. These regulatory standards generally require treatment procedures and techniques by water supply systems so that drinking water will be free from bacteriological and chemical contaminants. States and the Commonwealth assist in the SDWA enforcement process. In Puerto Rico, enforcement responsibility for SDWA regulations developed by EPA is delegated to DOH.

Amendments to the SDWA in 1986 enhanced the public health protection mandated by the SDWA by imposing additional treatment requirements for surface and subsurface water sources, including criteria, procedures and timetables for state determinations of whether filtration measures are required, maximum permissible levels of coliform bacteria occurrence in distribution systems, and the testing and control of lead and copper in water at the customers’ taps.

When the SDWA was amended and reauthorized in 1996, the water quality standard setting process was revised, a revolving loan fund for drinking water projects was established, water suppliers were required to issue consumer confidence reports, and a timetable was established for further regulation of microbial pathogens and potentially harmful disinfection by-products in drinking water. As part of such further regulation, the first set of rules, the Interim Enhanced Surface Water Treatment Rule (“*ESWTR*”) and Stage 1 Disinfectants and Disinfection By-products Rule (“*DBPR*”) were issued in December 1998, and effective in November 2001. These rules specify further treatment requirements for filtered systems to protect against pathogens and revise the maximum contaminant levels for potentially harmful disinfection by-products.

Lead and Copper Rule. Under the Lead and Copper Rule (the “*Lead Rule*”), water suppliers must conduct sampling and testing programs, identify and implement optimal corrosion control treatment, and provide information to the public on ways to further reduce risk of lead exposure when trigger levels are exceeded. The presence of lead results from corrosion of certain plumbing materials used in the Authority’s and in household plumbing’s water system fixtures.

The Authority treats its source water, as needed, to reduce the corrosiveness of the water so that lead concentrations at customers' taps are reduced.

Pursuant to the Lead Rule, the Authority is required to conduct sampling to detect the presence of lead and copper in its customers' tap water. Since 2000, samples collected from the Water System have at times exceeded the trigger levels set by the Lead Rule beyond which remedial action by the Authority is required. These required remedial actions include conducting a public education program and the implementation of a corrosion control treatment and service replacement program in affected communities where applicable levels were exceeded. These programs have been implemented in those facilities that have exceeded the trigger levels of the Lead Rule. As a result of the corrosion control treatment put in place at the affected systems, these systems achieved compliance. No service replacement programs have been needed at any of these systems.

Annual System Report. The SDWA requires that all water systems publish an annual drinking water quality report to be distributed to system customers. The report, called a Consumer Confidence Report, is required to contain monitoring results of all detected contaminants that are regulated by EPA. The regulations governing this provision of the SDWA were promulgated in August 1998. The report has been published annually since 1998 by the Authority and is available (in Spanish) online (the most recent report being for calendar year 2019) at the Authority's website www.acueductospr.com. Such report is not incorporated by specific reference into this Limited Offering Memorandum.

Other Safe Drinking Water Act Regulations. In January 2006, EPA published two drinking water supply regulations, developed pursuant to the SDWA: the Long Term 2 Enhanced Surface Water Treatment Rule ("**LT2**") and the Stage 2 Disinfectant and Disinfection By-Products Rule ("**DBP2**"), which became effective March 2006. The LT2 rule defines four (4) compliance schedules that are based on the population served by the Systems and designed to allow the Systems to comply simultaneously with the DBP2.

The purpose of LT2 is to reduce the incidence of waterborne disease by mandating certain levels of inactivation and the removal of certain microorganisms in or from water supply systems. The LT2 Rule also mandates that certain uncovered finished water storage facilities be covered or that water from such facilities be filtered. The Authority has completed all monitoring phases of the LT2 Rule compliance schedule and has sampled and characterized its water sources to determine treatment requirements. Eight of the Authority's water systems were initially identified as requiring capital improvements – namely, the Aguas Buenas, Orocovis, Barranquitas, Luquillo, Morovis Urbano, Morovis Sur, Vega Baja and Quebrada-Camuy Water Filtration Plants, and these improvements have been completed. Additionally, the construction and completion of 20 Schedule 4 capital improvement projects to other Authority systems is required to remove microorganisms required to achieve compliance with the LT2 Rule. Prior Authority capital programs did not include funds to cover these pending capital improvement projects within the required LT2 Rule deadlines. Therefore, on May 12, 2015, the Authority and DOH submitted a joint motion to amend the 2006 Drinking Water Settlement Agreement to include these projects under a revised schedule of compliance, which motion was granted by the court on May 22, 2015. See "2006 Drinking Water Settlement Agreement" in ENVIRONMENTAL MATTERS.

The DBP2 Rule requires reduction of disinfection byproducts, which are chemical compounds formed as a result of chemical reactions between organic and inorganic matter in water when disinfectants such as chlorine are added. Based on preliminary assessments, the Authority believes that the mandated level of disinfection byproducts set forth by DBP2 may be exceeded in certain parts of the Water System. In this respect, the Authority has performed Operational Level Evaluations and complied with all regulation and action plans submissions required thereunder. Some of these evaluations have included the performance of hydraulic modeling. In most cases, the Authority has been able to implement the recommendations of its consultants resulting from such assessments. Additional recommendations, requiring improvements such as pump and control system replacements, among other like projects, are currently under evaluation of the funds necessary to comply with such recommendations. According to the Consulting Engineer's Report, on average, the Authority's WTPs were rated "Adequate." See Sections 4.2.2.1 and 9.1 of the Consulting Engineer's Report in *Appendix I*.

On November 8, 2006, EPA published the Ground Water Rule ("**GWR**"). The purpose of GWR is to provide for increased protection against microbial pathogens in public water systems that use ground water sources, particularly those that are susceptible to fecal contamination. The GWR establishes a risk-targeted approach of ground water surveys and source water monitoring and requires ground water systems whose surveys and monitoring indicate a risk of fecal contamination to take corrective action to reduce exposure to microbial pathogens. The Authority is currently complying with the GWR monitoring requirements by the Total Coliform Rule monitoring. Under the GWR, the Authority has developed action plans for the ground water systems at risk for microbial pathogens, but additional corrective actions to reduce microbial pathogens may be required in such systems that continuously show contamination. In order to assess the foregoing, the Authority and DOH agreed to categorize the GWR systems into five different groups based on their priority.

As of 2019, the Authority has completed the Ground Water Under the Influence ("**GWUDI**") assessment of 169 wells initially identified at risk due to their proximity to superficial body of water or geological conditions. During the assessment, 21 wells were determined to be out of service, and 8 wells were eliminated or moved directly to the Microscopic Particulate Analysis ("**MPA**") sampling schedule. This resulted in an adjusted total of 140 wells for the assessment. After making a correlation of the water quality results of groundwater and surface water, 24 wells were identified as No-GWUDI and the remaining 116 wells were determined in need of MPA testing. From the 116 wells identified as Potential GWUDI, 15 were out of service, 86 have been sampled for MPA and of those 86 wells, 84 resulted No-GWUDI, and 2 were medium and high risk. These two wells were disconnected from the Water System. The remaining 15 wells are scheduled for MPA sampling to be completed by the end of fiscal year 2021.

Risk and Resilience. America's Water Infrastructure Act of 2018 ("**AWIA**") requires community water systems ("**CWS**") serving more than 3,300 people to develop or update risk and resilience assessments ("**RRAs**") and emergency response plans ("**ERPs**"). CWS owners, such as the Authority, are required to take an all-hazards approach and expand the consideration of risk and resilience to include natural, proximity and dependency threats in addition to malevolent threats. The all-hazards approach expands previous, federally mandated, vulnerability assessments completed under the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (the "**Bioterrorism Act of 2002**").

The Authority owns and operates 98 CWS, of which five (5) serve populations of more than 100,000; five (5) serve populations between 50,000 and 99,999; and 88 serve populations between 3,301 and 49,999. To comply with AWIA, CWS owners must produce a RRA and an ERP that addresses the risks identified in the RRA. Both must be reviewed and updated (as needed) every five years. Owners must self-certify completion of the RRAs and ERPs by the deadlines stipulated in AWIA in 2020 and 2021.

In 2003 and 2004, the Authority complied with the requirements of the Bioterrorism Act of 2002, by conducting and completing Vulnerability Assessments and ERPs, and submitting to EPA certificates of completion. To comply with AWIA, the Authority is currently conducting and completing its RRAs and ERPs for all 98 CWS and submitting self-certifications of completion to EPA. The Authority completed and certified RRAs for large systems on March 26, 2020. The ERPs for large systems were certified on October 15, 2020, 19 days after the required deadline, which is six months after the RRAs certification is completed. The Authority submitted a notification to EPA on October 9, 2020, explaining all good faith efforts that were employed to complete these ERPs by the deadline date. The Authority expects to meet all other deadlines stipulated by AWIA. The Authority is committed to continue developing and designing Water System improvements to mitigate, prevent, detect and respond to vulnerabilities and risks, as well as to build resilience in its CWS considering the findings of the RRAs and following the actions included in the ERPs.

Future Drinking Water Act Considerations. The SDWA requires EPA to conduct an Unregulated Contaminant Monitoring Program to collect data for contaminants that are suspected to be present in drinking water but do not have health-based standards under the SDWA. According to the Consulting Engineer's Report, there are several contaminants that may be regulated in the future based on this data. The Consulting Engineer did not make any determinations regarding the likely impact on the Authority due to potential regulations due to these candidate contaminants. See Sections 6.6 and 6.7 of the Consulting Engineer's Report in *Appendix I*. The Authority recognizes, however, that additional requirements regarding these contaminants could require more advanced technologies.

On October 10, 2019, EPA announced a proposal to revise the Lead and Copper Rule proposing a series of actions to reduce lead exposure in drinking water where it is needed the most, focusing on the following six areas: (1) identifying the areas most affected; (2) strengthening drinking water treatment requirements; (3) replacing lead service lines; (4) increasing sampling reliability; (5) improving risk communication; and (6) protecting children in schools and child care facilities. As of the date of this Limited Offering Memorandum, this proposed regulation has not been adopted. The adoption of this new rule may impose additional requirements on the Authority.

Water Supply System Discharges

In March 2015, DNER adopted new numeric water quality standards for nitrogen and phosphorus, which entered into effect on May 26, 2016. As of the date of this Limited Offering Memorandum, EPA has issued some NPDES permits to the Authority containing the new limits for nitrogen and phosphorus, for both its water treatment plants and wastewater treatment plants. Other existing permits are under renewal, and pending the issuance of such permits, the existing permits continue in effect. The Authority has requested interim limits for nitrogen and phosphorus,

with which it anticipates it may comply, for those NPDES permits that have been issued, which requests have either been granted or are under consideration, and expects to request interim limits for these parameters for permits issued in the future for both its water and wastewater treatment plants. In order to comply with the final limits for these parameters, the Authority will have to undertake the actions in all of its water treatment plants and 35 of its wastewater treatment plants discharging in rivers and streams, which could result in an aggregate of approximately \$1.0 billion in capital improvement projects and annual expenditures of approximately \$55 million for operation and maintenance initiatives related thereto. Since these capital improvement projects are not included in the 2015 EPA Consent Decree, no funds are assigned under the current CIP for the construction of such projects. Rather, the Authority proposes to include these projects in the prioritization system that is included in the 2015 EPA Consent Decree.

In general, the CIP does not include projects intended solely to address future regulations, but the Authority is implementing some improvement projects with consideration for compliance with the LT2 Rule. In addition, the Authority has established a policy for new water treatment plants to be designed with the appropriate effluent turbidity levels to aid in compliance with the LT2 rule.

Wastewater System Regulation

The Clean Water Act. The Wastewater System is also subject to extensive environmental regulation, principally under the federal Water Pollution Control Act enacted in 1956, as amended by the federal Water Pollution Control Act Amendments of 1972, the Clean Water Act of 1977, and the Water Quality Act of 1987, each as amended (collectively, the “**Clean Water Act**”). The Clean Water Act prohibits wastewater treatment plant discharges of pollutants into waters unless such discharges are in compliance with the terms and conditions of the applicable federal permit. EPA has the responsibility for implementing and enforcing Clean Water Act requirements in Puerto Rico. However, EPA and DNER are parties to a memorandum of agreement under which EPA delegates to DNER some of the enforcement powers under the Clean Water Act (but EPA retains the authority to reclaim jurisdiction over such enforcement, on a case by case basis).

Under the Clean Water Act, each of the Authority’s wastewater treatment plants that discharge into nearby bodies of water must have a NPDES permit issued by EPA, containing the limits on the pollutants discharged in plant effluent. Discharge limits are established by federal law and regulation and by water quality standards, which in Puerto Rico’s case are established by the DNER. NPDES permits also contain operating and maintenance requirements for wastewater facilities and their associated collection systems appurtenances. Agreements entered into by the Authority as a condition of receiving federal construction grant assistance under the Clean Water Act also impose requirements on many of the Authority’s wastewater facilities. In addition, the Clean Water Act requires the Authority to administer an industrial wastewater pretreatment program applicable to many industrial or significant users of its Wastewater System. The Authority administers an EPA-approved industrial pretreatment program and the Fats, Oils and Grease (“**FOG**”) program.

The rehabilitation, improvement and expansion of the Wastewater System are required in significant respects by the Clean Water Act. In particular, the Clean Water Act requires publicly owned treatment works to achieve secondary treatment by a certain date, with some exceptions.

By level of treatment, seven Authority wastewater treatment plants are designed to provide tertiary treatment, 38 plants are designed to provide secondary treatment, and the remaining six facilities are designed to provide advanced primary treatment. Currently, the Authority's six primary advanced treatment plants have been granted waivers from secondary treatment limits pursuant to Section 301(h) of the Clean Water Act or have waiver requests pending renewal of their NPDES permits. Specifically, the Ponce, Carolina, Aguadilla and Arecibo wastewater treatment plants have renewed their 301(h) permits, while Bayamón and Puerto Nuevo are operating under administrative extensions, pending final approval of their applications for permit renewal. The Authority has initiated a program of extensive interaction with EPA, among other regulatory agencies, to keep it abreast of possible legislative or regulatory changes that might affect its treatment plant operations, including changes that may influence the granting of such secondary treatment waivers. In 2000, the Authority signed a memorandum of agreement with EPA in which the parties agreed that notwithstanding the secondary treatment (301(h)) waivers at these six plants, the Authority and EPA would work cooperatively to achieve voluntary plant upgrades to full secondary treatment over a 20-year period and to secure the necessary capital funding to support these upgrades in the form of federal grants or other means of federal financial assistance (coupled with the required "matching share" of Authority funding (whether through Commonwealth appropriations or otherwise)). The failure by the Authority to comply fully with the existing 301(h) secondary treatment waivers applicable to these plants would entitle EPA to issue and require the Authority to comply with secondary treatment for these plants with the concomitant obligation on the Authority to incur the needed capital and operational expenditures to upgrade them. At the time of execution of the memorandum of agreement, the parties estimated that the capital costs involved in those upgrades exceeded \$500 million with over \$600 million in incremental related operating costs, but the Authority now believes that these capital costs may be significantly in excess of these amounts. The Authority, however, continues to operate these primary treatment plants pursuant to the Section 301(h) waivers and believes that it will continue to obtain such waivers when the permits for these plants are renewed. As of the date of this Limited Offering Memorandum, the federal funding for the construction of these facilities has not been received or appropriated, nor does the Authority believe that the Commonwealth is in a position to provide the required "matching share" of funds for such construction. Under the memorandum of agreement, the deadline for the construction of the projects would commence upon the receipt of such funds. The CIP contains projects including plant upgrades and capacity expansion construction intended to achieve compliance with "secondary treatment" effluent standards at all of its plants except for the mentioned six advanced primary treatment plants.

In addition, as further discussed below, in connection with the Wastewater System, the 2015 EPA Consent Decree, which also addresses non-compliant sanitary sewer overflows, requires the Authority to conduct a sanitary sewer system evaluation and implement a related repair plan at several specified sewer systems. The Authority is the owner or the operator of sewer systems that were either designed or constructed in the mid-twentieth century or before as combined sewer systems or that operates as such, including the Puerto Nuevo wastewater collection system ("*Puerto Nuevo WCS*"), portions of which have been identified as operating as combined sewer systems. Typically, combined sewer systems transport all of their wastewater to wastewater treatment plants, where wastewater is treated and then discharged into a body of water. During rainfall events, wastewater volume in combined sewer systems can exceed the capacity of the sewer system or the wastewater treatment plant causing combined sewer overflows ("*CSOs*") that discharge storm water influenced wastewater into nearby bodies of water. The Clean Water Act

prohibits unpermitted CSOs, and in order to establish a national framework to control these discharges, EPA issued the Combined Sewer Overflow Control Policy (“*CSO Policy*”). The CSO Policy requires permittees to engage in characterization of their combined sewer systems and CSO discharges, demonstrate compliance with certain technology and water quality-based controls identified in the policy, and develop long-term CSO control plans to achieve compliance with the Clean Water Act (these controls are termed “*Nine Minimum Controls*” and “*Long Term Controls*,” respectively) which EPA may include in the plant’s discharge permit.

Detailed information regarding all known combined sewer systems in the Puerto Nuevo WCS is still in the process of being developed, and the Authority is currently performing additional sanitary sewer evaluations to determine if additional portions are conveying both sanitary wastewater and storm water and to identify needed corrective actions as part of achieving compliance with the Nine Minimum Controls/Long Term Control Plan requirements established under the current Puerto Nuevo wastewater treatment plant’s NPDES permit. Until the evaluation process of these combined sewer systems is completed, the Authority has obtained permitted outfalls for certain identified CSO outfalls.

As mentioned, new numeric water quality standards for nitrogen and phosphorus went into effect on May 26, 2016, and also apply to the discharges of the wastewater treatment plants. As of the date of this Limited Offering Memorandum, EPA has issued some NPDES permits to the Authority containing new limits for nitrogen and phosphorus, for both its water treatment plants and wastewater treatment plants. Other existing NPDES permits are under renewal, and pending the issuance of such permits, the existing permits continue in effect. The Authority has requested interim limits for nitrogen and phosphorus, with which it anticipates it may comply, for those NPDES permits that have been issued, which requests have either been granted or are under consideration, and expects to request interim limits for these parameters for permits issued in the future for both its water and wastewater treatment plants.

Further Clean Water Act Considerations. Statutory and regulatory evolution of Clean Water Act requirements impose continuing environmental planning and compliance requirements on the Authority in addition to compliance with the terms of the 2015 EPA Consent Decree. These include, but are not limited to, the imposition of more stringent monitoring limits for parameters such as fecal coliform and the inclusion of additional monitoring parameters such as enterococcus. Compliance with future regulatory requirements will almost certainly result in the Authority having to make capital and operating expenditures that are not reflected in the CIP and the Authority’s financial projections. Generally, future regulatory requirements provide for a period of time to achieve compliance or develop compliance plans. The Authority is unable to determine at this point the magnitude of such expenditures, but it is possible that they may in the aggregate be significant. The Authority would expect, however, to include any such new capital improvement projects under the prioritization system as included in the 2015 EPA Consent Decree.

Regulatory Compliance

Clean Water Act and Safe Drinking Water Act Litigation against the Authority.

Previous Consent Decrees

Until May 23, 2016, the Authority was subject to the EPA consent decrees described below, all of which have been closed or superseded by the 2015 Consent Decree but are described below for background purposes (the “*Previous Consent Decrees*”).

- A. Consent Decree entered into on or about July 2, 2003 in *U.S. v. the Authority, Commonwealth of Puerto Rico and Compañía de Aguas de Puerto Rico, Inc.*, Civil Action No. 01-1709 (JAF) before the U.S. District Court for the District of Puerto Rico, addressing alleged violations under Sections 301 and 402 of the Clean Water Act, its implementing regulations and NPDES permits issued under these related to the Authority’s wastewater pump stations (as amended, the “**2003 EPA Consent Decree**”). Under the 2003 Consent Decree, the Authority was required to implement 111 capital improvement remedial projects, pay stipulated penalties for bypass events associated with the pump stations, complete a Supplemental Environmental Project (“**SEP**”) and implement an Integrated Preventive Maintenance Program (“**IPMP**”) and a Spill Response and Clean-up Plan (“**SRCP**”). The Authority completed all 111 capital improvement projects and the SEP, IPMP and SRCP. This Consent Decree has been closed, and the stipulated penalty provisions and IPMP and SRCP requirements were included in the 2015 EPA Consent Decree. Certain pending requirements were also incorporated into the 2015 Consent Decree.
- B. Consent Decree entered into on or about June 22, 2006, in *U.S. v. the Authority and Commonwealth of Puerto Rico*, Civil Action No. 06-1624 (SEC) before the U.S. District Court for the District of Puerto Rico, addressing alleged violations under Sections 301 and 402 of the Clean Water Act, its implementing regulations and NPDES permits issued under these related to the Authority’s wastewater treatment plants (as such decree may be amended from time to time, “**2006 EPA Consent Decree**”). The 2006 EPA Decree required the Authority to undertake extensive remedial and capacity expansion measures over a 15 to 20 year period at all of its wastewater treatment plants and sanitary sewer and collection systems (obligating the Authority to complete several short-, mid-, and long-term capital projects (the latter comprised of Term 1, Term 2 and Term 3 projects)), including:
- The installation of de-chlorination equipment, the installation of flow proportional chlorination equipment, the repair and replacement of equipment, and the implementation of a chemical treatment program for phosphorous removal, among other things.
 - The implementation of a \$3 million SEP (designed to provide sewer service to a community located at the La Plata Watershed and approved by EPA).
 - The adoption and implementation of an IPMP and a SCRCP for its collection systems and wastewater lift stations.
 - The preparation and implementation of Sanitary Sewer System Repair Plans (“**SSSRP**”) for five Authority’s wastewater collection systems.

- Update the 2008 island wide Preliminary Sanitary Sewer System Evaluation Plan (“*PSSSEP*”) for the remainder of the Authority’s collection systems and perform specific SSSEPs for the Facilities the PSSSEP identifies as requiring further evaluation (“*SSSEPs 2*”).
 - Implement repairs on those systems as may be needed based on the foregoing evaluations.
 - Pay stipulated penalties for failure to comply with various requirements contained therein, some of which were deposited in an escrow account.
 - Submission of tri-annual progress reports to EPA and progress meetings with EPA.
 - As of the execution of the 2015 EPA Consent Decree, which superseded the 2006 EPA Consent Decree, the Authority had completed the following required actions under the 2006 EPA Consent Decree: the SEP, all short and medium term remedial actions; capital improvements; Term 1 of the long-term capital improvement projects; the SSSEP; the SSSRP and the SSSEPs 2; and the development and implementation of the EPA-approved IPMP, the SRCP and the capacity management system policy. The pending requirements under the 2006 EPA Consent Decree, comprised mostly of pending Term 2 and Term 3 capital improvement projects that were not yet due, were included in and superseded by the 2015 EPA Consent Decree.
- C. Consent Decree entered into on or about April 6, 2010, in *U.S. v. the Authority and the Commonwealth of Puerto Rico*, Civil Action 01-365, before the U.S. District Court for the District of Puerto Rico, addressing alleged violations to the Clean Water Act and the SDWA’s National Primary Drinking Water Regulations, in connection with all of the Authority’s water treatment plants and three unfiltered plants and sludge treatment systems. (the “*2010 EPA Consent Decree*”). The 2010 EPA Consent Decree implemented a system-wide NPDES permits compliance plan and measures to properly handle sludge disposals and the discharge of pollutants from water treatment plants whereby, the Authority was required to:
- Implement remedial measures/capital improvement projects to address wastewater discharges at water treatment plants owned and operated by the Authority, to be completed in three phases (short, medium and long term), the long-term being divided into Term 1, Term 2 and Term 3 projects and certain remedial measures at unfiltered plants.
 - Implement a \$2.5 million SEP to provide for an aeration system for Lake Toa Vaca.
 - Monitor and sample the wastewater discharges from each sludge treatment system at the water treatment plants and comply with the respective interim limitations.
 - Evaluate existing sludge treatment systems to determine whether these have capacity to adequately treat the water treatment plant washwater discharges to

comply with the effluent limitations contained in its NPDES permit and identify the actions to ensure that washwaters are adequately treated including, but not limited to, the installation of alternative power units, flow meters and high level indicators and the construction of additional facilities to adequately treat the sludge and achieve compliance with the respective NPDES permit.

- Provide the necessary training to its operators, standardize all record keeping and reporting procedures for sludge treatment systems at water treatment plants, implement standard operating procedures for filter backwashing and washing of process treatment units and operate and maintain all sludge treatment systems in accordance with EPA-approved IPMP.
- Pay a \$1.0 million civil penalty and pay stipulated penalties for failure to comply with various requirements of the 2010 EPA Consent Decree.
- As of the execution of the 2015 EPA Consent Decree, which superseded the 2010 EPA Consent Decree, the Authority had completed the following actions required under the 2010 EPA Consent Decree: the payment of the civil penalty; the SEP; all the short- and medium-term remedial measures/capital improvement projects; all Term 1 long-term capital improvement projects; some Term 2 and Term 3 capital improvement projects; the implementation of the EPA-approved IPMP, capacity evaluation plans and operator training program; the installation of alternative power units for all sludge treatment systems; the installation of flow meters and high level indicators; the implementation of standard operating procedures for filter backwashing and washing of process treatment units; the remedial measures for unfiltered plants; and the implementation of standardized recordkeeping. The pending requirements under the 2010 EPA Consent Decree, comprised of some pending Term 2 and Term 3 long-term capital improvement projects, were included in and superseded by the 2015 EPA Consent Decree.

Current Consent Decree and Settlement Agreement.

2015 EPA Consent Decree. On September 15, 2015, the DOJ filed a Consent Decree in the case *U.S. v. the Authority and the Commonwealth of Puerto Rico*, Civil Case 15-2283 before the U.S. District Court for the District of Puerto Rico, brought in connection with alleged violations of Sections 301 and 402 of the Clean Water Act, its implementing regulations and the NPDES permits issued pursuant to these, in relation to the Authority's water treatment plants, wastewater treatment plants and associated sewer systems and pump stations thereof (the "**2015 EPA Consent Decree**"). The 2015 EPA Consent Decree was officially logged and accepted by the court on May 26, 2016. It was the result of an extensive negotiation process between the Authority and EPA aimed, among other things, at addressing, consolidating and updating pending requirements of the Previous Consent Decrees, as well as imposing new requirements. Although at the time of execution of the 2015 EPA Consent Decree the Authority was materially in compliance with the capital improvement requirements of the Previous Consent Decrees, in light of the challenges faced by the Authority, resulting from the continued uncertainty and strain on the Commonwealth's economy, the Authority had requested EPA amendments to the Previous

Consent Decrees to re-align compliance priorities and alleviate the Authority's financial burden, which are addressed in the 2015 EPA Consent Decree.

In the 2015 EPA Consent Decree, EPA acknowledged that the Authority had complied with various requirements under the Previous Consent Decrees as of the date of the 2015 EPA Consent Decree, which are summarized in the description of the Previous Consent Decrees above and recognized the need to establish a prioritization system for the implementation of pending capital improvement projects to address the Authority's demonstrated financial hardship. The EPA and the Authority acknowledged that the work to be undertaken under the 2015 EPA Consent Decree would enable the Authority to better understand its wastewater system but would not resolve all of the Authority's Clean Water Act obligations with respect to such system.

The 2015 EPA Consent Decree includes, the following requirements, which include modifications or the continuation of requirements under the Previous Consent Decrees and other requirements:

- The ability to modify deadlines and completion dates (including postponing or advancing deadlines) of certain capital improvement projects based on the prioritization system.
- A revision to the scope of work negotiated for certain projects to better address certain facilities' current needs.
- The elimination of certain projects required under the Prior Consent Decrees as a result of: (a) the facility being compliant; (b) declining population trends which made the project no longer necessary; or (c) the completion and certification of the project. In total, 10 projects required under the 2006 EPA Consent and two projects required under the 2010 EPA Consent Decree were eliminated.
- The addition of new compliance projects. These additional projects include: capacity evaluation projects for compliance of sludge treatment systems at water treatment plants, infiltration/inflow studies for seven sanitary sewer systems covered by the first SSSEP, and Caño Martin Peña/ENLACE projects. The Authority was also required to develop and implement a second SSSEP for all other sanitary sewer systems by December 2016, which has been completed.
- Requirements on new sludge treatment systems at water treatment plants.
- Requirements applicable to the FOG program, including training program for inspectors and supervisors.
- Required training program for all new sludge treatment systems and wastewater treatment plant operators hired by the Authority.
- Required process control systems to be implemented at the Authority's sludge treatment systems and wastewater treatment plants.

- Monitoring, recording and reporting requirements for unpermitted sludge treatment systems.
- Requirements related to wastewater treatment capacity and flow management, including installation of flow meter devices at the point of discharge of wastewater treatment plants.
- Continued implementation of existing IMPs and SCRPs originally required under the 2006 EPA Consent Degree.
- The inclusion of the operation, maintenance and capital improvement program requirements related to the Puerto Nuevo wastewater collection system, including CSOs. The Authority is required to comply with all the requirements of its NPDES Permit and with the Permit concerning CSOs. The most recent NPDES permit for the Puerto Nuevo wastewater treatment plant requires that the Authority implement the Nine Minimum Control measures and a Long-Term Control Plan for the Puerto Nuevo wastewater treatment plant service area to address wastewater collection system and CSOs occurrences. As such, the Authority is required to develop and design a S2OMP for the wastewater collection system associated with the Puerto Nuevo wastewater treatment plant service area to manage both the combined sewer systems and the sanitary sewer system requirements as stipulated in the NPDES permit. The Authority's S2OMP was finally approved by the EPA in January 2017.
- Submission of annual reports on the status of the implementation of the S2OMP originally due May of each year. The first annual report was submitted in May 2017. The Authority submitted a consolidated S2OMP Annual Report for 2017 and 2018 on May 31, 2019. As a result of the impact of COVID-19, EPA agreed that the 2019 annual report will be due on November 1, 2020, which deadline the Authority met.
- The following tasks are to be performed by either the Authority personnel or a private contractor as part of the S2OMP: sewer system reconnaissance to enable complete inspections, observation and cleaning of the sewers; FOG program; sewer cleaning; sanitary sewer overflows, dry-weather overflows and unauthorized release prevention and control; and mapping. Within 60 days of completing the sewer system reconnaissance of the Puerto Nuevo wastewater treatment plant service area, the Authority is also required to submit to EPA for review and approval its proposed plan to undertake a condition assessment of the Puerto Nuevo wastewater treatment plant sewer system, which must include a series of remedial measures. The required sewer system reconnaissance is in process. It is anticipated that its completion will take several years.
- Development of a Prioritization System. The prioritization system is a project scheduling methodology developed to provide an objective and systematic guideline to prioritize the implementation of capital improvement projects and required regulatory projects. Specific criteria were defined for each project category and a scoring methodology developed to objectively rank and prioritize the list of projects. In prioritizing upcoming and required projects, the prioritization system takes into consideration regulatory and environmental compliance, quality of service and reliability, operational

requirements and needs, as well as population served by a specific capital improvement project. Through the application and analysis of the prioritization system the Authority will establish the relative priority of all projects required under the 2015 EPA Consent Decree, except for those projects identified in the base list of high priority mandatory compliance (described further below), to objectively allocate its limited financial resources.

- Interim limits for water and wastewater treatment plants to comply with newly implemented regulations regarding numeric nutrient criteria for nitrogen and phosphorus as well as other non-compliant parameters in these discharges. It is anticipated that in order to comply with the lower final discharge limits to be imposed by EPA for these parameters in NPDES permits, operational modifications and even additional capital improvements to the wastewater treatment plants may be required, which would be subject to the prioritization system.
- Completion of scheduled mandatory projects under a base list of projects, including high priority mandatory compliance projects that have already started the process of planning, design or construction and will not be subjected to the prioritization process. Specific deadlines for these high priority projects were individually discussed and negotiated between the Authority and EPA.
- Stipulated penalties for noncompliance with decree requirements.
- Bi-annual progress reporting to EPA.

The prioritization system allows the Authority to apply lower annual expenditures to mandatory projects on the basis of their rank in the priority list and would require that any other mandated regulatory projects also be ranked under the prioritization system, as well as allow the Authority to assess any significant change in circumstances or additional environmental obligations, stemming from new regulations approved by Regulatory Agencies or unforeseen events such as emergencies, that are not addressed in any of the Previous Consent Decrees.

Before Hurricanes Irma and María in September 2017, the Authority had been in substantial compliance with the capital improvement and program deadlines of the 2015 EPA Consent Decree. In the aftermath of these Hurricanes, the Authority submitted a notification to EPA invoking the *force majeure* provisions of the 2015 EPA Consent Decree and indicating the possibility of some delays in projects and program due dates. In June 2018, the Authority requested time extensions with the corresponding justifications due to lack of funding to reactivate the CIP, the ongoing debt renegotiation process and the impact of the Hurricanes, requesting a hold for a period to be determined for certain obligations and stipulated penalties due under the 2015 EPA Consent Decree. The Authority, DOJ and the EPA have been negotiating the deadlines to comply with certain programs under the 2015 EPA Consent Decree which has resulted in the submission of amendments to the Consent Decree. The *force majeure* excuse was to be in effect until the new amendments are approved.

On July 26, 2019, the Authority reached a debt restructuring agreement with the funding programs of the Clean Water Act and the SDWA, see DEBT, which would allow the Authority to

access funds needed for the execution of projects included in Appendices H and J (which include a base list for certain projects, and certain capital projects subject to prioritization, respectively) of the 2015 EPA Consent Decree. New proposed dates for the base list were presented to EPA in October 2019.

As a result of increased seismic activity in Puerto Rico in late 2019/early 2020, as well as the recent COVID-19 pandemic, the Authority again invoked the Consent Decree's *force majeure* clause. Although compliance with regulatory requirements was not affected, the Authority requested and obtained from both local and federal regulatory agencies extensions to deadlines for certain documentation and reporting requirements including Discharge Monitoring Reports (DMRs) and progress reports. As a result of structural damages at several facilities resulting from the recent seismic activities, the Authority has had to implement alternate liquid sludge disposal methods for sludge produced by affected wastewater treatment facilities, including landfill disposal.

Prior to the *force majeure* clause entering into effect as described above, the Authority had been required to pay stipulated penalties for noncompliance with certain interim and final effluent limitations pursuant to the 2015 EPA Consent Decree, which penalties for the quarter ended August 31, 2017, totaled \$84,300. Since *the force majeure* clause entered into effect, however, the payment of stipulated penalties has not been required due to the resulting stay of this and other obligations under the 2015 EPA Consent Decree. Once this stay ends, the Authority anticipates that it will be required to pay additional stipulated penalties similar to the amounts previously paid.

2006 Drinking Water Settlement Agreement. Prior to December 2006, the Water System had been subject to approximately 180 administrative orders arising from enforcement actions by DOH for violations of the SDWA and to three administrative consent agreements with DOH addressing monitoring and turbidity violations. On December 2006, the Authority entered into, a comprehensive settlement agreement with DOH resolving litigation brought against the Authority seeking enforcement of the administrative orders of DOH under the SDWA and the violations by the Authority of two of the prior consent agreements (the “**2006 Drinking Water Settlement Agreement**”). The 2006 Drinking Water Settlement Agreement was filed on December 15, 2006 with the Court of First Instance, Superior Court of San Juan in Civil Action KPE 2006-0858, was approved on March 15, 2007, subsequently amended on June 16, 2008 and continues in effect. The 2006 Drinking Water Settlement Agreement replaces and supersedes all prior DOH administrative orders and consent agreements.

The 2006 Drinking Water Settlement Agreement provides for remedial and compliance actions by the Authority in its water treatment plants in accordance with agreed-upon schedules and for the payment of stipulated penalties for non-compliance. It obligates the Authority to carry out approximately 210 long-term remedial measures over a 15-year period along with many other shorter-term remedial actions that will involve both capital expenditures and expenditures for operating, maintenance and training programs and evaluations and studies centered on ensuring that the quality of drinking water provided by the Authority to its customers meets all federal and Commonwealth regulatory standards. Additionally, the Authority paid a \$1 million civil penalty to the Commonwealth and is required to pay stipulated penalties for violations of the agreement. Certain stipulated penalties paid by the Authority may be returned to the Authority under certain circumstances to be used to finance any action directed at achieving or maintaining compliance

with the Authority's obligations under the 2006 Drinking Water Settlement Agreement and under local and federal laws applicable to the Water System. The Authority submits quarterly progress reports to the DOH to inform on its compliance with the terms of the 2006 Drinking Water Settlement Agreement and self-assesses any applicable stipulated penalties.

The long-term remedial measures are divided in three terms: The Term 1 measures that were to be completed by December 31, 2011, the Term 2 measures that were to be completed by December 31, 2016, and the Term 3 measures are to be completed by December 31, 2021. All long-term remedial measures under Term 1 have been completed. The Term 2 measures have a total of 18 projects of which 14 have been completed. The Authority and DOH jointly requested the overseeing court to convert these remaining measures to the Term 3 category, which motion was granted by the court. The Term 3 measures have a total of 13 projects, seven of which have been completed. With respect to the remaining six remedial measures, the Authority and the DOH filed an additional joint motion requesting time extensions for four of these and the elimination of the remaining two, which motion was also granted by the court.

The time frame for the completion of the remaining Term 3 long-term measures remains December 31, 2021, but the Authority has asked to start negotiations with the DOH to amend the 2006 Drinking Water Settlement Agreement to include (i) an update of the Authority's facilities, (ii) the elimination of certain projects and requirements included in the 2006 Drinking Water Settlement Agreement because such projects or requirements have already been completed or met and certified as such, (iii) the acceptance and the implementation of the prioritization system and the Base List as was accepted under the 2015 EPA Consent Decree and (iv) the inclusion of scheduled mandatory projects under the base list in the 2015 EPA Consent Decree. However, these negotiations were not completed.

Before Hurricanes Irma and María in September 2017, the Authority had been in substantial compliance with the capital improvement project deadlines of the 2006 Drinking Water Settlement Agreement. After these Hurricanes, the Authority submitted a notification to DOH invoking the *force majeure* provisions of the 2006 Drinking Water Act Settlement Agreement and indicating the possibility of some delays in projects and program due dates. As a result of increased seismic activity in Puerto Rico in late 2019/early 2020, as well as the recent COVID-19 pandemic, the Authority again invoked the *force majeure* clause.

To the date of this Limited Offering Memorandum, as mentioned above, the Authority has substantially complied with the capital improvement project deadlines under the 2006 Drinking Water Settlement Agreement. The Authority anticipates, however, that it may have difficulties meeting future deadlines unless the DOH approves the prioritization system under that Settlement Agreement. During the past year, the Authority has been required to pay stipulated penalties under the 2006 Drinking Water Settlement Agreement related to compliance issues in respect of primary standards (and mostly related to DBPs), which amounted to approximately \$14,500 per quarter. The Authority has also been required to pay stipulated penalties because of certain missing or late deliverables, remedial measures and mitigation measures.

Although the Authority is committed to bringing the Systems into material compliance with applicable law, it is highly probable that the Authority will not be able to comply fully with all the requirements of the 2015 EPA Consent Decree and 2006 Drinking Water Settlement

Agreement. As a consequence, the Authority expects that it will have to continue to pay stipulated penalties and to make additional capital expenditures (some not included in the CIP) in the future. To prepare for this potential liability, the Authority makes a risk assessment of the average exposure for payment of stipulated penalties under the 2015 EPA Consent Decree and 2006 Drinking Water Settlement Agreement and creates a reserve for the amounts it believes should be sufficient to pay the stipulated penalties at current levels. In addition, the CIP is structured to modernize and help bring the Systems into compliance with applicable environmental laws. See CAPITAL IMPROVEMENT PROGRAM. No assurance can be given, however, that the amounts budgeted for payment of stipulated penalties will be in all cases sufficient to cover potential liabilities or that the CIP will result in regulatory compliance.

Other Regulatory and Compliance Matters

In common with most water and wastewater operating agencies, the Authority's operations and improvements for its Systems are subject to numerous environmental regulatory requirements in addition to the SDWA and the Clean Water Act. These include environmental impact assessment requirements under the National Environmental Policy Act, air quality protection requirements, permitting requirements under various federal, Commonwealth and local laws for construction projects, various requirements affecting the Authority's properties and operations under the Resource Conservation and Recovery Act of 1976 and the Comprehensive Environmental Response, Compensation and Liabilities Act of 1980, including the Superfund Amendments and Reauthorization Act of 1986, as amended. Puerto Rico statutes and regulations cover matters, such as water quality standards, control of solid waste and air pollution control requirements. The Authority currently has no litigation with respect to any of these regulatory requirements. Compliance with such future requirements may result in the Authority having to make capital and operating expenditures that are not reflected in the CIP and the Authority's financial projections. Generally, future legal/regulatory requirements provide for a period of time to achieve compliance or develop compliance plans. It is not possible for the Authority to determine at this point the magnitude of such expenditures, but it is possible that it may be significant.

In addition, plans and specifications for many projects are subject to review and approval by Commonwealth agencies and the EPA. Permitting and environmental compliance procedures for many of the Authority's construction projects are complex and may in some cases lead to unforeseeable delay or expense, which may affect the Authority's ability to comply with regulatory deadlines or other requirements. These complexities are faced by many, if not most, public sector utilities, and management of the Authority does not anticipate that they will result in substantial delays or cost increases.

CAPITAL IMPROVEMENT PROGRAM

The Authority has undertaken numerous capital improvement programs to improve and maintain its Systems, including the current CIP. The current CIP's main objectives are regulatory compliance, including compliance with the 2015 EPA Consent Decree and the 2006 Drinking Water Settlement Agreement, renewal and replacement, optimization and systems simplification, and modernization and technology. In addition, the Authority has included, as part of the CIP

projects, for the restoration of infrastructure damaged by the September 2017 hurricanes and the 2020 earthquakes.

The CIP is a dynamic program that evolves and undergoes regular revision and updating as needs and funding are identified, and as projects transition from planning through design, bid, construction and startup. Historically, the program has been funded with debt and federal assistance in accordance with standard utility financing practices. Recently, the Authority changed its CIP funding policy with the goal of gradually establishing self-funding for its annual renewal and replacement investments to maintain the System in optimal condition for operation and to self-fund at least 50% of the remaining CIP, excluding projects funded through federal loans or grants, including RUS, CWSRF, DWSRF and FEMA, among others. The Authority's core goals for self-funding targets are based on industry best practices and analysis of overall capital portfolio completed by a third party.

CIP Suspension and Revival

The Government's fiscal situation has had a major impact on the Authority, precluding its access to the capital markets to obtain financing for the Authority's CIP projects. The Authority was able to use operating funds to cover expenses related to certain CIP projects. However, in fiscal year 2016, the Authority was forced to suspend the execution of all CIP projects and stopped making deposits into its Capital Improvement Fund under the Trust Agreement. Important renewal work, such as replacing inefficient meters and failed/leaking pipelines was deferred. This lack of capital investment has resulted in both short and long-term effects on the Authority's operations and infrastructure, and on Puerto Rico's economy, resulted short-term infrastructure degradation affecting operating and maintenance expenses, and could lead to an increase in costs as Authority capital projects re-start as vendors price-in the risks associated with delays in payment or non-payments to contracted projects as well as increasing risks related to asset failures or operational challenges that could affect the quality and continuity of service, ultimately leading to reduced Operating Revenues and increased Operating Expenses. Given the delays in re-starting CIP projects, the Authority was in arrears to certain CIP contractors and suppliers in the amount of \$150 million during the CIP suspension. In fiscal year 2019, the Authority paid off all outstanding payments due to CIP contractors and suppliers.

Starting in fiscal year 2019, the Authority re-activated regulatory-driven CIP projects. In addition, the Authority regained access to low interest federal loans during fiscal year 2020 as a result of the restructuring of a substantial portion of the Commonwealth Guaranteed Indebtedness as Senior Indebtedness. See DEBT. Additionally, the Authority is expecting federal funds related to the September 2017 Hurricanes to execute recovery projects. Finally, in fiscal year 2019 the Authority began a procurement process to select Program Management Consultants to support the Authority in project management and deployment of the CIP. One PMC contract has been executed, and the Authority anticipates executing additional PMC contracts with up to three other recognized engineering firms. See AUTHORITY CONSULTANTS, ENVIRONMENTAL MATTERS and "Certain Risks Related to the Systems and Authority Operations" under CERTAIN RISK FACTORS AND INVESTMENT CONSIDERATIONS.

The Fiscal Plan contains an updated, six-year CIP which includes adjustments resulting from negotiations with EPA and DOH and the necessary investment to reflect the Authority's infrastructure current needs to ensure adequate operation and sustainability of the Systems.

2020-2025 CIP

The CIP, as included in the Fiscal Plan, totals \$1.7 billion (in current dollars) in capital expenditures related to project life cycle activities related to the construction of the projects during the five-fiscal year period of the CIP. A discussion of the CIP can be found in Section 2.4 of the Fiscal Plan, starting on page 2-44, in *Appendix III*. The expected funding for the CIP, as presented in the Fiscal Plan, may change materially depending on the final appropriation of federal program funds (both loans and grants) and other federal funds for recovery and resiliency projects, as well as availability of federal funds to cover Puerto Rico's cost-share or the portion of the costs of these projects required to be "matched" by Puerto Rico, when applicable. The Authority expects that additional substantial expenditures will be necessary after fiscal year 2025 in order to comply with the long-term aspects of the 2015 EPA Consent Decree and the 2006 Drinking Water Settlement Agreement. The Authority can provide no assurance that such additional substantial expenditures will be made.

The CIP is based on project-by-project cost estimates, including construction costs and all associated costs needed to execute a construction project, such as engineering, design, land acquisition, insurance, construction inspection, among others. The estimates of annual expenditures for individual projects are based on a combination of historical costs, recent manufacturer and supplier quotes of specialty items and other factors, including labor, construction, taxes, etc. Individual projects and their cost estimates are subject to periodic revision to reflect updated information regarding design, site considerations, value engineering, changing regulatory requirements, and overall program development. The Authority reviews and revises its capital improvement program to reflect current data and requirements at least annually and individual project costs are updated after completion of each phase of a project's life cycle stages. As mentioned in AUTHORITY CONSULTANTS, the Authority uses the services of reputable engineering firms and program management consultants, that are industry leaders in the engineering and construction of public works, to assist it with the planning, design, and management of its CIP. Supervision of these consultants, in supporting CIP execution, is done by the Authority's Infrastructure Department staff.

The approval and execution of the CIP, as included in the Fiscal Plan, are contingent upon federal funding availability and allocation of funds. Furthermore, the Oversight Board requested that the Authority identify CIP savings to reduce and optimize investment projects costs. The Authority has requested additional information from the Oversight Board to understand the rationale behind its conclusion that the Authority should reduce its estimates of CIP project costs. The Authority has not yet received the information needed to analyze and validate the Oversight Board's recommendation. The Authority has advised the Oversight Board that the Authority's total project investment costs include all services and activities needed for construction to occur and are not a contingency.

Summary of CIP

The CIP included in the Fiscal Plan is set forth below (by fiscal year and in millions of current dollars):

	2020	2021	2022	2023	2024	2025	Total
Emergency/Permanent Works	\$33	\$125	\$141	\$41	\$44	\$57	\$441
Renewal & Replacement	50	98	83	80	81	96	487
Mandatory Compliance	7	44	76	62	24	17	230
Non-Mandatory Compliance	6	29	72	62	25	12	205
Quality	0	14	40	41	25	15	135
Fleet & IT	19	14	9	9	9	9	70
Optimization & Emergencies	0	15	15	14	16	5	65
Safety & Growth	4	5	14	13	13	9	58
Others	1	4	4	1	2	3	14
Total	\$119	\$349	\$454	\$323	\$238	\$222	\$1,704

The sources of funds to implement the CIP included in the Fiscal Plan, excluding funds expected from the initiatives included in the Fiscal Plan related to federal programs funding, is set forth below (by fiscal year and in millions of current dollars):

	2020	2021	2022	2023	2024	2025	Total
Operating Revenues	\$86	\$223	\$312	\$282	\$194	\$166	\$1,263
FEMA Reimbursement	30	113	127	37	39	51	397
Authority Cost Share	3	13	14	4	4	6	44
Total	\$119	\$349	\$454	\$323	\$238	\$222	\$1,704

The Consulting Engineer reviewed the CIP contained in the Authority's 2019 fiscal plan certified by the Oversight Board on June 25, 2019, and has concluded that it addresses the general needs of the Systems. However, the Consulting Engineer cautions that the Authority may need to realign its projected CIP breakdown and use of funding sources if results show that the annual renovation and replacement investment (included in the CIP) is not adequate to properly maintain the Systems. Finally, since the existing CIP does not include projects intended to address potential new regulatory requirements that may be imposed on the Authority in the future, as the impact of future regulations becomes more defined, modifications to the Authority's CIP may be required to adequately accommodate resulting needs. See Section 6.7 of the Consulting Engineer's Report in *Appendix I*. The Authority anticipates, however, that with respect to new regulatory requirements arising under the Clean Water Act and the SDWA, these would be subjected to the prioritization system in the 2015 EPA Consent Decree. Under the prioritization system, these requirements would be prioritized and scheduled for implementation depending on the Authority's financial capacity. Any delay in CIP development and implementation could negatively affect the Systems' renewal, replacement, and overall upkeep. It will also affect the Authority's ability to meet regulatory obligations. See "Certain Risks Related to the Systems and Authority Operations" under CERTAIN RISK FACTORS AND INVESTMENT CONSIDERATIONS.

The Authority's Master Plan was completed in 2010 and most recently revised in 2014 to account for adjusted population projections. The Authority plans to update its Master Plan after information from the 2020 census becomes available. Based on the updated Master Plan, the Authority will adjust the CIP to address climate and population changes, as needed.

Systems Resiliency Improvements

In addition to the CIP included above, there are additional projects that the Authority deems necessary to improve the resiliency of its Systems to reduce down-time of the Systems when affected by natural disasters. The Authority has identified resiliency projects totaling \$3.7 billion, which projects the Authority will undertake only if federal funding is obtained covering all costs, including any Puerto Rico "match." Therefore, no financial impact from these projects was included in the Fiscal Plan financial projections.

The Authority has requested funding under eligible federal programs to improve Systems' resiliency and water availability throughout Puerto Rico as further summarized in Table 8-1 of the Fiscal Plan in *Appendix III*.

THE AUTHORITY'S FISCAL PLAN

The Fiscal Plan has been developed to ensure compliance with the Authority's mission to ensure safe, reliable and high-quality drinking water and wastewater treatment services to comply with federal environmental regulations, protect public health and safeguard the environment. As such, the Fiscal Plan provides for the required investment in necessary infrastructure while promoting the Authority's long term financial self-sustainability

In the Fiscal Plan, the Oversight Board included the CIP approved by the Board on February 25, 2020, to cover a six-year period from fiscal year 2020 to fiscal year 2025. The assumptions used to develop the Fiscal Plan are discussed starting on page 2-36, Table 2-1, in the Fiscal Plan in *Appendix III*.

The major revenue assumptions in the Fiscal Plan include a reduction in residential billings at a compounded annual decline of 0.9%, collection rates of 96% for residential, commercial, and industrial and 92% for government accounts, starting in January 2021. The collections rate for government accounts is expected to gradually increase to 95% by fiscal year 2025. Expense assumptions include projections of Puerto Rico Electric Power Authority rates and a slight increase in total employment. Also, the Authority and the Oversight Board have identified several measures that, if successfully implemented, would improve the Authority's financial and operational performance. The Fiscal Plan includes the following 11 measures related to revenue enhancement, cost reduction, and federal funding over the 6-year period of the Fiscal Plan, which the Oversight Board says "must be executed" by the Authority (see "Authority Disagreements with Oversight Board Regarding Fiscal Plan" below in this section for a discussion of areas of disagreement between the Authority and the Oversight Board regarding certain of these measures):

1. **Rate Adjustments (\$908 million from fiscal year 2020 to fiscal year 2025)**¹: continue with the scheduled implementation of modest rate increases in fiscal year 2022—consistent with past Authority fiscal plans and standard utility practice—and conduct a review of the current rate structure with the goal of ensuring simplicity, affordability, and adequate cost recovery in fiscal year 2023 and beyond.

2. **Metering and customer service optimization (\$33 million)**: reduce commercial water losses and improve customer experience and satisfaction either independently or through a public-private partnership agreement. The Authority can give no assurance that this measure will be implemented in whole or in part or on the timing or expected benefits.

3. **Chemical expense reduction (\$3 million)**: reduce chemical usage and costs through improved inventorying, contracts negotiation, and installed technology improvements at Carraízo Dam. The Authority does not agree with the Oversight Board’s inclusion of the projected benefit of this measure in the Fiscal Plan and cannot give any assurance on the savings to be achieved by this measure or its final viability.

4. **Pension reform (\$21 million)**: improve the financial stability of public employees through reforms that maintain enough funds for employee pension plans and create a defined contribution plan for employees, consistent with the Commonwealth’s pension reform measure. As further explained below, the Authority does not agree with the Oversight Board’s inclusion of this measure in the Fiscal Plan financial projections.

5. **Christmas bonus elimination (\$16 million)**: remove the annual bonus starting in fiscal year 2021. As further explained below, the Authority does not agree with the Oversight Board inclusion of this measure in the Fiscal Plan financial projections.

6. **Uniform healthcare (\$12 million)**: implement a newly negotiated medical health plan by July 1, 2020. This measure was implemented by the stated deadline.

7. **Headcount cap (\$16 million)**: limit the Authority’s workforce size to 4,600 while a comprehensive productivity and rightsizing assessment is conducted. As further explained below, the Authority does not agree with the Oversight Board inclusion of this measure in the Fiscal Plan financial projections.

8. **Electricity cost reduction (\$13.2 million)**: reduce electricity costs through increased efficiency and distributed generation.

9. **Physical water loss reduction (\$11 million)**: reduce physical water losses through master meter installation, leaks reduction, and pressure management.

¹ Estimate takes into account the rate adjustments implemented and to be implemented from fiscal year 2018 to fiscal year 2022 (of which the ones for fiscal years 2018 to 2021 are in effect) and projects additional annual rate adjustments of 2.5% for all customers for fiscal year 2023 to fiscal year 2025, subject to a rate redesign to be implemented starting in fiscal year 2023.

10. **Capital delivery optimization (\$54 million):** achieve a more cost-effective way to deliver its CIP. The Fiscal Plan urges the Authority to employ a Project Management Consortium. The Authority also must establish a prioritization criteria for all projects, set up a CIP tracking tool, and monitor key performance indicators. As further explained below, the Authority does not agree with the Oversight Board inclusion of this measure in the Fiscal Plan financial projections.

11. **New Federal Funds (\$421 million):** obtain new financing from the Federal Programs. On August 18, 2020, the Authority obtained new financing from the SRF program in the principal amount of \$163 million.

A summary of the projected financial results for the Authority upon implementation of the Fiscal plan is set forth below. The Fiscal Plan in *Appendix III* should be read in its entirety for a complete understanding of its impact on the Authority.

<i>In \$'Millions (numbers may not add due to rounding)</i>	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY20-25
Authority Revenues	945	953	925	914	904	895	5,536
Senior Debt Service	(251)	(251)	(251)	(251)	(251)	(251)	(1,505)
Net Operating Expenses	(721)	(668)	(711)	(720)	(730)	(741)	(4,291)
Operating Reserve Fund	(32)	(33)	(5)	(2)	(3)	(3)	(78)
Capital Improvement Fund	(97)	(178)	(279)	(271)	(198)	(171)	(1,195)
Commonwealth Payment Fund	(21)	(26)	(28)	(28)	(32)	(32)	(167)
Baseline Financial Result	(178)	(202)	(348)	(359)	(310)	(303)	(1,700)
Initiatives Benefit	112	201	343	344	292	312	1,603
Adjusted Financial Result	(66)	(1)	(5)	(15)	(18)	9	(96)
Funds available in Current Expense Fund	66	1	5	15	18	-	105
Transfer to RSA	-	-	-	-	-	(9)	(9)
Final Annual Need	-	-	-	-	-	-	-

However, as stated on page 1-15 of the Fiscal Plan, implementing these measures will not be enough to eliminate the Authority's structural deficit, thus forcing the Authority to draw down approximately \$105 million from its Current Expense Fund under the Trust Agreement to achieve balanced budgets throughout the Fiscal Plan Period. In addition, the above table shows an expected \$9 million deposit in fiscal year 2025 into the Rate Stabilization Account. Moneys in the Rate Stabilization Account may, among other uses, be withdrawn by the Trustee at the Authority's direction to be deposited into any of the funds and accounts referred to in "Flow of Funds" under SECURITY FOR THE BONDS, including to cover any deficiency in the Senior Bond Fund to pay debt service on Senior Bonds, including the 2020 Senior Bonds. See Section 5.13 of the Trust Agreement in *Appendix II*. If the Proposed Amendments to the Trust Agreement are approved during the period covered by the Fiscal Plan, the requirement that moneys in the Current Expense Fund serve as an additional reserve to pay debt service on Bonds and Other System Indebtedness would be eliminated. See PROPOSED AMENDMENTS TO TRUST AGREEMENT.

Authority Disagreements with Oversight Board Regarding Fiscal Plan

The following Fiscal Plan measures have not been accepted by the Authority:

- Inclusion of savings for the reduction of chemicals measure, which savings should be achieved through a laminar aeration project in Carraízo reservoir based on the Oversight Board's recommendation. The Authority is evaluating the project's viability, and the projected savings cannot currently be properly estimated. See measure 3 above.
- Reduction of pension benefits, as this is contrary to Government public policy. See measure 4 above and also "Pension Benefits" under THE AUTHORITY.
- Elimination of Christmas Bonus, as this is contrary to Government public policy and existing law. See measure 5 above and also "Employees and Labor Relations-Applicability of CBAs since 2017" under THE AUTHORITY. By letter, dated November 20, 2020, the Oversight Board permitted the payment of the 2020 Christmas bonus to the Authority's employees.
- Reduction of headcount cap to 4,600 (see measure 7 above). The Authority strongly believes an increase from the Authority's current level of operational employees is required to maintain uninterrupted and adequate service to customers and has advised the Oversight Board regarding this point. On September 30, 2020, the Oversight Board allowed the Authority to increase its headcount cap to 4,649, subject to certain conditions, including a reduction of the budgeted overtime amount to compensate for the cost of added employees, without increasing the total budgeted payroll budget for fiscal year 2021. The Authority's most recent labor capacity and productivity assessment was conducted in 2014, recommending an optimal staffing of approximately 4,900 employees. The Authority expects to update this optimal workforce assessment during fiscal year 2021. The Consulting Engineer notes in Chapter 3 of the Consulting Engineer's Report in *Appendix I* the Authority's revised optimal staffing level to operate, maintain and effectively manage the Systems stands at approximately 4,800 employees.
- Capital delivery optimization. The Authority's current project cost estimates include non-construction costs, including planning, design, insurance, overhead and others that account for 60% of total costs in addition to construction costs. The Oversight Board concluded that such amount is above the industry average (20%-30%) and that the Authority "needs to deliver capital projects with lower overhead in line with industry benchmarks." The Authority has not yet received the information needed to analyze and validate the Oversight recommendation. The Authority has advised the Oversight Board that its total project investment costs include all services and activities needed for construction to occur and are not a contingency.

A table summarizing the benefit of the measures included in the Fiscal Plan not agreed to by the Authority is included below (in millions of current dollars):

<i>in \$ Millions</i>	FY2021	FY2022	FY2023	FY2024	FY2025	Total
Christmas Bonus Elimination	3.1	3.1	3.1	3.1	3.1	15.6
Pension Reform	-	3.0	6.1	6.0	6.0	21.0
Headcount Cap	1.8	3.6	3.6	3.6	3.6	16.3
Optimized Chemicals Consumption	-	-	1.0	1.0	1.0	3.0
Capital Expenditure Delivery Improvements	-	6.8	17.6	16.1	13.6	54.1
Total for Not-Agreed Initiatives	4.9	16.6	31.4	29.9	27.3	110.0

The Authority also does not agree with the Oversight Board revenue projections and applied macroeconomic indicators. Applying the Puerto Rico Government macroeconomic indicators (included in the Commonwealth Fiscal Plan submitted by the Puerto Rico Government in May 2020) Authority Revenues are expected to be higher than the ones included in the Fiscal Plan. Also, depending on the federal amount of funds to be received from FEMA, adjustments to the CIP may be required.

See “Certain Risks Related to the Political and Economic Circumstances of Puerto Rico” and “Certain Risks Related to the Authority’s Financial Condition” under CERTAIN RISK FACTORS AND INVESTMENT CONSIDERATIONS for a discussion of the possible effect of disagreements between the Authority and the Oversight Board relating to certain of these measures.

DEBT

The following table sets forth the debt of the Authority as of October 31, 2020, and as adjusted for the issuance of the 2020 Senior Bonds and the refunding of the Refunded Bonds. Following the table is a discussion of the material terms of certain of the Authority’s debt instruments.

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	October 31, 2020	As Adjusted
	(in \$000s)	(in \$000s)
<u>Senior Bonds and Other System</u>		
<u>Indebtedness:</u>		
2008 Series A Bonds	\$1,207,580	\$87,215
2008 Series B Bonds	22,445	-
2012 Series A Bonds	1,695,055	1,695,055
2012 Series B Bonds	153,585	153,585
2020 Series A Bonds	-	1,351,300
2020 Series B Bonds	-	18,775
Senior Revolving Fund Indebtedness ¹	596,647	596,647
Senior RUS Indebtedness	400,469	400,469
<u>Commonwealth Guaranteed</u>		
<u>Indebtedness:</u>		
2008 Revenue Refunding Bonds	284,755	-
<u>Commonwealth Supported Obligations</u> ²	162,700	162,700
<u>Notes:</u>		
Transition Line of Credit (DRA Loan Agreement)	57,743	-
Total bonds and notes payable	\$4,580,979	\$4,465,746

1 Includes \$11 million in amounts disbursed through October 31, 2020, from the \$163.2 million in additional loans authorized under the CWSRF program on August 18, 2020.

2 Commonwealth Supported Obligations are payable from legislative appropriations and are not a contractual obligation of the Authority. The Commonwealth Supported Obligations are subject to ongoing bankruptcy proceedings of the Commonwealth under Title III of PROMESA. The Authority pays such debt only if amounts are available in the Surplus Fund not otherwise deposited in the Rate Stabilization Account under the Trust Agreement. See "Commonwealth Supported Obligations" below.

Other System Indebtedness

In addition to the outstanding Senior Bonds of the Authority discussed under "Source of Payment" under SECURITY FOR THE BONDS, below is a summary of other debt of the Authority classified as Other System Indebtedness secured as to payment on a parity with Outstanding Senior Bonds under the Trust Agreement.

Senior RUS Indebtedness. The United States Department of Agriculture through its Rural Utilities Service ("**RUS**") provides funding for infrastructure improvements to rural communities, including debt financing of water and sewer facilities in rural areas of Puerto Rico.

As the financial condition of the Authority worsened along with that of the Government of Puerto Rico, on June 30, 2016, the Authority entered into a forbearance agreement with RUS (and extended on various occasions) until July 2019 when a restructuring agreement was reached between RUS and the Authority (and approved by the Oversight Board). The final agreement was signed on July 26, 2019, pursuant to which all then outstanding debt to RUS (which was included as Commonwealth Guaranteed Indebtedness under the Trust Agreement) was restructured, providing debt service relief for the Authority and terminating the guarantee of the Commonwealth related to this debt.

In connection with the debt restructuring, the then outstanding RUS debt was refunded with Other System Indebtedness issued to RUS under the RUS Loan Agreement. Such Other System Indebtedness now constitutes Senior Indebtedness and is secured on a parity with Senior Bonds under the Trust Agreement. The Oversight Board approved these agreements pursuant to Section 207 of PROMESA on July 3, 2019.

Additional information regarding this transaction can be found at <https://emma.msrb.org/ER1244363-ER973331-ER1374257.pdf>, which information is specifically incorporated by this reference into this Limited Offering Memorandum.

Senior Revolving Fund Indebtedness. The Authority also receives federal funds for its CIP through various loans (the “*SRF Loans*”) granted by the CWSRF and the DWSRF. Prior to July 26, 2019, the SRF Loans were also guaranteed by the Commonwealth under Act No. 45 of the Legislative Assembly of Puerto Rico, approved on July 28, 1994, as amended.

As the financial condition of the Authority worsened concurrently with that of the Government of Puerto Rico, on June 30, 2016, the Authority entered into a forbearance agreement with DOH, DNER and PRIFA (and extended on various occasions) until July 2019 when a restructuring agreement was reached among DOH, DNER, PRIFA and the Authority (and approved by the Oversight Board). The final agreement was signed on July 26, 2019, pursuant to which all then outstanding SRF Loans (which had been included as Commonwealth Guaranteed Indebtedness under the Trust Agreement to that date) was restructured, providing debt service relief for the Authority and terminating the guarantee of the Commonwealth related to this debt.

In connection with the debt restructuring, the then outstanding SRF Loans and an additional amount of \$26 million in funds for ongoing projects pending to be disbursed were refunded with Other System Indebtedness issued to PRIFA. Such Other System Indebtedness now constitutes Senior Indebtedness and is secured on a parity with Senior Bonds under the Trust Agreement. The Oversight Board approved these agreements pursuant to Section 207 of PROMESA on July 3, 2019.

Additional information regarding this transaction can be found at <https://emma.msrb.org/ER1244363-ER973331-ER1374257.pdf>, which information is specifically incorporated by this reference into this Limited Offering Memorandum.

Commonwealth Guaranteed Indebtedness

Guaranteed Bonds. On March 18, 2008, the Authority issued the 2008 Commonwealth Guaranteed Bonds in the aggregate principal amount of \$284.8 million pursuant the Guaranteed Bond Resolution.

The Guaranteed Bonds are Commonwealth Guaranteed Indebtedness under the Trust Agreement and provision for the payment of principal and interest thereon is subordinated to the payment of debt service on Bonds and Other System Indebtedness, Current Expenses and the funding of the Operating Reserve Fund and the Capital Improvement Fund. The Guaranteed Bonds were issued under the Guaranteed Bond Resolution and not under the Trust Agreement, and payment of principal of and interest on Commonwealth Guaranteed Indebtedness is not secured by a pledge of Authority Revenues. Therefore, consent from holders of any remaining outstanding

Guaranteed Bonds is not required for the Proposed Amendments to become effective. Failure by the Authority to pay debt service on the Guaranteed Bonds is not an Event of Default under the Trust Agreement.

Under Act No. 45 of the Legislative Assembly of Puerto Rico, approved July 28, 1994, as amended, the full faith, credit and taxing power of the Commonwealth are pledged to the payment of the Guaranteed Bonds, in the event Authority Revenues are insufficient to pay debt service thereon.

A portion of the proceeds of the 2020 Senior Bonds will be used to refund all of the Guaranteed Bonds. See PLAN OF REFUNDING.

Commonwealth Supported Obligations

The outstanding Commonwealth Supported Obligations consist of an Authority note to PFC in respect of the PFC Bonds (the “**PFC Note**”), the proceeds of which were used to finance the costs of construction of the North Coast Superaqueduct. The terms of the PFC Note provide that debt service thereunder is payable solely from budgetary appropriations to be made by the Commonwealth. The Authority made debt service payments on the PFC Note in fiscal years 2007, 2008, 2009 and 2011. For fiscal years 2010 and after 2011, other funding sources were used for the payment of debt service on the PFC Note, including, but not limited to, capitalized interest from the proceeds of the PFC Bonds. The Commonwealth has not made budgetary appropriations for debt service on the PFC Bonds after fiscal year 2015.

Under the Trust Agreement, funds on deposit in the Commonwealth Supported Obligations Account are required to be transferred by the Trustee to the trustee of the PFC Bonds prior to the applicable debt service payment date. Due to the non-appropriation of funds for the payments of the Notes in the Commonwealth’s annual budget for fiscal years 2016 and 2017 and the subsequent filing by the Oversight Board of a Title III case on behalf of the Commonwealth in July 2017, none of the payments on the Notes, or any corresponding payments on the PFC Bonds, that have come due and payable in fiscal year 2016 or thereafter has been paid. See “Commonwealth Supported Obligations” under INTRODUCTORY STATEMENT.

Payment of principal of and interest on Commonwealth Supported Obligations is not secured by a pledge of Authority Revenues. Under the Trust Agreement and as noted in the Fiscal Plan, if any payment in respect of Commonwealth Supported Obligations is not made by the Authority, the obligation is not cumulative and, therefore, does not carry forward to future periods. Failure to pay principal of or interest on Commonwealth Supported Obligations is not an Event of Default under the Trust Agreement.

The Proposed Amendments to the Trust Agreement would eliminate all references to the Commonwealth Supported Obligations in the Trust Agreement. See PROPOSED AMENDMENTS TO TRUST AGREEMENT.

Notes

In 2012, to assist the Authority with cash flow needs during the transition period after amending and restating the Trust Agreement in connection with the issuance of 2012 Senior

Bonds, the Authority entered into the Loan Agreement. In 2014, the Amended and Restated Loan Agreement was executed and the outstanding principal amount under the Loan Agreement (\$72.8 million) was converted into a term loan. In 2015, the Authority stopped making payments under the Amended and Restated Loan Agreement because its revenues were insufficient to cover any obligations subordinated to the Authority's obligations under the Trust Agreement.

The Amended and Restated Loan Agreement was subsequently transferred to GDB-DRA upon consummation of the GDB Qualifying Modification under Title VI of PROMESA on November 29, 2018. The Authority's obligation under the GDB-DRA Loan Agreement was subordinate in all respects to its outstanding Trust Agreement obligations. At the time of the transfer to GDB-DRA, the outstanding principal amount under the GDB-DRA Loan Agreement was \$57.5 million, plus accrued and unpaid interest.

The Fiscal Plan contained no amounts to make payments to satisfy the Authority's obligation under the GDB-DRA Loan Agreement. On November 10, 2020, the Authority, AAFAF, GDB-DRA and the collateral monitor for GDB-DRA reached an agreement in principle, contingent on Oversight Board approval, to resolve and settle in full all Authority obligations under the GDB-DRA Loan Agreement by a one-time Authority payment in the amount of \$20.5 million. On November 20, 2020, the Oversight Board approved the settlement, the Authority made that payment in full, the GDB-DRA Loan Agreement was terminated, and the Authority has no further obligation under it.

Revitalization Act

On July 12, 2016, the Governor of Puerto Rico signed into law Act 68 of 2016 ("**Act 68**"), providing for the creation of a new public corporation, to be known as the Puerto Rico Aqueduct and Sewer Authority Revitalization Corporation (the "**Corporation**"), as a single-purpose, bankruptcy-remote entity. The Corporation is authorized to fix and collect securitization charges for the purpose of issuing bonds the proceeds of which may be used by the Authority for CIP, refinancing of bond anticipation notes and the cancelation, defeasance and refinancing of its Bonds, among other approved financing costs. Act 68 limits the securitization charge that may be imposed by the Corporation to an amount equivalent to 20% of the Authority's revenues and provides that the Corporation may issue up to a maximum of \$900 million in bonds for the purpose of financing the development of the Authority's CIP. The difference between the \$900 million that may be used for the financing of the CIP and the maximum amount that can be financed with the 20% of Authority's revenues may be used to retire, cancel (defease) or refinance Indebtedness of the Authority, subject to certain conditions. As of the date of this Limited Offering Memorandum, the Corporation is not operating. The Fiscal Plan does not contemplate any issuance of debt by the Corporation.

The Proposed Amendments to the Trust Agreement include an amendment to the definition of Revenues to provide that Revenues do not include revitalization charges imposed pursuant to Act 68-2018 or similar mandatory non-bypassable charge imposed by law to secure securitization bonds. See PROPOSED AMENDMENTS TO THE TRUST AGREEMENT.

ANNUAL DEBT SERVICE

Annual Debt Service for the Bonds in any Fiscal Year, as defined in the Trust Agreement, equals the sum of principal, including Sinking Fund Requirements, and interest payable after July 1 during such Fiscal Year and on July 1 of the next Fiscal Year. The following table shows the Annual Debt Service, after taking into effect the issuance of the 2020 Senior Bonds and the refunding of the Refunded Bonds, which among other things, will retire all of the Authority's 2008 Commonwealth Guaranteed Bonds. No legislation is currently effective that authorizes the Authority to issue additional Commonwealth Guaranteed Indebtedness, and no additional Commonwealth Guaranteed Indebtedness is currently anticipated to be issued by the Authority. See "Source of Payment" under SECURITY FOR THE BONDS.

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2020 Senior Bonds

July 1,	Outstanding Senior Indebtedness**	Principal	Interest	Total	Grand Total
2021	\$185,650,301	\$34,005,000	\$36,546,703	\$70,551,703	\$256,202,004
2022	185,853,110	13,430,000	66,454,800	79,884,800	265,737,910
2023	185,851,810	14,395,000	65,912,825	80,307,825	266,159,635
2024	185,850,697	19,495,000	65,331,900	84,826,900	270,677,597
2025	160,612,391	42,790,000	64,437,500	107,227,500	267,839,891
2026	160,609,804	44,935,000	62,298,000	107,233,000	267,842,804
2027	160,610,681	47,170,000	60,051,250	107,221,250	267,831,931
2028	160,612,251	49,545,000	57,692,750	107,237,750	267,850,001
2029	160,610,526	51,990,000	55,215,500	107,205,500	267,816,026
2030	184,969,869	54,935,000	52,616,000	107,551,000	292,520,869
2031	184,967,119	57,695,000	49,869,250	107,564,250	292,531,369
2032	184,969,619	60,550,000	46,984,500	107,534,500	292,504,119
2033	184,963,869	63,590,000	43,957,000	107,547,000	292,510,869
2034	184,966,619	66,790,000	40,777,500	107,567,500	292,534,119
2035	184,969,413	42,205,000	37,438,000	79,643,000	264,612,413
2036	184,968,950	44,310,000	35,327,750	79,637,750	264,606,700
2037	184,963,188	46,530,000	33,112,250	79,642,250	264,605,438
2038	184,959,569	49,060,000	30,785,750	79,845,750	264,805,319
2039	184,969,207	51,390,000	28,332,750	79,722,750	264,691,957
2040	184,964,794	53,960,000	25,763,250	79,723,250	264,688,044
2041	184,967,682	56,655,000	23,065,250	79,720,250	264,687,932
2042	184,967,382	59,495,000	20,232,500	79,727,500	264,694,882
2043	96,778,144	62,465,000	17,257,750	79,722,750	176,500,894
2044	94,378,144	65,585,000	14,134,500	79,719,500	174,097,644
2045	91,978,144	68,865,000	10,855,250	79,720,250	171,698,394
2046	89,578,144	72,310,000	7,412,000	79,722,000	169,300,144
2047	87,178,144	75,930,000	3,796,500	79,726,500	166,904,644
2048	44,778,144	—	—	—	44,778,144
2049	44,990,220	—	—	—	44,990,220
2050	17,371,648	—	—	—	17,371,648
2051	16,947,497	—	—	—	16,947,497
2052	16,947,497	—	—	—	16,947,497
2053	16,947,497	—	—	—	16,947,497
2054	16,947,497	—	—	—	16,947,497
2055	16,947,497	—	—	—	16,947,497
2056	16,947,497	—	—	—	16,947,497
2057	16,947,497	—	—	—	16,947,497
2058	16,947,497	—	—	—	16,947,497
2059	16,977,948	—	—	—	16,977,948
Total*	<u>\$4,670,417,505</u>	<u>\$1,370,075,000</u>	<u>\$1,055,658,978</u>	<u>\$2,425,733,978</u>	<u>\$7,096,151,483</u>

* Totals may not add due to rounding.

** Does not include interest paid through and including December 1, 2020 on the 2008B Senior Bonds that are Refunded Bonds. Includes \$11 million in amounts disbursed through October 31, 2020, from the \$163.2 million in additional loans authorized under the CWSRF program on August 18, 2020. An additional \$152.2 million of loans under this program is not included in this table but has been authorized in accordance with the Trust Agreement, remains undrawn but may be drawn by the Authority in the future. The actual amortization of these loans will be different than as set forth in the table above. Principal of these loans is expected to amortize evenly over a thirty year period, commencing on the earlier of (i) the date that is ten years from the initial draw date and (ii) the date on which the project to which such loan relates is completed and the loan is converted by the lender to a permanent loan. Until principal begins to so amortize, the Authority is obligated to pay interest on the disbursed portions of such loans.

HISTORICAL AND PROJECTED COVERAGE

Set forth in the tables below are (1) the Authority's Operating Revenues and Current Expenses for fiscal years 2016 and 2017 (audited) and corresponding debt service coverage ratios, (2) the Authority's preliminary estimated Operating Revenues and Current Expenses (unaudited) for fiscal years 2018 through 2020 and corresponding debt service coverage ratios and (3) the Authority's projections of the Authority's Operating Revenues and Current Expenses for fiscal years 2021 through 2025 and corresponding debt service coverage ratios, which projections are based on information and projections included in the Fiscal Plan. See "Authority Disagreements with Oversight Board Regarding Fiscal Plan" under THE AUTHORITY'S FISCAL PLAN. The ratios shown in such tables are computed based on both (a) the current priority of payments under the Trust Agreement whereby Authority Revenues are first applied to debt service on Senior Indebtedness and (b) the priority of payments detailed in the Second Amended and Restated Master Agreement of Trust whereby Revenues would first be applied to Current Expenses before debt service on Senior Indebtedness, including the 2020 Senior Bonds. No assurance can be given if, or when, the Second Amended and Restated Master Agreement will take effect and the ratios shown below with respect to the flow of funds under the Second Amended and Restated Master Agreement of Trust are for illustrative purposes only. See PROPOSED AMENDMENTS TO TRUST AGREEMENT and "Certain Risks Related to the Limited Source of Payment and Security for the Senior Indebtedness and Remedies Under the Trust Agreement" under CERTAIN RISK FACTORS AND INVESTMENT CONSIDERATIONS.

The Operating Revenues and Current Expenses for fiscal years 2016 and 2017 are derived from the Authority's audited financial statements. The Operating Revenues and Current Expenses for fiscal years 2018 through 2020 are derived from Authority-prepared, internal, preliminary financial statements that have not been audited or subject to examination of internal controls, or reported on by the Authority's independent auditor, and are subject to revision during the audit process and year-end adjustment entries, which revisions and adjustments may be material. The Authority cannot provide any assurance that such audit or year-end adjustment processes will not result in material changes to the revenue and expense amounts and to the debt service coverage ratios set forth for such fiscal years in the tables below. The information set forth below takes into account for fiscal year 2018 the known effects of the September 2017 Hurricanes and for fiscal year 2020 the known effects of the January 2020 earthquakes and COVID-19. See "September 2017 Hurricanes," "2020 Seismic Activity" and "COVID-19" under THE AUTHORITY and "Certain Risks Related to the Potential Absence of a Secondary Market for the 2020 Senior Bonds" and "Certain Risks Related to the Systems and Authority Operations" under CERTAIN RISK FACTORS AND INVESTMENT CONSIDERATIONS. The projections for fiscal years 2021 through fiscal year 2025 reflect the Authority's calculation of debt service coverage based on information and projections included in the Fiscal Plan. No assurance can be given that the projections will prove to be accurate, because actual results and future events could differ materially from those projected. See CAUTIONARY NOTE REGARDING FORWARD-LOOKING INFORMATION.

Consistent with the Fiscal Plan, the debt service and all obligations coverage ratio calculations presented below for fiscal years 2016 through 2025 do not include, for any fiscal year, debt service payable on any Commonwealth Supported Obligations. During the periods covered by the tables below, the Authority has not received (through fiscal year 2020) and does not expect

to receive (through fiscal year 2025) any such appropriations. The debt service and coverage ratio calculations shown for fiscal years 2021 through 2025 include the issuance of the 2020 Senior Bonds and the refunding of the Refunded Bonds.

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PRELIMINARY HISTORICAL FINANCIAL INFORMATION AND DEBT COVERAGE

<i>Amounts expressed in \$ Thousands</i>	FY2016¹	FY2017¹	FY2018²	FY2019²	FY2020²
Revenues	\$1,107,883	\$1,029,717	\$952,682	\$1,156,002	\$1,065,906
Current Expenses ³	609,367	608,072	652,589	605,953	680,466
Senior Debt Service ^{4 8}	325,961	230,789	230,788	230,790	250,791
Senior Subordinate Debt Service	2,721	2,721	1,387	-	-
Commonwealth Guaranteed Indebtedness (CGI) ^{5 8} Debt Service	52,714	21,066	22,026	46,507	20,920
Other Deposits required by the Trust Agreement ⁶	-	<u>119,120</u>	<u>126,139</u>	<u>92,043</u>	<u>117,912</u>
Total Obligations	\$990,763	\$981,769	\$1,032,929	\$975,294	\$1,070,090
<u>Debt Service Coverage Ratio - Debt Service Paid Prior to Current Expenses</u>					
<i>Senior Debt Service</i>	<i>3.40</i>	<i>4.46</i>	<i>4.13</i>	<i>5.01</i>	<i>4.25</i>
<i>Senior + Senior Sub Debt Service</i>	<i>3.37</i>	<i>4.41</i>	<i>4.10</i>	<i>5.01</i>	<i>4.25</i>
<u>Debt Service Coverage Ratio - Current Expenses Paid Prior to Debt Service</u>					
<i>Senior Debt Service</i>	<i>1.53</i>	<i>1.83</i>	<i>1.36</i>	<i>2.38</i>	<i>1.54</i>
<i>Senior + Senior Sub Debt Service</i>	<i>1.52</i>	<i>1.81</i>	<i>1.35</i>	<i>2.38</i>	<i>1.54</i>
All Obligations Coverage Ratio^{7 8}	1.12	1.05	0.92	1.19	1.00

¹ Total Obligations in the audited financial statements for fiscal years 2016 and 2017 differ from the amounts included because the corresponding amounts in the audited financial statements include accrued debt service rather than the cash deposits made by the Authority in the various Bond Funds under the Trust Agreement on such debt for those fiscal years.

² As noted above, results for fiscal years 2018 through 2020 are unaudited and may change materially upon the completion of the year-end adjustment process and the audit for each of these respective years. Results presented above are based on the Authority's internal accounting system current balances. As a result, figures shown here may differ materially from other information made publicly available in the past and from final audited results.

³ Current Expenses are presented based on the Trust Agreement definition, net of non-cash reserves, and do not include subsidy expenses, which are netted from Authority Revenues.

⁴ Following the restructuring of the debt under the Federal Programs, effective July 26, 2019, debt service on such loans is included in Senior Debt Service starting in fiscal year 2020. See "Other System Indebtedness" under DEBT.

⁵ Commonwealth Guaranteed Indebtedness for fiscal years 2016 to 2020 includes payments made under the forbearance agreements in place until July 25, 2019, relating to the then outstanding Commonwealth Guaranteed Indebtedness held by the Federal Lenders. Following the restructuring of such debt to Senior RUS Indebtedness and Senior Revolving Fund Indebtedness, effective July 26, 2019, debt service on such loans is included in Senior Debt Service. See "Other System Indebtedness" under DEBT.

⁶ Other deposits required by the Trust Agreement include deposits to the Operating Reserve Fund and the Capital Improvement Fund.

⁷ The all obligations coverage ratio is calculated comparing Authority Revenues with Total Obligations. The coverage for fiscal year 2018 (unaudited) was materially affected by the 2017 Hurricanes. In accordance with the requirements of Section 7.01 of the Trust Agreement, the Authority expects to submit the rate covenant calculation to the Consulting Engineer as soon as the fiscal year 2018 audited financial statements are available. Based on the preliminary information included herein, the Authority expects that the Consulting Engineer will issue a report stating the rate covenant results for fiscal year 2018 were affected by the extraordinary impact of the 2017 Hurricanes and that for fiscal year 2019, taking into account the rate adjustments made by the Authority during that fiscal year, the Authority is expected to comply with the rate covenant without any additional measure or action to be taken by the Authority.

⁸ Debt service due and payable on July 1 of any year is included in the annual debt service for the prior fiscal. For example, debt service due and payable on July 1, 2020, is included in debt service reported for the fiscal year ended June 30, 2020, rather than the fiscal year ending June 30, 2021.

PROJECTED FINANCIAL INFORMATION AND DEBT COVERAGE

<i>Amounts expressed in \$ Thousands</i>	FY2021¹	FY2022^{1 4}	FY2023^{1 4}	FY2024^{1 4}	FY2025^{1 4}
Revenues	\$1,073,052	\$1,101,683	\$1,150,737	\$1,199,355	\$1,239,791
Current Expenses	670,697	722,305	745,131	771,167	793,398
Senior Debt Service ^{2 6}	259,037	275,057	280,733	287,007	285,303
Commonwealth Guaranteed Indebtedness (CGI) Debt Service ^{3 6}	7,178	-	-	-	-
Other Deposits required by the Trust Agreement ⁴	<u>124,478</u>	<u>96,545</u>	<u>126,571</u>	<u>146,107</u>	<u>136,466</u>
Total Obligations	\$1,061,390	\$1,093,907	\$1,152,435	\$1,204,281	\$1,215,167
<u>Debt Service Coverage Ratio - Debt Service Paid</u>					
<u>Prior to Current Expenses</u>					
<i>Senior Debt Service</i>	<i>4.14</i>	<i>4.01</i>	<i>4.10</i>	<i>4.18</i>	<i>4.35</i>
<i>Senior + Senior Sub Debt Service</i>	<i>4.14</i>	<i>4.01</i>	<i>4.10</i>	<i>4.18</i>	<i>4.35</i>
<u>Debt Service Coverage Ratio - Current Expenses Paid Prior to Debt Service</u>					
<i>Senior Debt Service</i>	<i>1.51</i>	<i>1.38</i>	<i>1.44</i>	<i>1.49</i>	<i>1.56</i>
<i>Senior + Senior Sub Debt Service</i>	<i>1.51</i>	<i>1.38</i>	<i>1.44</i>	<i>1.49</i>	<i>1.56</i>
All Obligations Coverage Ratio^{5 6}	<i>1.01</i>	<i>1.01</i>	<i>1.00</i>	<i>1.00</i>	<i>1.02</i>

¹ Financial projections for fiscal years 2021 through 2025, except for debt service, are presented based on the information included in the Fiscal Plan. Revenues, expenses and deposits are presented as provided in the Fiscal Plan, adjusted by the amounts in Table 3-8: New Measures Projected Benefit in *Appendix III*. The Oversight Board assumed any projected gap between revenues and expenses will be covered by funds in the Current Expense Fund. The Authority may also use the balance in its Rate Stabilization Account as additional Operating Revenues. See “Authority Disagreements with Oversight Board Regarding Fiscal Plan” under THE AUTHORITY’S FISCAL PLAN.

² Projected senior debt service includes (i) in addition to the Senior Bonds debt service, the debt service on Senior RUS Indebtedness and Senior Revolving Fund Indebtedness, as restructured on July 26, 2019 and (ii) debt service on Senior RUS Indebtedness and Senior Revolving Fund Indebtedness expected to be issued as detailed in Table 3-7 of the Fiscal Plan. It also takes into account the issuance of the 2020 Senior Bonds.

³ Amount shown for Commonwealth Guaranteed Indebtedness debt service for fiscal year 2021 consists of interest paid on the 2008 Commonwealth Guaranteed Bonds through December 1, 2020. The 2008 Commonwealth Guaranteed Bonds will be refunded in whole by the 2020 Senior Bonds, and the Authority does not expect to issue any additional Commonwealth Guaranteed Indebtedness during the period through the fiscal year ending June 30, 2025.

⁴ Other deposits required by the Trust Agreement include deposits to the Operating Reserve Fund and the Capital Improvement Fund.

⁵ All obligations coverage is the ratio of Authority Revenues to Total Obligations.

⁶ Debt service due and payable on July 1 of any year is included in the annual debt service for the prior fiscal year ending the day prior. For example, debt service due and payable on July 1, 2022, is included in debt service reported for the fiscal year ending June 30, 2022, rather than the fiscal year ending June 30, 2023.

LITIGATION

There is no pending litigation of any nature restraining or enjoining or seeking to restrain or enjoin the issuance, sale or delivery of the 2020 Senior Bonds or in any way contesting or affecting the validity of the 2020 Senior Bonds, the resolutions or the proceedings of the Authority taken with respect to the authorization, issuance or sale thereof, or the pledge or application of any moneys under the Trust Agreement or the existence or powers of the Authority.

The Authority is party to a consent decree entered in litigation brought by the United States to enforce compliance with the Clean Water Act and party to a settlement agreement entered into in litigation brought by the DOH to enforce the SDWA. See “Regulatory Compliance” in ENVIRONMENTAL MATTERS.

The Authority is a defendant in various lawsuits arising in the normal course of its business, including employment, contract, construction and miscellaneous environmental claims. In the opinion of the Authority and its General Counsel, the ultimate disposition of such existing proceedings is either covered by insurance or will not otherwise have a material adverse effect on the financial position or operations of the Authority. See “Employees and Labor Relations – Relations with Labor Unions” under THE AUTHORITY.

TAX MATTERS

2020A Senior Bonds

Federal Income Taxes

The Code imposes certain requirements that must be met subsequent to the issuance and delivery of the 2020A Senior Bonds for interest thereon to be and remain excluded from gross income for Federal income tax purposes. Noncompliance with such requirements could cause the interest on the 2020A Senior Bonds to be included in gross income for Federal income tax purposes retroactive to the date of issue of the 2020A Senior Bonds. Pursuant to the Trust Agreement and the Tax Certificate, the Authority has covenanted to comply with the applicable requirements of the Code in order to maintain the exclusion of the interest on the 2020A Senior Bonds from gross income for Federal income tax purposes pursuant to Section 103 of the Code. In addition, the Authority has made certain representations in the Tax Certificate. Nixon Peabody LLP, New York, New York, Bond Counsel (“*Bond Counsel*”), will not independently verify the accuracy of those representations and certifications.

In the opinion of Bond Counsel, under existing law and assuming compliance with the aforementioned covenant, and the accuracy of certain representations and certifications made by the Authority described above, interest on the 2020A Senior Bonds is excluded from gross income for Federal income tax purposes under Section 103 of the Code. Bond Counsel is also of the opinion that such interest is not treated as a preference item in calculating the alternative minimum tax imposed under the Code.

State and Puerto Rico Taxes

Bond Counsel is also of the opinion that under the existing statutes, interest on the 2020A Senior Bonds is exempt from state, Commonwealth, and local income taxation. Bond Counsel expresses no opinion as to other state, Commonwealth or local tax consequences arising with respect to the 2020A Senior Bonds.

Original Issue Premium

All of the 2020A Senior Bonds (in such context, the “***Premium Bonds***”) are being offered at prices in excess of their stated principal amounts. An initial purchaser with an initial adjusted basis in a Premium Bond in excess of its principal amount will have amortizable bond premium that is not deductible from gross income for federal income tax purposes. The amount of amortizable bond premium for a taxable year is determined actuarially on a constant interest rate basis over the term of each Premium Bond based on the purchaser’s yield to maturity (or, in the case of Premium Bonds callable prior to their maturity, over the period to the call date, based on the purchaser’s yield to the call date and giving effect to any call premium). For purposes of determining gain or loss on the sale or other disposition of a Premium Bond, an initial purchaser who acquires such obligation with an amortizable bond premium is required to decrease such purchaser’s adjusted basis in such Premium Bond annually by the amount of amortizable bond premium for the taxable year. The amortization of bond premium may be taken into account as a reduction in the amount of tax-exempt income for purposes of determining various other tax consequences of owning such Premium Bonds. Beneficial owners of the Premium Bonds are advised that they should consult with their advisors with respect to the state and local tax consequences of owning such Premium Bonds.

Ancillary Tax Matters

Ownership of the 2020A Senior Bonds may result in other federal tax consequences to certain taxpayers, including, without limitation, certain S corporations, foreign corporations with branches in the United States, property and casualty insurance companies, individuals receiving Social Security or Railroad Retirement benefits, individuals seeking to claim the earned income credit, and taxpayers (including banks, thrift institutions and other financial institutions) who may be deemed to have incurred or continued indebtedness to purchase or to carry the 2020A Senior Bonds. Prospective investors are advised to consult their tax advisors regarding these rules.

Interest paid on tax-exempt obligations such as the 2020A Senior Bonds is subject to information reporting to the Internal Revenue Service (the “***IRS***”) in a manner similar to interest paid on taxable obligations. In addition, interest on the 2020A Senior Bonds may be subject to backup withholding if such interest is paid to a registered owner that (a) fails to provide certain identifying information (such as the registered owner’s taxpayer identification number) in the manner required by the IRS, or (b) has been identified by the IRS as being subject to backup withholding.

Bond Counsel is not rendering any opinion as to any Federal tax matters other than those described in the opinions attached as Appendix VI. Prospective investors, particularly those who may be subject to special rules described above, are advised to consult their tax advisors regarding

the federal tax consequences of owning and disposing of the 2020A Senior Bonds, as well as any tax consequences arising under the laws of any state or other taxing jurisdiction.

Changes in Federal Tax Law and Post Issuance Events

Legislative or administrative actions and court decisions, at either the federal or state level, could have an adverse impact on the potential benefits of the exclusion from gross income of the interest on the 2020A Senior Bonds for Federal or state income tax purposes, and thus on the value or marketability of the 2020A Senior Bonds. This could result 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), repeal of the exclusion of the interest on the 2020A Senior Bonds from gross income for Federal or state income tax purposes, or otherwise. It is not possible to predict whether any legislative or administrative actions or court decisions having an adverse impact on the Federal or state income tax treatment of holders of the 2020A Senior Bonds may occur. Prospective purchasers of the 2020A Senior Bonds should consult their tax advisors regarding the impact of any change in law on the 2020A Senior Bonds.

Bond Counsel has not undertaken to advise in the future whether any events after the date of issuance and delivery of the 2020A Senior Bonds may affect the tax status of interest on the 2020A Senior Bonds. Bond Counsel expresses no opinion as to any Federal, state or local tax law consequences with respect to the 2020A Senior Bonds, or the interest thereon, if any action is taken with respect to the 2020A Senior Bonds or the proceeds thereof upon the advice or approval of other counsel.

2020B Senior Bonds

Federal Income Taxes

The following is a summary of certain anticipated United States federal income tax consequences of the purchase, ownership and disposition of the 2020B Senior Bonds. The summary is based upon the provisions of the Code, the Treasury Regulations promulgated thereunder and the judicial and administrative rulings and decisions now in effect, all of which are subject to change. Such authorities may be repealed, revoked, or modified, possibly with retroactive effect, so as to result in United States federal income tax consequences different from those described below. The summary generally addresses 2020B Senior Bonds held as capital assets within the meaning of Section 1221 of the Code and does not purport to address all aspects of federal income taxation that may affect particular investors in light of their individual circumstances or certain types of investors subject to special treatment under the federal income tax laws, including but not limited to financial institutions, insurance companies, dealers in securities or currencies, persons holding such 2020B Senior Bonds as a hedge against currency risks or as a position in a “straddle,” “hedge,” “constructive sale transaction” or “conversion transaction” for tax purposes, or persons whose functional currency is not the United States dollar. It also does not deal with holders other than original purchasers that acquire 2020B Senior Bonds at their initial issue price except where otherwise specifically noted. Potential purchasers of the 2020B Senior Bonds should consult their tax advisors in determining the federal, state, local, foreign and other tax consequences to them of the purchase, holding and disposition of the 2020B Senior Bonds.

The Authority has not sought and will not seek any rulings from the Internal Revenue Service with respect to any matter discussed herein. No assurance can be given that the Internal Revenue Service would not assert, or that a court would not sustain, a position contrary to any of the tax characterizations and tax consequences set forth below.

U.S. Holders

As used herein, the term “***U.S. Holder***” means a beneficial owner of 2020B Senior Bonds that is (a) an individual citizen or resident of the United States for federal income tax purposes, (b) a corporation, including an entity treated as a corporation for federal income tax purposes, created or organized in or under the laws of the United States or any State thereof (including the District of Columbia), (c) an estate whose income is subject to federal income taxation regardless of its source, or (d) a trust if a court within the United States can exercise primary supervision over the administration of the trust and one or more U.S. persons have the authority to control all substantial decisions of the trust. Notwithstanding clause (d) of the preceding sentence, to the extent provided in Treasury regulations, certain trusts in existence on August 20, 1996, and treated as United States persons prior to that date that elect to continue to be treated as United States persons also will be U.S. Holders. In addition, if a partnership (or other entity or arrangement treated as a partnership for federal income tax purposes) holds 2020B Senior Bonds, the tax treatment of a partner in the partnership generally will depend upon the status of the partner and the activities of the partnership. If a U.S. Holder is a partner in a partnership (or other entity or arrangement treated as a partnership for federal income tax purposes) that holds 2020B Senior Bonds, the U.S. Holder is urged to consult its own tax advisor regarding the specific tax consequences of the purchase, ownership and dispositions of the 2020B Senior Bonds.

Taxation of Interest Generally

Interest on the 2020B Senior Bonds is not excluded from gross income for federal income tax purposes under Section 103 of the Code and so will be fully subject to federal income taxation. Purchasers will be subject to federal income tax accounting rules affecting the timing and/or characterization of payments received with respect to such 2020B Senior Bonds. In general, interest paid on the 2020B Senior Bonds and recovery of any accrued original issue discount and market discount will be treated as ordinary income to a bondholder, and after adjustment for the foregoing, principal payments will be treated as a return of capital to the extent of the U.S. Holder’s adjusted tax basis in the 2020B Senior Bonds and capital gain to the extent of any excess received over such basis.

Recognition of Income Generally

Section 451(b) of the Code provides that purchasers using an accrual method of accounting for U.S. federal income tax purposes may be required to include certain amounts in income no later than the time such amounts are reflected on certain financial statements of such purchaser. In this regard, the IRS issued proposed regulations which provide that, with the exception of certain fees, the rule in section 451(b) will generally not apply to the timing rules for original issue discount and market discount, or to the timing rules for de minimis original issue discount and market discount. Prospective purchasers of the 2020B Senior Bonds should consult their tax

advisors regarding the potential applicability of these rules and their impact on the timing of the recognition of income related to the 2020B Senior Bonds under the Code.

Market Discount

A holder who purchases a 2020B Senior Bond at a price which includes market discount (i.e., at a purchase price that is less than its adjusted issue price in the hands of an original owner) in excess of a prescribed de minimis amount will be required to recharacterize all or a portion of the gain as ordinary income upon receipt of each scheduled or unscheduled principal payment or upon other disposition. In particular, such holder will generally be required either (a) to allocate each such principal payment to accrued market discount not previously included in income and to recognize ordinary income to that extent and to treat any gain upon sale or other disposition of such a 2020B Senior Bond as ordinary income to the extent of any remaining accrued market discount or (b) to elect to include such market discount in income currently as it accrues on all market discount instruments acquired by such holder on or after the first day of the taxable year to which such election applies.

The Code authorizes the Treasury Department to issue regulations providing for the method for accruing market discount on debt instruments the principal of which is payable in more than one installment. Until such time as regulations are issued by the Treasury Department, certain rules described in the legislative history of the Tax Reform Act of 1986 will apply. Under those rules, market discount will be included in income either (a) on a constant interest basis or (b) in proportion to the accrual of stated interest.

A holder of a 2020B Senior Bond who acquires such 2020B Senior Bond at a market discount also may be required to defer, until the maturity date of such 2020B Senior Bond or the earlier disposition in a taxable transaction, the deduction of a portion of the amount of interest that the holder paid or accrued during the taxable year on indebtedness incurred or maintained to purchase or carry a 2020B Senior Bond in excess of the aggregate amount of interest (including original issue discount) includable in such holder's gross income for the taxable year with respect to such 2020B Senior Bond. The amount of such net interest expense deferred in a taxable year may not exceed the amount of market discount accrued on the 2020B Senior Bond for the days during the taxable year on which the holder held the 2020B Senior Bond and, in general, would be deductible when such market discount is includable in income. The amount of any remaining deferred deduction is to be taken into account in the taxable year in which the 2020B Senior Bond matures or is disposed of in a taxable transaction. In the case of a disposition in which gain or loss is not recognized in whole or in part, any remaining deferred deduction will be allowed to the extent gain is recognized on the disposition. This deferral rule does not apply if the bondholder elects to include such market discount in income currently as described above.

Holders that use an accrual method of accounting may be required to include certain amounts in income no later than the time such amounts are reflected on certain financial statements of such holder as discussed under "Recognition of Income Generally" above. Prospective purchasers of the 2020B Senior Bonds should consult their tax advisors regarding the potential applicability of this rule and its impact on the timing of the recognition of income related to the 2020B Senior Bonds under the Code.

Bond Premium

A holder of a 2020B Senior Bond who purchases such 2020B Senior Bond at a cost greater than its remaining redemption amount will have amortizable bond premium. If the holder elects to amortize this premium under Section 171 of the Code (which election will apply to all 2020B Senior Bonds held by the holder on the first day of the taxable year to which the election applies and to all 2020B Senior Bonds thereafter acquired by the holder), such a holder must amortize the premium using constant yield principles based on the holder's yield to maturity. Amortizable bond premium is generally treated as an offset to interest income, and a reduction in basis is required for amortizable bond premium that is applied to reduce interest payments. Purchasers of 2020B Senior Bonds who acquire such 2020B Senior Bonds at a premium should consult their tax advisors with respect to federal, state and local tax consequences of owning such 2020B Senior Bonds.

Surtax on Unearned Income

Section 1411 of the Code generally imposes a tax of 3.8% on the "net investment income" of certain individuals, trusts and estates. Among other items, net investment income generally includes gross income from interest and net gain attributable to the disposition of certain property, less certain deductions. U.S. Holders should consult their tax advisors regarding the possible implications of this provision in their particular circumstances.

Sale or Redemption of 2020B Senior Bonds

A bondholder's adjusted tax basis for a 2020B Senior Bond is the price such holder pays for the 2020B Senior Bond plus the amount of original issue discount and market discount previously included in income and reduced on account of any payments received on such 2020B Senior Bond other than "qualified stated interest" and any amortized bond premium. Gain or loss recognized on a sale, exchange or redemption of a 2020B Senior Bond, measured by the difference between the amount realized and the bondholder's tax basis as so adjusted, will generally give rise to capital gain or loss if the 2020B Senior Bond is held as a capital asset (except in the case of 2020B Senior Bonds acquired at a market discount, in which case a portion of the gain will be characterized as interest and therefore ordinary income).

If the terms of a 2020B Senior Bond are materially modified, in certain circumstances, a new debt obligation would be deemed "reissued", or created and exchanged for the prior obligation in a taxable transaction. Among the modifications which may be treated as material are those related to the redemption provisions and, in the case of a nonrecourse obligation, those which involve the substitution of collateral. In addition, the defeasance of a 2020B Senior Bond under the defeasance provisions of the Trust Agreement could result in a deemed sale or exchange of such 2020B Senior Bond.

EACH POTENTIAL HOLDER OF SERIES 2020B BONDS SHOULD CONSULT ITS TAX ADVISOR CONCERNING (1) THE TREATMENT OF GAIN OR LOSS ON SALE, REDEMPTION OR DEFEASANCE OF THE BONDS, AND (2) THE CIRCUMSTANCES IN WHICH BONDS WOULD BE DEEMED REISSUED AND THE LIKELY EFFECTS, IF ANY, OF SUCH REISSUANCE.

Non-U.S. Holders

The following is a general discussion of certain United States federal income tax consequences resulting from the beneficial ownership of 2020B Senior Bonds by a person other than a U.S. Holder, a former United States citizen or resident, or a partnership or entity treated as a partnership for United States federal income tax purposes (a “***Non-U.S. Holder***”).

Subject to the discussion of backup withholding and the Foreign Account Tax Compliance Act (“***FATCA***”), payments of principal by the Authority or any of its agents (acting in its capacity as agent) to any Non-U.S. Holder will not be subject to federal withholding tax. In the case of payments of interest to any Non-U.S. Holder, however, federal withholding tax will apply unless the Non-U.S. Holder (1) does not own (actually or constructively) 10 percent or more of the voting equity interests of the Authority, (2) is not a controlled foreign corporation for United States tax purposes that is related to the Authority (directly or indirectly) through stock ownership, and (3) is not a bank receiving interest in the manner described in Section 881(c)(3)(A) of the Code. In addition, either (1) the Non-U.S. Holder must certify on the applicable IRS Form W-8 (series) (or successor form) to the Authority, its agents or paying agents or a broker under penalties of perjury that it is not a U.S. person and must provide its name and address, or (2) a securities clearing organization, bank or other financial institution, that holds customers’ securities in the ordinary course of its trade or business and that also holds the 2020B Senior Bonds must certify to the Authority or its agent under penalties of perjury that such statement on the applicable IRS Form W-8 (series) (or successor form) has been received from the Non-U.S. Holder by it or by another financial institution and must furnish the interest payor with a copy.

Interest payments may also be exempt from federal withholding tax depending on the terms of an existing Federal Income Tax Treaty, if any, in force between the U.S. and the resident country of the Non-U.S. Holder. The U.S. has entered into an income tax treaty with a limited number of countries. In addition, the terms of each treaty differ in their treatment of interest and original issue discount payments. Non-U.S. Holders are urged to consult their tax advisor regarding the specific tax consequences of the receipt of interest payments, including original issue discount. A Non-U.S. Holder that does not qualify for exemption from withholding as described above must provide the Authority or its agent with documentation as to his, her, or its identity to avoid the U.S. backup withholding tax on the amount allocable to a Non-U.S. Holder. The documentation may require that the Non-U.S. Holder provide a U.S. tax identification number.

If a Non-U.S. Holder is engaged in a trade or business in the United States and interest on a 2020B Senior Bond held by such holder is effectively connected with the conduct of such trade or business, the Non-U.S. Holder, although exempt from the withholding tax discussed above (provided that such holder timely furnishes the required certification to claim such exemption), may be subject to United States federal income tax on such interest in the same manner as if it were a U.S. Holder. In addition, if the Non-U.S. Holder is a foreign corporation, it may be subject to a branch profits tax equal to 30% (subject to a reduced rate under an applicable treaty) of its effectively connected earnings and profits for the taxable year, subject to certain adjustments. For purposes of the branch profits tax, interest on a 2020B Senior Bond will be included in the earnings and profits of the holder if the interest is effectively connected with the conduct by the holder of a trade or business in the United States. Such a holder must provide the payor with a properly

executed IRS Form W-8ECI (or successor form) to claim an exemption from United States federal withholding tax.

Generally, any capital gain realized on the sale, exchange, retirement or other disposition of a 2020B Senior Bond by a Non-U.S. Holder will not be subject to United States federal income or withholding taxes if (1) the gain is not effectively connected with a United States trade or business of the Non-U.S. Holder, and (2) in the case of an individual, the Non-U.S. Holder is not present in the United States for 183 days or more in the taxable year of the sale, exchange, retirement or other disposition, and certain other conditions are met.

For newly issued or reissued obligations, such as the 2020B Senior Bonds, FATCA imposes U.S. withholding tax on interest payments and, for dispositions after December 31, 2018, gross proceeds of the sale of the 2020B Senior Bonds paid to certain foreign financial institutions (which is broadly defined for this purpose to generally include non-U.S. investment funds) and certain other non-U.S. entities if certain disclosure and due diligence requirements related to U.S. accounts or ownership are not satisfied, unless an exemption applies. An intergovernmental agreement between the United States and an applicable non-U.S. country may modify these requirements. In any event, bondholders or beneficial owners of the 2020B Senior Bonds shall have no recourse against the Authority, nor will the Authority be obligated to pay any additional amounts to “gross up” payments to such persons, as a result of any withholding or deduction for, or on account of, any present or future taxes, duties, assessments or government charges with respect to payments in respect of the 2020B Senior Bonds. However, it should be noted that on December 13, 2018, the IRS issued Proposed Treasury Regulation Section 1.1473-1(a)(1) which proposes to remove gross proceeds from the definition of “withholdable payment” for this purpose.

Non-U.S. Holders should consult their tax advisors with respect to the possible applicability of federal withholding and other taxes upon income realized in respect of the 2020B Senior Bonds.

Information Reporting and Backup Withholding

For each calendar year in which the 2020B Senior Bonds are outstanding, the Authority, its agents or paying agents or a broker is required to provide the IRS with certain information, including a holder’s name, address and taxpayer identification number (either the holder’s Social Security number or its employer identification number, as the case may be), the aggregate amount of principal and interest paid to that holder during the calendar year and the amount of tax withheld, if any. This obligation, however, does not apply with respect to certain U.S. Holders, including corporations, tax-exempt organizations, qualified pension and profit sharing trusts, and individual retirement accounts and annuities.

If a U.S. Holder subject to the reporting requirements described above fails to supply its correct taxpayer identification number in the manner required by applicable law or under-reports its tax liability, the Authority, its agents or paying agents or a broker may be required to make “backup” withholding of tax on each payment of interest or principal on the 2020B Senior Bonds. This backup withholding is not an additional tax and may be credited against the U.S. Holder’s federal income tax liability, provided that the U.S. Holder furnishes the required information to the IRS.

Under current Treasury Regulations, backup withholding and information reporting will not apply to payments of interest made by the Authority, its agents (in their capacity as such) or paying agents or a broker to a Non-U.S. Holder if such holder has provided the required certification that it is not a U.S. person (as set forth in the second paragraph under “Non-U.S. Holders” above), or has otherwise established an exemption (provided that neither the Authority nor its agent has actual knowledge that the holder is a U.S. person or that the conditions of an exemption are not in fact satisfied).

Payments of the proceeds from the sale of a 2020B Senior Bond to or through a foreign office of a broker generally will not be subject to information reporting or backup withholding. However, information reporting (but not backup withholding) may apply to those payments if the broker is one of the following: (i) a U.S. person; (ii) a controlled foreign corporation for U.S. tax purposes; (iii) a foreign person 50-percent or more of whose gross income from all sources for the three-year period ending with the close of its taxable year preceding the payment was effectively connected with a United States trade or business; or (iv) a foreign partnership with certain connections to the United States.

Payment of the proceeds from a sale of a 2020B Senior Bond to or through the United States office of a broker is subject to information reporting and backup withholding unless the holder or beneficial owner certifies as to its taxpayer identification number or otherwise establishes an exemption from information reporting and backup withholding.

The preceding federal income tax discussion is included for general information only and may not be applicable depending upon a holder’s particular situation. Holders should consult their tax advisors with respect to the tax consequences to them of the purchase, ownership and disposition of the 2020B Senior Bonds, including the tax consequences under federal, state, local, foreign and other tax laws and the possible effects of changes in those tax laws.

State and Puerto Rico Taxes

Bond Counsel is also of the opinion that under the existing statutes, interest on the 2020B Senior Bonds is exempt from state, Commonwealth, and local income taxation. Bond Counsel expresses no opinion as to other state, Commonwealth or local tax consequences arising with respect to the 2020B Senior Bonds.

Changes in Law and Post Issuance Events

Legislative or administrative actions and court decisions, at either the federal or state level, could have an impact on the inclusion in gross income of interest on the 2020B Senior Bonds for federal or state income tax purposes, and thus on the value or marketability of the 2020B Senior Bonds. This could result 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 otherwise. It is not possible to predict whether any such legislative or administrative actions or court decisions will occur or have an adverse impact on the federal or state income tax treatment of holders of the 2020B Senior Bonds. Prospective purchasers of the 2020B Senior Bonds should consult their tax advisors regarding the impact of any change in law or proposed change in law on the 2020B Senior Bonds.

IN ALL EVENTS, ALL INVESTORS SHOULD CONSULT THEIR TAX ADVISORS IN DETERMINING THE FEDERAL, STATE, LOCAL, FOREIGN AND OTHER TAX CONSEQUENCES TO THEM OF THE PURCHASE, OWNERSHIP AND DISPOSITION OF THE BONDS.

Considerations for ERISA and Other U.S. Benefit Plan Investors

The Employee Retirement Income Security Act of 1974, as amended (“***ERISA***”), imposes certain fiduciary obligations and prohibited transaction restrictions on employee pension and welfare benefit plans subject to Title I of ERISA (“***ERISA Plans***”). Section 4975 of the Code imposes essentially the same prohibited transaction restrictions on tax-qualified retirement plans described in Section 401(a) and 403(a) of the Code, which are exempt from tax under Section 501(a) of the Code, other than governmental and church plans as defined herein (“Qualified Retirement Plans”), and on Individual Retirement Accounts (“***IRAs***”) described in Section 408(b) of the Code (collectively, “***Tax-Favored Plans***”). Certain employee benefit plans such as governmental plans (as defined in Section 3(32) of ERISA) (“***Governmental Plans***”), and, if no election has been made under Section 410(d) of the Code, church plans (as defined in Section 3(33) of ERISA) (“Church Plans”), are not subject to ERISA requirements. Additionally, such Governmental and Church Plans are not subject to the requirements of Section 4975 of the Code but may be subject to applicable federal, state or local law (“***Similar Laws***”) which is, to a material extent, similar to the foregoing provisions of ERISA or the Code. Accordingly, assets of such plans may be invested in the 2020B Senior Bonds without regard to the ERISA and Code considerations described below, subject to the provisions of Similar Laws.

In addition to the imposition of general fiduciary obligations, including those of investment prudence and diversification and the requirement that a plan’s investment be made in accordance with the documents governing the plan, Section 406 of ERISA and Section 4975 of the Code prohibit a broad range of transactions involving assets of ERISA Plans and Tax-Favored Plans and entities whose underlying assets include plan assets by reason of ERISA Plans or Tax-Favored Plans investing in such entities (collectively, “***Benefit Plans***”) and persons who have certain specified relationships to the Benefit Plans (“Parties In Interest” or “Disqualified Persons”), unless a statutory or administrative exemption is available. The definitions of “***Party in Interest***” and “***Disqualified Person***” are expansive. While other entities may be encompassed by these definitions, they include, most notably: (1) fiduciary with respect to a plan; (2) a person providing services to a plan; (3) an employer or employee organization any of whose employees or members are covered by the plan; and (4) the owner of an IRA. Certain Parties in Interest (or Disqualified Persons) that participate in a prohibited transaction may be subject to a penalty (or an excise tax) imposed pursuant to Section 502(i) of ERISA (or Section 4975 of the Code) unless a statutory or administrative exemption is available. Without an exemption an IRA owner may disqualify his or her IRA.

Certain transactions involving the purchase, holding or transfer of the 2020B Senior Bonds might be deemed to constitute prohibited transactions under ERISA and Section 4975 of the Code if assets of the Authority were deemed to be assets of a Benefit Plan. Under final regulations issued by the United States Department of Labor (the “***Plan Assets Regulation***”), the assets of the Authority would be treated as plan assets of a Benefit Plan for the purposes of ERISA and Section 4975 only of the Code if the Benefit Plan acquires an “equity interest” in the Authority and none

of the exceptions contained in the Plan Assets Regulation is applicable. An equity interest is defined under the Plan Assets Regulation as an interest in an entity other than an instrument which is treated as indebtedness under applicable local law and which has no substantial equity features. Although there is little guidance on this matter, it appears that the 2020B Senior Bonds should be treated as debt without substantial equity features for purposes of the Plan Assets Regulation. This determination is based upon the traditional debt features of the 2020B Senior Bonds, including the reasonable expectation of purchasers of 2020B Senior Bonds that the 2020B Senior Bonds will be repaid when due, traditional default remedies, as well as the absence of conversion rights, warrants and other typical equity features.

However, without regard to whether the 2020B Senior Bonds are treated as an equity interest for such purposes, though, the acquisition or holding of 2020B Senior Bonds by or on behalf of a Benefit Plan could be considered to give rise to a prohibited transaction if the Authority or the Issuing and Paying Agent, or any of their respective affiliates, is or becomes a Party in Interest or a Disqualified Person with respect to such Benefit Plan.

Most notably, ERISA and the Code generally prohibit the lending of money or other extension of credit between an ERISA Plan or Tax-Favored Plan and a Party in Interest or a Disqualified Person, and the acquisition of any of the 2020B Senior Bonds by a Benefit Plan would involve the lending of money or extension of credit by the Benefit Plan. In such a case, however, certain exemptions from the prohibited transaction rules could be applicable depending on the type and circumstances of the plan fiduciary making the decision to acquire a 2020B Senior Bond. Included among these exemptions are: Prohibited Transaction Class Exemption (“*PTCE*”) 96-23, regarding transactions effected by certain “in-house asset managers”; *PTCE* 90-1, regarding investments by insurance company pooled separate accounts; *PTCE* 95-60, regarding transactions effected by “insurance company general accounts”; *PTCE* 91-38, regarding investments by bank collective investment funds; and *PTCE* 84-14, regarding transactions effected by “qualified professional asset managers.” Further, the statutory exemption in Section 408(b)(17) of ERISA and Section 4975(d)(20) of the Code provides for an exemption for transactions involving “adequate consideration” with persons who are Parties in Interest or Disqualified Persons solely by reason of their (or their affiliate’s) status as a service provider to the Benefit Plan involved and none of whom is a fiduciary with respect to the Benefit Plan assets involved (or an affiliate of such a fiduciary). There can be no assurance that any class or other exemption will be available with respect to any particular transaction involving the 2020B Senior Bonds, or that, if available, the exemption would cover all possible prohibited transactions.

By acquiring a 2020B Senior Bond (or interest therein), each purchaser and transferee (and if the purchaser or transferee is a plan, its fiduciary) is deemed to represent and warrant that either (i) it is not acquiring the 2020B Senior Bond (or interest therein) with the assets of a Benefit Plan, Governmental plan or Church plan; or (ii) the acquisition and holding of the 2020B Senior Bond (or interest therein) will not give rise to a nonexempt prohibited transaction under Section 406 of ERISA or Section 4975 of the Code or Similar Laws. A purchaser or transferee who acquires 2020B Senior Bonds with assets of a Benefit Plan represents that such purchaser or transferee has considered the fiduciary requirements of ERISA, the Code or Similar Laws and has consulted with counsel with regard to the purchase or transfer.

Because the Authority, the Trustee, Underwriters or any of their respective affiliates may receive certain benefits in connection with the sale of the 2020B Senior Bonds, the purchase of the 2020B Senior Bonds using plan assets of a Benefit Plan over which any of such parties has investment authority or provides investment advice for a direct or indirect fee may be deemed to be a violation of the prohibited transaction rules of ERISA or Section 4975 of the Code or Similar Laws for which no exemption may be available. Accordingly, any investor considering a purchase of 2020B Senior Bonds using plan assets of a Benefit Plan should consult with its counsel if the Authority, the Trustee or the Underwriters or any of their respective affiliates has investment authority or provides investment advice for a direct or indirect fee with respect to such assets or is an employer maintaining or contributing to the Benefit Plan.

Any ERISA Plan fiduciary considering whether to purchase the 2020B Senior Bonds on behalf of an ERISA Plan should consult with its counsel regarding the applicability of the fiduciary responsibility and prohibited transaction provisions of ERISA and Section 4975 of the Code to such an investment and the availability of any of the exemptions referred to above. Persons responsible for investing the assets of Tax-Favored Plans that are not ERISA Plans should seek similar counsel with respect to the prohibited transaction provisions of the Code and the applicability of Similar Laws.

CONTINUING DISCLOSURE

The 2020 Senior Bonds are being sold to no more than 35 Qualified Institutional Buyers, each of which will represent that it is purchasing the 2020 Senior Bonds as an investment and not with a view to further distribution as provided in the form Investor Letter in *Appendix IV*. As a result, the 2020 Senior Bonds will not be subject to the annual and other continuing disclosure requirements of Rule 15c2-12, as amended (the “Rule”), promulgated by the SEC, and the Authority is under no legal obligation to provide to such purchasers any updates to the information included in this Limited Offering Memorandum, including all Appendices hereto or notice of the occurrence of any of the events listed in the Rule. The Authority is, however, subject to certain effective continuing disclosure undertakings in respect of other Senior Bonds and is obligated to file annually with EMMA its audited financial statements and updates of the financial and operating data set forth in such undertakings (along with notice of any delays in any such filings) as well as notice of the occurrence of the listed events set forth in such undertakings. As discussed above under “Certain Risks Related to the Potential Absence of a Secondary Market for the 2020 Senior Bonds” in CERTAIN RISKS AND INVESTMENT CONSIDERATIONS, the Authority is not in compliance with its continuing disclosure obligations with respect to its Outstanding Bonds.

ELIGIBILITY OF 2020 SENIOR BONDS

The 2020 Senior Bonds will be eligible for deposit by banks in Puerto Rico to secure public funds and will be approved investments for insurance companies to qualify them to do business in Puerto Rico as required by law.

UNDERWRITING

The Underwriters have agreed, subject to certain conditions, jointly and severally, to purchase the 2020 Senior Bonds from the Authority at a discount of \$8,036,615.87 from the initial

public offering prices set forth (or derived from information set forth) on the inside cover page. The Underwriters are obligated to take up and pay for all of the 2020 Senior Bonds if any are taken. The obligation of the Underwriters to purchase the 2020 Senior Bonds is subject to certain conditions. The 2020 Senior Bonds may be offered and sold to certain dealers (including dealers depositing them into investment trusts) and institutional purchasers at prices lower than the public offering prices which may be changed, from time to time, by the Underwriters.

The Authority has agreed to indemnify the Underwriters against certain liabilities, including liabilities under the federal securities laws.

The Underwriters and their respective affiliates are financial institutions engaged in various activities, which may include securities trading, commercial and investment banking, financial advisory, investment management, principal investment, hedging, financing and brokerage activities. Certain of the Underwriters and their respective affiliates have, from time to time, performed, and may in the future perform, various investment banking services for the Authority, AAFAF, the Commonwealth or its instrumentalities, for which they received or will receive customary fees and expenses.

In the ordinary course of their various business activities, the Underwriters and their respective affiliates may make or hold a broad array of investments and actively trade debt and equity securities (or related derivative securities) and financial instruments (which may include bank loans or credit default swaps) for their own account and for the accounts of their customers and may at any time hold long and short positions in such securities and instruments. Such investment and securities activities may involve securities and instruments of the Authority, the Commonwealth or its instrumentalities.

MATERIAL RELATIONSHIPS

The Consulting Engineer has been engaged to provide consulting and engineering services to the Authority as required by the Trust Agreement. The Consulting Engineer's Report is included in *Appendix I* in reliance on the expertise and consent of the Consulting Engineer. Ankura Consulting Group, LLC (the "***Municipal Advisor***"), has been retained to act as an independent municipal advisor to the Authority and to AAFAF in connection with the issuance of the 2020 Senior Bonds. The Municipal Advisor is an independent municipal advisory firm and is not engaged in the business of underwriting municipal bonds or other securities.

COMMONWEALTH COVENANT

The Commonwealth has pledged to all holders of the Bonds that it will not limit or alter the rights or powers vested in the Authority by the Act so as to impair the rights of such holders until the Bonds and the interest thereon are fully met and discharged. This covenant is subject to the powers granted to the Oversight Board under PROMESA and to the power of the Congress to enact legislation relating to Puerto Rico.

PUERTO RICO FISCAL AGENCY AND FINANCIAL ADVISORY AUTHORITY

As required by Act 2-2017, as amended, AAFAF has acted as financial advisor to the Authority in connection with the 2020 Senior Bonds offered hereby. As financial advisor, AAFAF

participated in the selection of the Underwriters of the Bonds. Certain of the Underwriters have been selected by AAFAF to serve from time to time as underwriters of the Commonwealth's obligations and the obligations of its instrumentalities and public corporations. Certain of the Underwriters or their affiliates also participate in other financial transactions with AAFAF.

INDEPENDENT AUDITORS

The Authority covenants in the Trust Agreement that by the end of the first month of each fiscal year it will cause an audit to be made of its books and accounts relating to the Systems by an independent firm of certified public accountants of suitable experience and responsibility to be chosen by the Board. Engagement by the Authority of auditors to conduct audits of such books and accounts of the Authority has occurred by the end of the first month of each fiscal year. Kevane Grant Thornton currently serves as the Authority's financial auditor.

The Trust Agreement further requires that before the first day of the sixth month following the making of such audit, reports of such audits shall be filed with the Trustee and the Authority, and copies of such reports shall be mailed to the Consulting Engineer, among others. The most recent audited financial statements for the Authority are as of and for the period ended June 30, 2017, and those statements have been provided to the required parties, including the Authority, the Trustee and the Consulting Engineer. The Authority anticipates that audited financial statements for the Authority, as of and for the fiscal year ended June 30, 2018, will be made publicly available and provided as required by the Trust Agreement on or about December 31, 2020, subject to final review and sign off by the Authority's independent auditors. See "Certain Risks Related to the Potential Absence of a Secondary Market for the 2020 Senior Bonds" under CERTAIN RISK FACTORS AND INVESTMENT CONSIDERATIONS.

LEGAL MATTERS

Legal matters incident to the authorization, issuance, sale and delivery of the 2020 Senior Bonds are subject to the unqualified approving legal opinion of Bond Counsel. The form of opinion of Bond Counsel is set forth in *Appendix VI*. Certain legal matters will be passed upon for the Underwriters by Norton Rose Fulbright US LLP, New York, New York, and for the Authority by DLA Piper (Puerto Rico) LLC, San Juan, Puerto Rico, its Special Counsel.

RATINGS

The 2020 Senior Bonds are not rated by any nationally recognized statistical rating organization, and none of the Authority, the Underwriters, AAFAF or the Oversight Board is under any obligation to obtain a rating on the 2020 Senior Bonds. The other outstanding Senior Bonds of the Authority are currently rated Ca (Negative) by Moody's and CCC by Fitch. See "Certain Risks Related to the Potential Absence of a Secondary Market for the 2020 Senior Bonds" under CERTAIN RISK FACTORS AND INVESTMENT CONSIDERATIONS.

MISCELLANEOUS

The foregoing references to and summaries of certain federal, state, Commonwealth and local laws, including, but not limited to, the laws of the Commonwealth, the Act, the Clean Water Act, the SDWA, PROMESA, and documents, agreements and court decisions, orders and decrees,

including but not limited to, the 2015 EPA Consent Decree, the 2006 Drinking Water Settlement Agreement, the Fiscal Plan, the Consulting Engineer's Report, the Trust Agreement, the Eighth Supplemental Agreement and the Proposed Form of Second Amended and Restated Trust Agreement, are made subject to all the detailed provisions thereof. Such references and summaries do not purport to be complete and are qualified in their entirety by reference to such acts, laws, documents, agreements or decisions. Copies of the Trust Agreement, the Eighth Supplemental Agreement and the Proposed Form of Second Amended and Restated Trust Agreement are available for inspection during regular business hours at the office of AAFAF, Roberto Sánchez Vilella Government Center, Avenida de Diego, Parada 22, San Juan, Puerto Rico 00940, telephone number (787) 722-2525, or at the principal corporate trust office of the Trustee.

Any statements in this Limited Offering Memorandum involving matters of opinion, whether or not expressly so stated, are intended as such and not as representations of fact.

This Limited Offering Memorandum will be filed with EMMA.

This Limited Offering Memorandum has been duly authorized, executed and delivered by the Authority.

There are appended to this Limited Offering Memorandum: in *Appendix I*, the Consulting Engineer's Report; in *Appendix II*, a conformed copy of the Trust Agreement and the form of the Eighth Supplemental Agreement; in *Appendix III*, the Fiscal Plan; in *Appendix IV*, the form of Investor Letter; in *Appendix V*, information concerning DTC; in *Appendix VI*, the proposed form of opinion of Bond Counsel; and in *Appendix VII* the proposed form of the Second Amended and Restated Trust Agreement.

The information set forth in this Limited Offering Memorandum, except for certain information on the page following the inside cover page, the information appearing in UNDERWRITING and the information pertaining to DTC, was supplied by the Authority. The information pertaining to DTC was supplied by DTC.

PUERTO RICO AQUEDUCT AND
SEWER AUTHORITY

By: /s/ Doriel Pagán Crespo
Executive President

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Appendix I

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Puerto Rico Aqueduct and Sewer Authority



FISCAL YEAR 2019 CONSULTING ENGINEER'S REPORT FOR THE PUERTO RICO AQUEDUCT AND SEWER AUTHORITY

To satisfy the requirements of Section 7.07 of the 2012 Master Agreement of Trust by and between PRASA and Banco Popular de Puerto Rico, as Trustee, and the requirements between PRASA, the Government of Puerto Rico and the Puerto Rico Fiscal Agency and Financial Advisory Authority.

December 2019

FISCAL YEAR 2019 CONSULTING ENGINEER'S REPORT FOR THE PUERTO RICO AQUEDUCT AND SEWER AUTHORITY



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**FISCAL YEAR 2019
CONSULTING
ENGINEER'S REPORT
FOR THE PUERTO
RICO AQUEDUCT AND
SEWER AUTHORITY**

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Date:
December 2019

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FISCAL YEAR 2019 CONSULTING ENGINEER'S REPORT FOR THE PUERTO RICO AQUEDUCT AND SEWER AUTHORITY

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FISCAL YEAR 2019 CONSULTING ENGINEER'S REPORT FOR THE PUERTO RICO AQUEDUCT AND SEWER AUTHORITY

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ACRONYMS AND ABBREVIATIONS

ABT	Additional Bonds Test
ACA	Asset Condition Assessment
AAFAF	Puerto Rico Fiscal Agency and Financial Advisory Authority (Spanish Acronym)
AMR/AMI	Automatic Meter Reading and/or Advanced Metering Infrastructure
AOP	All Other Perils
ASG	General Services Administration of Puerto Rico (Spanish Acronym)
AWWA	American Water Works Association
B	Billion
BOD	Biological Oxygen Demand
BOR	Broker of Record
CAA	Coefficient of Annual Adjustment
CAGR	Compound Annual Growth Rate
CT	Contact Time
CBA	Collective Bargaining Agreement
CCL	Contaminant Candidate List
CCP	Corrosion Control Program
CER	Consulting Engineer's Report
CGI	Commonwealth Guaranteed Indebtedness
CIP	Capital Improvements Program
CSO	Commonwealth Supported Obligations
CSWO	Combined Sewer Overflow
CWA	Clean Water Act
DBP	Disinfection Byproducts
DBPR	Disinfection Byproducts Rule
BPR	Biannual Progress Report
DSC	Debt Service Coverage
ECRC	Environmental Compliance and Regulatory Charge
DMR	Discharge Monitoring Report

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EPC	Energy Performance Contract
EPL	Excess Employment Practices Liability
ERS	Employee Retirement System
ESCO	Energy Service Companies
FEMA	Federal Emergency Management Agency
FOG	Fats, Oil and Grease
FY	Fiscal Year
GDB	Government Development Bank for Puerto Rico
GIS	Geographic Information System
gpm	gallons per minute
GWUDI	Groundwater Under the Direct Influence of Surface Water
HAA	Haloacetic Acid
HIEPAAA	<i>Hermanidad Independiente de Empleados Profesionales de la Autoridad de Acueductos y Alcantarillados</i>
ILI	Infrastructure Leakage Index
IMP	Integrated Maintenance Program
KPI	Key Performance Indicators
kWh	Kilowatt-Hour
LOC	Line of Credit
LTCP	Long-Term Control Plan
LTP2	Long-Term 3 Projects
LTP3	Long-Term 3 Projects
M	Million
M&V	Measurement and Verification
MAPFRE	MAPFRE PRAICO Insurance Company
MARSH	Marsh Saldaña
MAT	Master Agreement of Trust
MCC	Motor Control Center
MDT	Mobile Data Terminal

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MG	Million Gallons
MGD	Million Gallons per Day
MRP	Materials Requirement Planning
N	Nitrogen
NMC	Nine Minimum Controls
NPDES	National Pollutant Discharge Elimination System
NPW	Non-Potable Water
NRW	Non-Revenue Water
OCIP	Owner Controlled Insurance Program
O&M	Operation and Maintenance
OMB	Office of Management and Budget of Puerto Rico
OSHA	Occupational Safety and Health Administration
OTC	Operator Training Center
P	Phosphorous
P3	Public Private Partnership
PAN	<i>Programa de Asistencia Nutricional</i>
PMC	Program Management Consultant
PML	Probable Maximum Loss
PO	Purchase Order
POGS	Petroleum, Oil, Gas and Sand
PPA	Power Purchase Agreement
PRASA	Puerto Rico Aqueduct and Sewer Authority
PRDOH	Puerto Rico Department of Health
PREPA	Puerto Rico Electric Power Authority
PROMESA	Puerto Rico Oversight, Management, and Economic Stability Act
PRPB	Puerto Rico Planning Board
PWS	Potable Water Systems
RBC	Rotating Biological Contactor
RD	Rural Development

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RWI	Raw Water Intakes
R&R	Renewal and Replacement
RFP	Request for Proposal
SAP	Systems, Applications, and Products in Data Processing
SCADA	Supervisory Control and Data Acquisition
SDWA	Safe Drinking Water Act
SEC	Securities and Exchange Commission
SIR	Self-Insured Retention
SIRE	<i>Sistema Integrado de Resultados</i>
SRF	State Revolving Funds
SSO	Sanitary Sewer Overflow
SSOMP	Sewer System Operation & Maintenance Plan
SSSEP	Sanitary Sewer System Evaluation Plan
STS	Sludge Treatment System
SWTR	Surface Water Treatment Rule
TA	<i>Trabajador Alcantarillado</i>
TANF	<i>Programa de Asistencia Temporal para Familias Necesitadas</i>
TOC	Total Organic Carbon
TPL	<i>Terminal Portátil de Lectura</i>
TSO	<i>Trabajador Servicio Operacional</i>
TTHM	Total Tri-halomethane
UIA-AAA	<i>Unión Independiente Auténtica de la Autoridad de Acueductos y Alcantarillados</i>
U.S.	United States
USDA	U.S. Department of Agriculture
USDOJ	U.S. Department of Justice
USEPA	U.S. Environmental Protection Agency
UV	Ultraviolet
VFD	Variable Frequency Drive
WPS	Water Pump Station

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WRO	Water Recovery Office
WST	Water Storage Tank
WTP	Water Treatment Plant
WWPS	Wastewater Pump Station
WWTP	Wastewater Treatment Plant

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DISCLAIMER

This Consulting Engineer's Report (CER) considers the six-year financial projections and Capital Improvements Program (CIP) included in the Puerto Rico Aqueduct and Sewer Authority's (PRASA) 2019 Certified Fiscal Plan dated June 25, 2019 (the 2019 PRASA Fiscal Plan), PRASA's October 29, 2019 amended FY2020 Annual Budget and certain restructured debt service obligations.

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Arcadis devoted effort in the construction and preparation of this document is consistent with (i) the degree of care and skill ordinarily exercised by members of the same profession currently practicing under same or similar circumstances and (ii) the time and budget available for its work in its efforts to endeavor to ensure that the data contained in the 2019 CER is accurate as of the date of its preparation. This document was based on estimates, assumptions and other information developed by Arcadis from its independent research effort, general knowledge of the industry, and information provided by and consultations with the Authorized Recipient and the Authorized Recipient's representatives and consultants. No responsibility is assumed for inaccuracies in reporting by the Authorized Recipient, the Authorized Recipient's agents and representatives, or any third-party data source used in preparing or presenting this study. Arcadis assumes no duty to update the information contained in the 2019 CER unless it is separately retained to do so pursuant to a written agreement signed by Arcadis and PRASA.

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Arcadis relied on assumptions, forecasts, data and statistics provided by PRASA, its other consultants, and published industry references. Arcadis reviewed the PRASA-prepared forecast over a future six-year

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period of time and "forward-looking statements." These statements relate to Arcadis's expectations, beliefs, intentions, or strategies regarding the future. These statements may be identified by the use of words like "anticipate", "believe", "estimate", "expect", "intend", "may", "plan", "project", "will", "should", "seek", and similar expressions. The forward-looking statements reflect Arcadis's views and assumptions with respect to future events as of the date of this document and are subject to future economic conditions and other risks and uncertainties. Actual and future results and trends could differ materially from those set forth in such statements due to various factors, including, without limitation, those that will be discussed in this 2019 CER. These factors are beyond Arcadis's ability to control or predict. Accordingly, Arcadis makes no warranty or representation that any of the projected values or results contained in this document will actually be achieved.

Unless otherwise stated, this 2019 CER summarizes the work completed through June 30, 2019 with certain updates provided through November 30, 2019. Changed conditions occurring or becoming known after such date could affect the material presented and the conclusions reached herein to the extent of such changes. Arcadis has no responsibility for updating this report for changes that occur after the date of the report.

This document is qualified in its entirety by, and should be considered in light of, these limitations, conditions, and considerations.

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EXECUTIVE SUMMARY

E.1. Introduction

The Puerto Rico Aqueduct and Sewer Authority (PRASA) is a public utility responsible for the production and distribution of potable water and collection, treatment, and disposal of a large portion of domestic and industrial pretreated wastewaters in Puerto Rico. PRASA serves a population of approximately 3.2 million residents¹ plus over 5 million visitors annually. PRASA owns a large variety of assets, including land, buildings, dams, wells, water and wastewater treatment facilities and pump stations, ocean outfalls, buried infrastructure, vehicles, equipment, and water meters.

Arcadis Caribe, PSC (Arcadis), has been retained by PRASA as their Consulting Engineer for the preparation of the Consulting Engineer's Report (CER) to satisfy the reporting requirements specified in Section 7.07 of the Master Agreement of Trust (MAT), as amended, by and between PRASA and Banco Popular de Puerto Rico as Trustee, and the requirements between PRASA and the Government of Puerto Rico.

As required by Section 7.07 of the MAT, unless the Senior Bonds have been rated investment grade by at least two Rating Agencies for 24 consecutive months, the Consulting Engineer shall prepare a CER to document the current condition and changes, if any, in PRASA's operation and the performance of the water and wastewater systems (the System). Also, PRASA must maintain a continuous disclosure policy with its Fiscal Agent (Puerto Rico Fiscal Agency and Financial Advisory Authority, or AAFAF by its Spanish acronym) and satisfy certain reporting requirements throughout the fiscal year (FY). To comply with this reporting requirements, Arcadis has prepared this CER for FY2019 (2019 CER or the Report). PRASA's fiscal year begins on July 1st and ends June 30th. FY2019 is the fiscal year from July 1, 2018 through June 30, 2019.

E.2. Puerto Rico's Current Fiscal Situation

Over the past several years, the Government of Puerto Rico has faced a challenging financial situation. As a result, PRASA has also been adversely affected. In addition to the economic downturn that has been experienced in Puerto Rico, like many other municipal water and wastewater utilities around the world, PRASA is facing several major challenges including service affordability, aging infrastructure, high volume of non-revenue water (NRW), regulatory mandates, and increasing renewal and replacement (R&R) needs. The fiscal situation has been further exacerbated by the devastation caused by Hurricanes Irma and María (the 2017 Hurricanes) and delays in recovery efforts.

The high costs of infrastructure repairs combined with the lack of customer understanding of the value of water services (as an essential service, the public resists paying for higher service rates), makes it very difficult for water and wastewater utilities to achieve a break-even operation while maintaining affordable service rates. Because of the complexity of the System it operates, PRASA has inherently high operating costs and a significant need for capital investments with limited financial resources.

¹ Source: U.S. Census Bureau as of July 1, 2018.

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The Government's fiscal situation and ratings downgrades by the Rating Agencies had a major impact on PRASA, as each downgrade also resulted in a downgrade for PRASA's bonds, thereby limiting its ability to access the capital markets to obtain financing to cover its immediate capital improvement program (CIP) related expenses. In FY2016, after exhausting its surplus operating income and reserves to cover a portion of its unfunded CIP, PRASA was forced to essentially postpone and eventually terminate the execution of all CIP projects.

On May 25, 2016, the United States (U.S.) Congress enacted Puerto Rico Oversight, Management and Economic Stability Act, also known as PROMESA. PROMESA addresses Puerto Rico's debt by establishing an oversight board, a process for restructuring debt, and expedited procedures for approving critical infrastructure projects. Among other mandates, the Oversight Board oversees the development of budgets and fiscal plans for Puerto Rico's Central Government and its instrumentalities, including PRASA.

On June 25, 2019, the Oversight Board certified a revised version of PRASA's Fiscal Plan, pursuant to Section 201(d)(2) of PROMESA (the 2019 PRASA Fiscal Plan). For this Report and the analysis included herein, Arcadis used the Oversight Board's certified 2019 PRASA Fiscal Plan with modifications as noted in the Report. The 2019 PRASA Fiscal Plan covers a period of six years (preliminary results for FY2019 and projections for FY2020 through FY2024) and has been developed to promote PRASA's mission which is to provide high quality drinking water and sanitary sewer service at the lowest possible cost. It provides for the required investment for the necessary infrastructure to restore the System after the 2017 Hurricanes impact and ensure compliance with required standards while promoting a much-needed economic growth throughout the island, the timely execution and implementation of its measures, and PRASA's long-term financial self-sustainability plan.

The 2019 PRASA Fiscal Plan outlines cash management levers that PRASA will use to improve its liquidity, including but not limited to increasing revenues, decreasing expenses, increasing collections, and securing federal funding from disaster relief programs related to the 2017 Hurricanes recovery process. To do so, PRASA will rely on three main key focus areas: (i) affordable safe supply and treatment of water, (ii) resilient, reliable, and efficient infrastructure and (iii) organizational and fiscal sustainability. PRASA's management identified several new efforts and initiatives to achieve these goals and objectives, which could provide additional financial benefits. The initiatives in the FY2019 PRASA Fiscal Plan include, among others, the implementation and execution of a Public-Private Partnership Project for the optimization of PRASA's metering system and the improvement of its customer service activities (the P3 Project), reduction of NRW, rate adjustments, government accounts collections, pension/labor reform (pending ratification by the Government of Puerto Rico), and restructuring of its debt.

E.3. Organizational Updates and Changes

PRASA is organized into five operational Regions (North, South, East, West and Metro), is managed by an Executive Management Team that provides the day to day management oversight and coordination for all institutional activities and governed by a multi-disciplinary Board. The organization includes various departments including, but not limited to finance, human resources, customer services, purchasing and logistics, and information systems.

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The current organization has been able to operate, manage and maintain the System, despite experiencing major operational and financial challenges. Key PRASA leadership includes its Executive President, Strategic and Corporate Planning Vice President, Operations Vice President, Administration Vice President, and Infrastructure Executive Director, as well as the five Regional Executive Directors and Department Directors.

The following material change was reported by PRASA during FY2019 and the first quarter of FY2020 regarding its organization and changes in leadership and management: Cheryl Ortiz McCormick was appointed as Interim Executive Director for the South Region in replacement of Eng. Hector Gierbolini, whose term expired during FY2019.

PRASA's Governing Board, as restructured following Act 68-2016, is composed of eight members, which include:

- Four independent directors appointed by the Governor of Puerto Rico, comprising of:
 - One engineer licensed to practice in Puerto Rico with ten years of practice experience
 - One authorized legal advisor with at least ten years of experience in Puerto Rico and admitted to practice in the Government
 - One member with a wide knowledge and experience in the field of corporate finance
 - One professional with expertise in any fields related functions delegated to PRASA
- One Puerto Rico Fiscal Agency and Financial Advisory (AAFAP by its Spanish acronym) representative as per Act 2-2017
- One private citizen representing the PRASA's customers, and
- Two ex-officio members, the Executive Director of the Association of Mayors, and the Executive Director of the Federation of Mayors.

Board members serve staggered terms: two members shall hold office for five years and two members for six years. As the terms of office of the four Board members appointed by the Governor expire, the Governor shall appoint their successors following the same candidate identification mechanism. None of the members appointed by the Governor may hold such office for more than three terms.

The following material change as it relates to PRASA's Governing Board was reported by PRASA during FY2019 and the first quarter of FY2020: José A. Rivera Rodríguez replaced Gretchen Hau, Esq. as Executive Director of the Mayors Association. One Board position remains vacant (Independent Director with expertise in any fields related functions delegated to PRASA).

In FY2019, PRASA's customer accounts per employee ratio (434) decreased by 6.9% from FY2018 (466) but remained within the industry's range; this can be attributed to the slight reduction of staff and customer accounts. Although PRASA has reduced staff levels below Management's optimum staffing presented in the 2019 PRASA Fiscal Plan, the staffing mix is not adequate. For example, PRASA continues to struggle to fill key staffing needs in the Operations Department (i.e. operators for treatment facilities, system maintenance personnel, electromechanical and meter readers). PRASA must consider the impact of the employee retirement programs and population migration which will continue to affect not only its existing staff, but also its ability to recruit capable replacement workforce. Filling certain vacant

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position could help PRASA reduce overtime costs and address System Operation and Maintenance (O&M) needs.

E.4. Condition of System

During FY2019, Arcadis assessed the condition of PRASA's System through an inspection program that included a selection sample of the major elements of the System. The purpose of these assessments was to identify the overall condition of the facilities to determine if they were being operated and maintained in a manner to achieve their operating goals, and to evaluate if PRASA's CIP is aligned with identified needs. Facilities were rated based on their condition as unacceptable, poor, adequate, or good.

Given the significant reduction in capital and renewal and replacement investment over the past years, Arcadis performed asset condition assessments of a selection of WTP and WWTP facilities that were highly impacted during the 2017 Hurricanes. Arcadis visited 31% of water treatment plants (WTPs), and 39% wastewater treatment plants (WWTPs) to perform assessments of the facilities. These assessments were conducted from February 2019 to August of 2019. Subsequently, Arcadis also evaluated the compliance performance results for all PRASA WTPs and WWTPs for the period of January 1, 2018 through December 31, 2018. In addition, Arcadis performed asset condition assessments of a sample of auxiliary facilities (about 3% of wells, water storage tanks, and pump stations). In total, 173 facilities were assessed out of the 3,816 facilities that comprise the System, excluding active raw water intakes (RWIs).

PRASA operates 113 WTPs where it treats raw water from reservoirs, rivers, and groundwater, to produce potable water for its customers. The WTP facilities range in size from several thousand gallons per day up to 100 million gallons per day (MGD). The total potable water production from WTPs for FY2019 was approximately 542 MGD.

Overall, the WTPs are in adequate condition and, to the extent that the physical structures and operational/process controls are maintained or improved, they are expected to continue to serve their intended purpose of providing potable water supply in compliance with applicable regulations. However, facility ratings decreased in equipment/maintenance, operations/process control and staff/training criteria compared to the 2017 inspections. This decline in ratings is likely an effect of the lack of the capital and R&R improvements due to the fiscal situation and budget limitations. The greatest concern currently is the physical condition of the facilities which continue to deteriorate and were damaged during the 2017 Hurricanes.

Although the WTPs are performing better with respect to compliance with limits of the Safe Drinking Water Act and effluent discharge parameters, PRASA must continue to implement corrective measures to mitigate the production of disinfection by-products. Moreover, PRASA should address the shortcomings identified during inspections to improve the physical condition of its facilities, achieve/maintain continuous and consistent compliance, and optimize O&M expenses. Additionally, upgrades and/or improvements to the sludge treatment systems in WTPs are necessary to meet the permanent limits established under existing permits. Furthermore, PRASA should continue to standardize processes and provide additional tools and training to operators regarding process controls and actions to facilitate and improve plant operations and performance, as well as optimize O&M expenses. Also, PRASA should consider operational improvements including new process equipment and process automation considering that operators continue to depend on manual operations for several processes, a practice that has been found to be inefficient.

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PRASA currently operates 51 WWTPs. The facilities range in size from several thousand gallons per day up to 80 MGD. The island-wide design treatment capacity is approximately 403 MGD and the treated wastewater for FY2019 was approximately 209 MGD. In level of treatment, PRASA has seven plants designed to provide tertiary or advanced treatment, 38 plants are designed to provide secondary treatment, and the remaining six facilities (which account for 230 MGD of treatment capacity) provide primary treatment only under existing 301 (h) waivers with the United States Environmental Protection Agency (USEPA). The WWTPs generally range from poor to adequate condition, with compliance and equipment/maintenance as the categories of primary concern. There were nine facilities (45% of the WWTPs inspected) rated as poor compared to one in 2017; the remaining 55% were rated as adequate. Process control continues to be a challenge in some of the facilities, even though plant operators indicated that standard operating procedures and control strategies are followed. Regarding the compliance criteria, the overall rating decreased significantly (43%) since the previous inspection. Bringing facilities into consistent and sustained compliance with discharge parameters, addressing the shortcomings identified during inspections and additional operational improvements including new process equipment, process automation and process control optimization are some of the measures that PRASA must undertake to continue to improve and maintain the condition of its facilities. Also, PRASA must plan and make the necessary improvements to be able to meet permanent limits once the terms for consent decree interim limits end.

PRASA owns and operates over 3,000 ancillary facilities. No significant changes were noted in the overall evaluation of ancillary facilities with most scoring on the lower end of adequate rating. Approximately 13% of the visited wastewater pump stations (WWPSs) have recorded overflows during the evaluation period. Prompt identification and actions enabled by remote monitoring should help PRASA mitigate overflows in the System, and adding pre-treatment (screens, comminutors) and preventive maintenance to facilities would help lessen overflows. The number of sanitary overflows continues to be high compared to U.S. benchmarks. PRASA has continued to improve its response time and attention/repair effectiveness to minimize the duration of these overflow events and their environmental impact. PRASA is implementing sanitary sewer evaluations and repair plans to reduce levels of infiltration and inflow (I/I) that must be treated in their WWTPs. The progress of this initiative has been affected as well by the ongoing fiscal situation.

Most of the deficiencies identified for ancillary facilities can be addressed through PRASA's R&R program and may not require major capital improvements. Finally, future regulatory requirements may require either the implementation of significant capital improvements to include and achieve additional treatment capabilities at well facilities, or the closure of certain wells.

PRASA continues to address its leak detection and monitoring practices, and leak occurrences. Currently, PRASA is remotely monitoring levels of a number of tanks in the distribution system to avoid tank overflows and improve the water balance in the distribution system. PRASA continues conducting periodic water audits which are used to implement controls and develop action items to address NRW. PRASA estimates the FY2019 total water production at approximately 542 MGD and NRW at approximately 349 MGD. Of the total volume of NRW, unbilled authorized consumption was about 7 MGD while water losses, which total an estimated 342 MGD, consist of approximately 39.4 MGD in apparent (commercial) losses and 302.7 MGD in real (physical) losses. PRASA projects that water audits and NRW estimated values will be refined as metering efforts (both at the production point and customer service points) get underway.

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Some of the actions and projects to be implemented by PRASA to achieve additional reductions in NRW and water losses as included in the 2019 PRASA Fiscal Plan are: 1) the P3 Project for metering system modernization and customer service optimization and enhancement; and 2) Physical Losses Reduction initiatives. Furthermore, the 2019 PRASA Fiscal Plan Water Recovery Office (WRO) initiatives: pressure management and optimization; water leak reduction (reported and unreported); water storage tank overflow avoidance; and data quality improvement (reduce estimation) shall help reduce physical water losses. Nevertheless, significant capital investments and R&R funded budgets are required to accelerate the NRW program and address leak occurrences in both a corrective and preventive manner. PRASA's goal is to reduce water production by at least 10% (from 507 MGD) by 2024.

E.5. O&M Practices and Strategic Plan

Arcadis assessed the adequacy of PRASA's O&M practices based on compliance with regulatory requirements, interviews with PRASA personnel, and facility observations by field inspectors obtained through the 2019 asset condition assessment effort previously described. Overall, Arcadis found PRASA's O&M practices to be adequate. However, staff mix optimization and process control continue to be challenges PRASA's operations.

Despite of all the challenges faced by PRASA in FY2018 and slow recovery in FY2019, most of the facilities are operational and continue to serve their intended purpose of providing potable water supply and treating used water. However, the 2017 Hurricanes affected the conditions of most of PRASA's facilities; therefore, it is imperative that projects necessary to address the damages and improve and strengthen System conditions be implemented in order to ensure the sustainable production of safe drinking water and treatment of wastewater in compliance with applicable regulations. PRASA continues to address operational challenges resulting from intermittent power supply and budget constraints.

PRASA's FY2019 O&M expenses preliminary projection for the water and wastewater system (combined) prior to expected reimbursement from the 2017 Hurricanes is approximately \$782M, of which \$694M are directly related to the O&M of the System. The other \$87M were related to commercial activities and provision of customer services, including but not limited to staffing and operation of customer service offices island-wide; meter reading; connection and disconnection services; invoice preparation, printing and distribution; and customer service call centers, amongst others. PRASA estimates that during FY2019 approximately 73% of its System O&M budget (\$507M) was allocated to the water system and the remaining 27% (\$188M) to the wastewater system. As presented in **Table ES-1**, PRASA's FY2019 O&M budgets are within the industry standards, mostly around the median benchmark results published by the American Water Works Association in 2018.

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Table ES-1. PRASA Metrics vs. Water/Wastewater Utilities Benchmarks

Benchmark Category	2018 Benchmarks ¹			PRASA ²
	Top Quartile	Median	Bottom Quartile	
Water O&M Cost per Account	\$318	\$470	\$641	FY2017: \$319 FY2018: \$461 FY2019: \$411
Water O&M Cost per MG Processed	\$1,778	\$2,425	\$3,337	FY2017: \$2,100 FY2018: \$3,074 FY2019: \$2,561
Water O&M Cost per 100 miles of pipe	\$2,022,662	\$2,904,472	\$4,148,850	FY2017: \$2,652,680 FY2018: \$3,855,281 FY2019: \$3,404,467
Wastewater O&M Cost per Account	\$243	\$353	\$491	FY2017: \$194 FY2018: \$275 FY2019: \$246
Wastewater O&M Cost per MG Treated	\$1,607	\$2,318	\$3,581	FY2017: \$1,848 FY2018: \$2,798 FY2019: \$2,460
Wastewater O&M Cost per 100 miles of pipe	\$1,951,950	\$2,698,845	\$3,641,448	FY2017: \$2,745,356 FY2018: \$3,509,624 FY2019: \$3,130,358

¹ Source: 2018 AWWA Utility Benchmarking: Performance Management for Water and Wastewater.

² Includes total operation and maintenance costs, less depreciation and costs related to customer (commercial) services. PRASA reported values include payroll and related, power, chemicals, Superaqueduct O&M contract fee, insurance and other expenses, less capitalized operating expenses.

Table ES-2 presents a summary of PRASA's KPIs goals and results. In FY2018, PRASA had a lower than normal compliance score of 29% on its KPIs on an island-wide basis, mostly because of impacts of Hurricanes Irma and María. In FY2019, PRASA's KPI results improved substantially from FY2018 but remain low as a result of the delays in the recovery efforts and the fiscal situation hindering the implementation of certain initiatives.

Table ES-2. FY2019 KPI Goals and Results

Strategic Plan Initiative	Key Performance Indicator	FY2019 Goals	Results as of June 2019
Fiscal Health	Employees per Connection	3.34 or less Employees per 1,000 connections	2.97
	Overtime	Reduce to 7% or Below	8% ²
	Budget Compliance (Excludes Electricity Costs)	Below 100%	97%

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Strategic Plan Initiative	Key Performance Indicator	FY2019 Goals	Results as of June 2019
Operational Efficiency	Collection vs. Billings	Increase to 96% or Above	102%
	Compliance - Water System	Increase to 99% or Above	99.7%
	Compliance - Wastewater System	Increase to 97% or Above	95.1% ²
	Billing Adjustments	Reduce to 2% or Below	1.5%
	Complaints in Customer Service (per 1000 Actives Accounts)	Reduce to 16.7 or Below	11.81
	Monthly Average of Customers with Service Interruptions (as a Percentage of Total Customers)	Reduce to 5% or Below	17.8% ²
	Customer Service Attention Time (Commercial Office)	Maintain below 30 min.	26:12 min
	Vehicle Availability	Increase to 92% or Above	65% ²
	Average Processing Time of Purchase Orders ¹	Less than 40 days	-
	Preventive vs. Corrective Maintenance Ratio	Increase to 80%	76% ²
	Average Time for Equipment Repairs	Less than 25 days	51.70 days ²
	Reported Leaks	Reduce to 4,598 monthly	4,562
	Reported Overflows	Reduce to 2,298 monthly	2,198
	Repair Time for Leaks	Reduce to 53.0 hrs	120.87 hrs ²
	Repair Time for Overflows	Reduce to 32.0 hrs	53.81 hrs ²
	Average Water Production (MGD)	Reduce to 505 MGD	542 MGD
Percent of NRW	Reduce to 53.2%	64.4% (Estimated)	
Infrastructure and Sustainability	Energy Consumption (Annual)	Reduce to 660.34 MkWh	630.91 MkWh
	Project Progress (CIP) ³	Greater or equal to 0.9	-

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Strategic Plan Initiative	Key Performance Indicator	FY2019 Goals	Results as of June 2019
	Cost Performance (CIP) ³	Greater or equal to 0.9	-
Organizational Transformation	Training (Cumulative Hours per Employee)	More than 26 hrs per year	14.1 hrs ²
	Unplanned Work Effectiveness (Absenteeism)	Reduce to 2.0 days	2.13 days ²
	Planned Work Effectiveness	Reduce to 10%	4%

¹ This KPI was not measured or available due to the impact of the 2017 Hurricanes and delays of reimplementation.

² These KPIs results were still adversely impacted by the 2017 Hurricanes.

³ Due to the suspension of the CIP, the Project and Cost Performance KPIs for FY2019 are not being measured.

PRASA's Operational Initiatives are well developed and address critical aspects of PRASA's operation such as NRW, operational efficiency, and revenue stream. During FY2019, PRASA's main O&M efforts and practices were focused on the reestablishment and stabilization of the System in the aftermath of Hurricanes Irma and María and working with the Federal Emergency Management Agency (FEMA) and the insurance companies. Although some of the FY2019 planned O&M and key PRASA initiatives were restarted, several were delayed or suspended due to the slow recovery efforts or have been modified to meet commitments included in the 2019 PRASA Fiscal Plan.

E.6. Capital Improvement Program and Regulatory Compliance

PRASA has developed a CIP to improve and maintain its water and wastewater infrastructure. The CIP's main objectives are to maintain, modernize and simplify the System to achieve operational efficiency; protect public health; and safeguard environmental quality while enabling continued economic development and meeting all regulatory requirements. In addition, PRASA has included as part of the CIP objectives, the restoration of damaged infrastructure back to its condition prior to the 2017 Hurricanes and the implementation of sustainable measures in the longer-term to harden the System against the impacts of climate change and sea-level rise.

The CIP is a dynamic program that evolves and undergoes revisions as needs and sources of funds are identified, and as projects transition from planning to design, construction and startup phases. In the past, PRASA's CIP has been funded with external financing from bond issuances and federal assistance in accordance with standard utility financing practices, however the 2019 PRASA Fiscal Plan and public policies endorsed by PRASA's Governing Board includes a tapered transition in which financing of the CIP shifts from bonds to self-financing via PRASA's Operating Revenues. PRASA's CIP includes projects that cover major capital improvements identified throughout PRASA's five Operational Regions as well as environmental compliance related projects, island-wide initiatives such as technological advancements, telemetry, preventive maintenance, meter replacement, R&R of the System and Emergency/Permanent Work projects identified under the recovery efforts after the 2017 Hurricanes.

PRASA's CIP continues on hold, except for some R&R projects and the initial bidding of some emergency projects. The lack of capital investment over the past five years has resulted in degradation of the System's physical condition which could lead to a critical infrastructure situation in the near future. Also,

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PRASA could once again be subject to significant non-compliance events with regulatory mandates or administrative orders. In the long-term, the cost of capital projects may also increase as vendors may price-in the risks associated with delays in payment or non-payments to contracted projects, or due to higher construction demand.

The 2019 PRASA Fiscal Plan includes a modified six-year CIP covering the planning period from FY2019 through FY2024 which includes adjustments resulting from negotiations with Regulatory Agencies, Emergency/Permanent Work projects, and the necessary investment to address PRASA's infrastructure needs to ensure adequate operation and sustainability of the System. The approval and execution of this six-year CIP is contingent upon funding access and availability. The six-year CIP for FY2019 through FY2024, as included in the 2019 PRASA Fiscal Plan, consists of a total of 584 projects totaling \$2,410.5M.

The planned CIP along with the O&M initiatives are generally in alignment with the System needs. It includes projects identified through PRASA's 2014 Master Plan and measures to increase System resilience and strengthening. The six-year CIP adequately addresses the requirements of existing consent decrees and agreements and considers proposed modifications to said consent decrees and agreements, as recently negotiated or in negotiations by and between PRASA and Regulatory Agencies. However, there are additional R&R and CIP needs to address: 1) buried infrastructure improvements including, but not limited to, additional wastewater collection system repairs or improvements that PRASA may be required to implement to bring these into compliance, and 2) future regulations that may impact PRASA's System. The impact of these future regulations may require significant operational and capital investments. As the impact of future regulations becomes more defined, CIP modifications will be required to adequately accommodate resulting needs.

E.7. Insurance Program

To meet the requirements of the MAT as it relates to PRASA's insurance program, Arcadis reviewed PRASA's current insurance coverage and determined its adequacy considering the type and value of PRASA's fixed assets. Also, provided are some outstanding recommendations to PRASA's insurance coverage from a previous evaluation made by MARSH Saldaña, Inc. (MARSH) and validated or commented on by AON, PRASA's Broker of Record (BOR) in FY2016. The BOR for FY2017 and FY2018, Lone Star Insurance Producers, LLC (Lone Star), was consulted to verify if the recommendations were addressed in the policy renewals or if they were not adopted. In FY2019, PRASA changed its BOR from Lone Star to Goas & Associates, Inc (GOAS). They were consulted as well to verify if the recommendations were addressed in the FY2019 and/or FY2020 policy renewals. PRASA maintained GOAS as its BOR for the 1st quarter of FY2020 and changed to *Fedelta Insurance* as its BOR for the rest of FY2020 following the recommendation of the Insurance Commissioner Office.

Furthermore, the policies for FY2019 suffered changes, in some cases significant changes in coverage and primarily in premiums, as an effect of the upshot of the hurricanes that struck Puerto Rico in September 2017. In addition to the 2017 Hurricanes, insurance companies may have dealt with other catastrophic events impacting the Caribbean and the United States. The vast damages and losses suffered by the insured directly impacted the insurance market and resulted in premiums increases, stricter subscription guidelines and risk assessments.

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PRASA was adversely impacted and implementation of the Property Insurance Policy was warranted and put forth. PRASA was able to collect the \$300M coverage in the policy from the Insurance for the Hurricane María event. About half went to cover business interruption and the remaining will be used for projects. Moreover, PRASA is in the process of negotiations with the insurance companies for the claims regarding Hurricane Irma and post hurricane extreme rain event. PRASA can claim up to the limit of \$300M for each event. The claim amounts are subject to verification, adjustments, and acceptance by the insurance companies. As a result, and triggered by the claims resulting from the damages caused by the 2017 Hurricanes, there were significant changes to the FY2019 Property policy coverage and premiums. The only local insurance company to participate in this policy was MAPFRE; to pursue better probabilities for similar coverages the account was placed in the London markets (International). The premium for coverage under this policy tripled, increasing to \$16,112,931. The market cited the recent losses, damages, actual state of the infrastructure and the uncertainty of actual values, as well as the indeterminate value and risk exposure of underground assets as reasons for the dramatic increase. Besides the increase in premium, another important change in the Property Policy is that the deductible quadrupled to \$100M, which makes the deductible 33% of the total claim that can be reimbursed by the insurance company compared to the 8% figure in the FY2018 Property Policy. In addition, the definition for Flood in the first layer changed to exclude damages by "Wind Driven Water". Finally, the \$25,000 deductible for the "Boiler and Machinery" is eliminated and is subject to the \$100M policy deductible. Another significant change was in the Crime policy in which the deductibles for each crime coverage increased 650% from \$10,000 to \$75,000. This escalation on crime coverage deductibles resulted from Chubb's Head Office instructions, applicable to all the accounts they manage. Also, for FY2020 the Umbrella and Excess Liability Policy increase the limit of coverage to \$60M per occurrence with same coverage and Self-Insured Retention (SIR) but with a 12.6% Policy premium increase to \$850,000.

The insurance program covering PRASA's exposures to risks of accidental property and liability losses arising from on-going operations provides reasonable coverage. However, several recommendations to PRASA's insurance program are provided. Several recommendations have been provided as part of the evaluation and summarized in the conclusions (section E.9).

E.8. System Assets and Financial Analysis

PRASA's capital assets include depreciable capital assets, "Construction (Work) in Progress", land, and easements. PRASA's ending book value of capital (fixed) assets as of June 30, 2018, inclusive of registered impairment losses caused by the 2017 Hurricanes and net of accumulated depreciation, amounts to \$6,447M. Following the Restoration Cost Approach outlined by GASB 42, the calculated impairment loss (net of insurance recoveries) registered in FY2018 totaled \$184M. The preliminary ending book value of capital (fixed) assets as of June 30, 2019 amounts to \$6,237M (net of accumulated depreciation, and subject to change).

PRASA's base and volumetric rate structures for Residential customers and Non-Residential customers (Commercial, Industrial, and certain Government customer classes) were approved on July 15, 2013, and were further amended on December 18, 2013. Furthermore, to cover all projected operating expenses, CIP needs, and debt service obligations (assuming debt restructuring, or new external financing is attained), the 2019 PRASA Fiscal Plan includes a series of moderate rate adjustments (as required by the Oversight Board). The 2019 PRASA Fiscal Plan adjustments, included in **Table ES-3**, are calculated separate from the base and volumetric amounts, as compounded percentages of the total customer

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invoice amount. Additional adjustments are projected to be implemented annually on July 1st of each year through FY2024.

Table ES-3. PRASA's Proposed Fiscal Plan Annual Rate Adjustments by Customer Type

Customer Type	Annual Rate Increase FY2019 – FY2023	Rate Increase FY2024
Residential	2.5%	2.0%
Commercial	2.8%	2.0%
Industrial	3.5%	2.0%
Government	4.5%	2.0%

Arcadis reviewed the financial information provided by PRASA, the 2019 PRASA Fiscal Plan and the amendment that incorporates the benefit of the federal debt restructuring as approved by PRASA's Governing Board in October 2019. Arcadis assessed financial preliminary results for FY2019 and the reasonableness of PRASA's assumptions in the preparation of the financial projections from FY2020-FY2024 (the forecast period or the Forecast); and the sufficiency of the revenues necessary to support the projected operations and capital costs as shown in Exhibit 1, including O&M expenses, debt service payments, and required deposits in compliance with the MAT, as amended. Additionally, the Forecast illustrates the anticipated debt service coverage (DSC) for the forecast period.

PRASA's annual Operating Revenues are presented on a cash basis as required by the MAT. PRASA's preliminary Operating Revenues for FY2019 and Operating Revenues for FY2020 through FY2024 net of 1) the 2019 PRASA Fiscal Plan revenue enhancing initiatives and 2) the expected insurance reimbursement from revenue loss from the September 2017 Hurricanes impact, on a cash basis, range from \$1,050.2M in FY2019 to \$1,183M in FY2024.

PRASA's Operating (Current) Expenses are presented on an accrual basis as required by the MAT. PRASA's preliminary Operational Expenses for FY2019 and operating expense projections for FY2020 to FY2024 net of (i) capitalized expenses, (ii) the 2019 PRASA Fiscal Plan expense reduction initiatives, and (iii) the September 2017 Hurricanes impact, range from \$781.7M in FY2019 to \$726.7M in FY2024.

PRASA's outstanding debt includes Senior Bonds (the 2008 Series A and B Senior Lien Revenue Bonds, Revenue Refunding Bonds 2008 Series A and B, and the 2012 Series A and B Senior Lien Revenue Bonds; Commonwealth Guaranteed Indebtedness (CGI) which consists of existing obligations which are guaranteed by the Commonwealth of Puerto Rico, the United States Department of Agriculture (USDA) Rural Development (RD) bonds and USEPA State Revolving Funds (SRF) loan debt, among others; and Commonwealth Supported Obligations (CSO). The Puerto Rico Public Finance Corporation (PFC) has an outstanding note, the proceeds of which were used to finance the construction of the North Coast Superaqueduct System (the "PFC Superaqueduct Note"), which is considered CSO under the MAT, subordinate to the payment of Senior, Senior Subordinate and Subordinate Indebtedness and to CGI debt. The PFC Superaqueduct Note is contractually payable "solely" from Commonwealth budgetary appropriations. Until 2006, the Commonwealth (directly or indirectly through budgetary appropriations) had made all the debt service payments on the CGI and CSO, including the PFC Superaqueduct Note. In 2006, in order to help alleviate its budget constraints, the Commonwealth requested that PRASA, as part

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of its actions to restore its operations to financial self-sufficiency, recommence, in respect of the CGI and begin, in respect of the PFC Superaqueduct Note, to make debt service payments on said obligation during fiscal years where sufficient funds are available. The PFC Superaqueduct Note remains, nevertheless, a limited obligation of PRASA, payable solely from appropriations made by the Government.

Upon execution of the Seventh Supplemental Agreement of Trust dated as of July 26, 2019, the following amendments were made regarding the CGI:

1. Amendment to Section 1.02 of the MAT, Definition of "Commonwealth Guaranteed Indebtedness" was amended to read as follows: *"Commonwealth Guaranteed Indebtedness" shall mean any obligations of the Authority that are designated as Commonwealth Guaranteed Indebtedness by the Authority and Authority's Puerto Rico Aqueduct and Sewer Authority Revenue Refunding Bonds, Series 2088 but shall not include any loans from the United States Department of Agriculture, Rural Development, Rural Utilities Service or obligations of the Authority to the Puerto Rico Infrastructure Financing Authority evidencing revolving loans pursuant to the Puerto Rico Water Pollution control and Drinking Water Treatment Revolving Funds or any loans granted by the Commonwealth Revolving Funds under the provisions of the Federal Clean Water Act of 1972, as amended and the Federal Safe Drinking Water Act of 1996, as amended.*
2. Amendment to Section 2.20 of the MAT (new paragraph regarding Trustee notifications to each Fiduciary for, and Holder of (as applicable), Other System Indebtedness), amendment to Section 8.10 of the MAT regarding Waivers of Events of Default.
3. Amendment to Section 2.20 of the MAT (new paragraph regarding Trustee notifications to each Fiduciary for, and Holder of (as applicable), Other System Indebtedness).
4. Amendment to Section 8.10 of the MAT regarding Waivers of Events of Default.

On June 30, 2016, PRASA entered into various forbearance agreements with both (i) USDA and (ii) the Puerto Rico Infrastructure Financing Agency (PRIFA), the Environmental Quality Board (EQB) and the Department of Health (DOH) (all three for the SRFs), which were later extended in various occasions until July 2019 when an agreement was reached between all parties. Renegotiated terms of PRASA's SRF and RD debt obligations, reclassified as Senior Level Debt per the Seventh Supplemental Agreement of Trust dated as of July 26, 2019, are summarized in **Table ES-4**.

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Table ES-4. Finalized Renegotiated Terms for SRF and RD Debt

Debt Category	SRF	RD
Outstanding Debt		
Balances including future loans of \$26M for SRF and accrued interests for RD	\$595,777,017.21	\$402,931,464.55
Term	30 years	40 years
Rate	0% until year 10 and 1.0% thereafter	2.0%
Payment Terms	Bi-annual principal only payment of \$5M in Years 1-10; bi-annual principal and interest payments of \$13.7M in Years 11-30	Bi-annual principal and interest payments of \$5M in Years 1-10; increasing to \$8.5M in Years 11-40
Maturity Date	7/1/2049	7/1/2059
Debt Level	Senior	Senior

A summary of PRASA's debt service obligations and projections for FY2019 and the forecast period are presented in **Tables ES-5** and **ES-6**, respectively.

Table ES-5. FY2019 Debt Service Obligations and Preliminary Results (\$, Thousands)

Debt Category	FY2019 Obligations ¹	FY2019 Preliminary Results ²
Senior Debt	\$230,790	\$230,790
Senior Subordinated Debt	-	-
Subordinated Debt	-	-
Commonwealth Guaranteed Indebtedness (CGI)	87,916	45,674
Commonwealth Supported Obligations (CSO)	8,999	-
Total	\$327,705	\$276,464

¹ Considers the full debt service obligations due in FY2019 per amortization schedule.

² Considers forbearance agreements for SRF and RD debt and no payment of CSO (PFC Superaqueduct related debt, payable from Commonwealth appropriations). As provided in the MAT, the obligation to make CSO payments is not cumulative and therefore does not carry forward to future periods, and failure to make the payments or required deposits related to this debt is not an event of default under the MAT.

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Table ES-6. FY2020-FY2024 Debt Service Obligations (\$, Thousands)

Debt Category ¹	FY2020 Projection	FY2021 Projection	FY2022 Projection	FY2023 Projection	FY2024 Projection
Senior Debt	\$250,791	\$250,790	\$250,789	\$250,788	\$250,787
Senior Subordinated Debt	-	-	-	-	-
Subordinated Debt	-	-	-	-	-
Commonwealth Guaranteed Indebtedness (CGI)	20,920	25,956	27,935	28,360	31,962
Commonwealth Supported Obligations (CSO)	-	-	-	-	-
Total Debt	\$271,711	\$276,746	\$278,724	\$279,148	\$282,749

¹ Considers the July 2019 renegotiated agreements for SRF and RD debt service relief as included in PRASA's Governing Board-approved amended FY2020 Annual Budget. Assume no payment of CSO or PFC Superaqueduct related debt, payable from Commonwealth appropriations. As provided in the MAT the obligation to make CSO payments is not cumulative and therefore does not carry forward to future periods, and failure to make the payments or required deposits related to this debt is not an event of default under the MAT.

The debt service coverage (DSC) results presented in **Table ES-7** for the forecast period have been calculated using the Rate Covenant requirements per the MAT, as amended, and debt service obligations.

Table ES-7. FY2019 - FY2024 Debt Service Coverage

Debt Service Level	DSC Requi- rement	FY2019 Preliminary DSC	FY2020 DSC	FY2021 DSC	FY2022 DSC	FY2023 DSC	FY2024 DSC
Senior Debt ¹	2.50	4.55	4.10	4.42	4.54	4.58	4.72
Senior Subordinated Debt ¹	2.00	4.55	4.10	4.42	4.54	4.58	4.72
Subordinated Debt ¹	1.50	4.55	4.10	4.42	4.54	4.58	4.72
All Obligations ²	1.00	0.98	1.00	0.97	1.00	1.00	1.00

¹ DSC calculated with respect to Operating Revenues.

² DSC calculated with respect to Authority Revenues.

FY2019 preliminary DSC results consider the forbearance agreements payment obligations and that PRASA will not pay the CSO debt; while the Forecast DSC results consider the renegotiated debt obligations, changes in the debt level of the SRF and RD debt, and that PRASA will not pay CSO debt. PRASA's Operating Revenues and Authority Revenues are projected to be sufficient to meet Senior Lien debt service payments during the forecast period. While PRASA does not project to meet All Obligations in FY2019 or FY2021, Authority Revenues shall be sufficient to meet DSC on All Obligations in FY2020 and FY2022 through FY2024. Final DSC for FY2019 will be recalculated after the issuance of the FY2019 Audited Financial Statement to determine if PRASA was able to comply with all its obligations.

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E.9. Conclusions

In preparation of this Report and the conclusions contained herein, Arcadis has relied on certain assumptions and information provided by PRASA with respect to the conditions which may exist or events which may occur in the future. Arcadis believes the information and assumptions are reasonable but has not independently verified information provided by PRASA and others. To the extent that actual future conditions differ from those assumed herein or provided by others, the actual results will vary from those forecasts.

Arcadis has made several considerations and assumptions (as provided throughout this Report); some of the most notable are as follows:

1. Arcadis has made no determination as to the validity and enforceability of any contracts, agreements, existing laws, rules, or regulations applicable to PRASA and its operations. However, for purposes of this report, Arcadis has assumed that all such contracts, agreements, laws, rules and regulations will be fully enforceable in accordance with their terms.
2. PRASA will continue the current policies of employing qualified and competent personnel; properly operating and maintaining the System in accordance with generally accepted industry practices; and of operating the System in a prudent and sound businesslike manner.
3. The proposed CIP reflects the general needs of the System, the CIP will be largely implemented as planned and reflected in this Report, and PRASA will make modifications to the CIP investment forecast if the overall System condition is negatively affected by the investment levels projected in future years.

Set forth below are the most relevant opinions which Arcadis has reached regarding the review of PRASA's System, CIP and financial projections as per the 2019 PRASA Fiscal Plan.

1. PRASA has reached below the optimum staffing level stipulated by the Executive Management Team but its staffing mix is not yet optimal. For example, PRASA continues to face challenges in filling critical operational staff needs in its Operations Department (i.e., plant operators, electromechanical staff, System maintenance staff and meter readers), which results in overtime hours, delayed repairs, or understaffed/deficient services. PRASA shall further assess its staff mix and implement a more targeted training and workforce development program to allow internal staff re-assignments thereby decreasing existing staffing needs. Also, PRASA may need to reevaluate their compensation package to critical positions in need, such as plant operators and electromechanical, in order to compete with the market and retain personnel (PRASA has indicated that they have begun the process of reevaluating existing compensation packages).
2. PRASA continues to assess administrative and operational performance, and to implement organizational and policy changes, focusing on customer service, System performance, and budget controls. KPI and metrics being measured, along with stronger management oversight continue to contribute to operational and organizational improvements, although KPI results are below established goals.
3. Arcadis visited a total of 173 facilities throughout PRASA's five Operational Regions between February and August of 2019, to conduct a condition assessment of water and wastewater facilities. In overall, facilities were found to be in the adequate range although the physical condition continues

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to deteriorate as capital improvements and R&R actions are limited due to the fiscal situation and budget limitations.

- Overall, the WTPs are in adequate condition and, to the extent that the physical structures and operational/ process controls are maintained or improved, they are expected to continue to serve their intended purpose of providing potable water supply in compliance with applicable regulations. Facility ratings decreased in equipment/maintenance, operations/process control and staff/training criteria compared to the 2017 inspections. The greatest concern currently is the physical condition of the facilities, which continues to deteriorate as capital and R&R improvements are delayed. Also, even though the WTPs are performing better with respect to compliance with limits of the SDWA and effluent discharge parameters, PRASA must continue to implement corrective measures to mitigate the production of disinfection by-products. Moreover, PRASA should address the shortcomings identified during inspections to improve the physical condition of its facilities, achieve/maintain continuous and consistent compliance, and optimize O&M expenses.
 - The WWTPs generally range from poor to adequate condition with compliance and equipment/maintenance as the categories of primary concern. There were nine facilities rated as poor compared to one in 2017 and from the remaining facilities rated as adequate. The greatest concern currently is the physical condition of the facilities, which continues to deteriorate as capital and R&R improvements are delayed. Also, despite some of the NPDES parameters having interim limits, the results showed that there were still many exceedances. Therefore, improvements are necessary not only to meet current interim limits but also future permanent, and more stringent limits. PRASA should verify the flood zone levels at all WWTPs to identify vulnerabilities of assets in these facilities and determine if the potential flood risks merit mitigation actions.
 - No significant changes were noted in the overall evaluation of ancillary facilities with most scoring on the lower end of adequate rating. Approximately 13% of the visited wastewater pump stations (WWPSs) have recorded overflows during the evaluation period. Prompt identification and actions enabled by remote monitoring should help PRASA mitigate overflows in the System, and adding pre-treatment (screens, comminutors) and preventive maintenance to facilities would help lessen overflows. Most of the deficiencies identified for ancillary facilities can be addressed through PRASA's R&R program and may not require major capital improvements. Finally, future regulatory requirements may require either the implementation of significant capital improvements to include and achieve additional treatment capabilities at well facilities, or the closure of certain wells.
4. The number of water leaks and sanitary overflows continue to be high when compared to U.S. benchmarks. However, PRASA has continued to improve its response time and attention/repair effectiveness, excluding the latter years because of the impacts and the after effect of the 2017 Hurricanes. PRASA continues to work on and improve its leak detection and monitoring practices and continues to aggressively address leak occurrences. Currently, PRASA is remotely monitoring levels of a number of tanks in the distribution system to avoid tank overflows and improve the water distribution balance and continues conducting periodic water audits which are used to implement the necessary controls and develop action items to address NRW. Also, PRASA is implementing the 2019 PRASA Fiscal Plan WRO initiatives, which shall help reduce physical water losses. Additionally,

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PRASA is implementing sanitary sewer evaluations and repair plans to reduce levels of I/I that must be treated in their WWTPs. However, the progress of this initiative has been affected as well by the ongoing fiscal situation.

5. PRASA is redefining their NRW goals and metrics to phase out calculations that still use estimation methods, moving towards use of real measurements. Furthermore, the provision of meters or other mechanisms to measure the water discarded as part of the programmed drainages will further improve accounting for the volume of NRW in the System. Additionally, the Physical Losses Reduction initiatives along with the PRASA's P3 project will further support PRASA's efforts to reduce NRW. Lastly, significant capital investments and R&R funded budgets are required to accelerate the NRW program and address leak occurrences in both a corrective and preventive manner.
6. Except for buried infrastructure improvement needs, PRASA's six-year CIP along with the O&M initiatives are in alignment with the System needs and adequately addresses all mandated requirements of existing consent decrees and agreements with Regulatory Agencies. The CIP also includes funding for minor repair projects and PRASA's R&R program, as well as funding for recovery efforts and for System resilience/strengthening. Most of the investment included for the CIP is related to Emergency/Permanent Work projects. However, as noted in previous reports, given PRASA's high rate of leaks and overflows and continuing aging infrastructure, additional funds and a reactivation and acceleration of the R&R program are required to reduce/minimize these incidences. Hence, PRASA may need to further re-prioritize its funding and capital projects to address these critical System issues, as well as to address future regulations and other regulatory requirements of which impacts are not yet known. Finally, PRASA's six-year CIP includes funding for maintenance improvements, as well as for other necessary infrastructure projects (i.e., fleet and building renovation, and technological improvements) essential to maintaining and preserving the utility assets.
7. The insurance program covering PRASA's exposures to risks of accidental property and liability losses arising from on-going operations provides reasonable coverage. Also, the Owner Controlled Insurance Program (OCIP) covering PRASA's exposures to risks of accidental property and liability losses arising from construction activities provides reasonable coverage. PRASA should address the following key recommendations:
 - Conduct a PML Study considering new CAT Modellings and parameters. Specially after the lessons learned in the aftermath of the September 2017 Hurricanes.
 - PRASA should consider establishing a fund to cover possible financial losses from any future catastrophic or any non-catastrophic, peril that might affect infrastructure and operations and, therefore, impose an unexpected financial burden.
 - Consideration to Cyber Security Coverage, which is excluded under all current PRASA's Insurance Programs. Also, complete a self-assessment to determine potential areas of weakness as compared to international standards and to determine the potential frequency and severity of a breach.
 - Consideration to Terrorism Coverage, which is excluded under all current PRASA's Insurance Programs.

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- PRASA should consider including Fungi and/or Bacteria coverage, which is excluded under General liability and umbrella coverage and other programs.
 - PRASA should consider including a "Claims Preparation Expense" additional coverage sublimit in the OCIP Builder's Risk policy to provide for the necessary and reasonable fees or expenses incurred by the insured's customary auditors, accountants, architects or engineers that may assist the insured proving a claim.
 - PRASA should consider requesting an endorsement to include a "Partial Occupancy Provision" to grant permission for partial occupancy of project areas in the OCIP Builder's Risk Policy. Therefore, coverage will not cease or expire due to the partial occupation of any project area or due to the project's substantial completion.
 - PRASA should consider changing the "Completed Operations" coverage extension to ten years to cover the full statutory limit (Statute of Limitations Law) in the OCIP Commercial General Liability Policy. Currently is for five years from the termination date of the policy or its renewal(s). Should also consider same action for the OCIP Commercial Umbrella Liability Policy.
8. PRASA's Forecast (Exhibit 1) reflects the financial plan certified by the Oversight Board: the FY2019 PRASA Fiscal Plan. Despite PRASA's projected additional revenues, cost savings, new federal funds, and proposed rate increases, the Forecast reflects a total deficit of \$54.6M. PRASA plans to bridge this gap by identifying and securing additional revenue sources or financing, implementing higher rate increases, implementing additional controls in Operating Expenses, modifications to projected deposits to the Capital Improvement Fund, or through a combination of these actions.

PRASA must continue the implementation and monitoring of Operational Initiatives so that adjustments, if needed, are made on a timely basis to both the program's operational elements and budget projections. Given the status of these initiatives, and considering the coordination, planning and implementation efforts still required to be completed; it is possible that the timing for achieving the projected benefits will not be as expected by PRASA. PRASA should re-evaluate the status and schedule of these initiatives and adjust the Forecast accordingly and/or identify actions to accelerate development and implementation.

9. While Operating Revenues are projected to be sufficient to meet Senior Lien debt service payments and meet Rate Covenant DSC requirements for Senior Lien Debt, Authority Revenues are not sufficient in every year of the forecast period to meet All Obligations per the MAT. Therefore, PRASA is currently not projecting to meet its Rate Covenant requirement of 1.0x coverage of its current obligations throughout the Forecast. PRASA may need to obtain new financing, refinance a portion of their current debt, reduce its projected CIP investments, increase projected annual rate adjustments, or implement additional operational cost controls to meet its obligations. Furthermore, PRASA must consider the overall sustainability and affordability of its rates given the overall economic situation affecting Puerto Rico and recent trends affecting customer consumption profiles.

The probability of PRASA meeting its Forecast is conditioned on the following key assumptions:

- **PRASA's ability to maintain its Service Revenues, billings, and collections in a continuing challenging economic environment** – Continued uncertainty and strain on the economy, population shifts, and changing consumption patterns could continue to cause further declines in

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PRASA's billings (reflected in lower Service Revenues than budgeted) and collections (reflected in higher Adjustment for uncollectibles).

- **PRASA's ability to implement the necessary annual rate increases** – PRASA is projecting to implement annual modest rate increases that will generate about \$690M between FY2019 and FY2024. The actual amount of the rate increases to be implemented by PRASA will depend on their financial results, planned CIP investments, customer base and consumption trends, among others.
- **PRASA's ability to continue to successfully implement the 2019 PRASA Fiscal Plan initiatives** – PRASA's Forecast includes additional revenue enhancing and cost reduction initiatives. Any changes to the funding, framework and execution of these initiatives may significantly alter PRASA's projected financial results. Also, there is a possibility that the projected results and, more specifically, the timing of those results may not be achieved.

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EXHIBIT 1

PRASA FINANCIAL FORECAST PRO FORMA* (\$, Thousands)	FY2019 PRELIMINARY ^b	FY2020 ANNUAL BUDGET	FY2021 PROJECTION	FY2022 PROJECTION	FY2023 PROJECTION	FY2024 PROJECTION
OPERATING REVENUES						
1. Service Revenues (Base Fee and Service Charges, Net of Subsidies) ^c	\$995,357	\$1,036,499	\$1,062,752	\$1,090,199	\$1,109,547	\$1,120,030
2. Transfer from / (to) Rate Stabilization Account	0	(20,753)	20,753	(22)	(14,553)	\$4,675
3. Other Income (Miscellaneous/Special Assessments)	2,000	500	800	800	1,100	1,100
4. Fiscal Plan - Revenue Enhancing Initiatives ^d	2,832	12,009	23,973	48,676	53,035	57,190
5. Insurance Reimbursement from Revenue Loss	50,000	0	0	0	0	0
6. Total Operating Revenues [Sum Lines 1-5]	\$1,050,189	\$1,028,255	\$1,108,278	\$1,139,654	\$1,149,129	\$1,182,995
ADDITIONAL REVENUES						
7. Transfer from Budgetary Reserve Fund	0	0	0	0	0	0
8. General Fund Grants/Appropriations/Contributions	0	0	0	0	0	0
9. Reimbursements to the Authority Revenues	0	-	0	0	0	0
10. Total Other Sources of Revenue [Sum Lines 7-9]	\$0	\$0	\$0	\$0	\$0	\$0
11. Total Authority Revenues [Line 6 + Line 10]	\$1,050,189	\$1,028,255	\$1,108,278	\$1,139,654	\$1,149,129	\$1,182,995
OPERATING EXPENSES						
12. Payroll and Benefits	\$321,011	\$326,606	\$330,832	\$334,425	\$337,020	\$338,090
13. Electric Power	136,005	152,523	163,299	168,517	166,140	169,447
14. Maintenance and Repair	50,438	57,418	55,601	56,420	57,244	58,085
15. Chemicals	33,903	33,339	34,872	35,386	35,903	36,430
16. Insurance	19,100	19,284	19,560	19,848	20,137	20,433
17. Other Expenses	150,730	156,914	159,156	161,500	163,858	166,264
18. Fiscal Plan - Cost Saving Initiatives ^e	(11,271)	(12,913)	(26,597)	(29,400)	(31,465)	(32,903)
19. Capitalized Operating Expenses	(7,112)	(27,605)	(28,243)	(28,716)	(28,871)	(29,184)
20. Total Operating Expenses [Sum Lines 12-19]	\$692,804	\$705,566	\$708,480	\$717,979	\$719,966	\$726,661
ADDITIONAL EXPENSES						
21. Hurricane Impact on OPEX ^f	25,393	(65,740)	0	0	0	0
22. Total Additional Expenses [Line 21]	\$25,393	(\$65,740)	\$0	\$0	\$0	\$0
23. Total Operating Expenses [Line 20 + Line 22]	\$718,198	\$639,826	\$708,480	\$717,979	\$719,966	\$726,661
DEPOSITS						
24. Deposit to the Senior Bond Fund ^g	\$230,790	\$250,791	\$250,790	\$250,789	\$250,788	\$250,787
25. Deposit to the Senior Debt Service Reserve Fund	0	0	0	0	0	0
26. Deposit to the Senior Subordinate Bond Fund	0	0	0	0	0	0
27. Deposit to the Senior Subordinate Debt Service Reserve Fund	0	0	0	0	0	0
28. Deposit to the Subordinate Bond Fund	0	0	0	0	0	0
29. Deposit to the Subordinate Debt Service Reserve Fund	0	0	0	0	0	0
30. Deposit to the Current Expense Fund	0	0	0	0	0	0
31. Deposit to the Operating Reserve Fund	36,197	32,384	39,974	3,076	1,013	2,033
32. Deposit to the Capital Improvement Fund (Net of Projected New Federal Funds)	42,472	84,334	114,578	139,875	149,002	171,552
33. Deposit to the Construction Fund	0	0	0	0	0	0
34. Deposit to the Commonwealth Payments Fund ^h	45,674	20,920	25,956	27,935	28,360	31,962
35. Deposit to the Surplus Fund	0	0	0	0	0	0
36. Total Deposits, excluding existing deposits available in the Current Expense Fund [Sum Lines 24-29 and 31-35]	\$355,133	\$388,429	\$431,298	\$421,675	\$429,163	\$456,334
37. Net Authority Revenues After Obligations and Deposits [Line 11 - Line 23 - Line 36] ⁱ	(\$23,141)	\$0	(\$31,499)	\$0	\$0	\$0
DEBT SERVICE PAYMENTS DUE						
38. Senior (S)	\$230,790	\$250,791	\$250,790	\$250,789	\$250,788	\$250,787
39. DS Coverage Required = 2.50	4.55	4.10	4.42	4.54	4.58	4.72
40. Senior Subordinated (SSUB)	0	0	0	0	0	0
41. DS Coverage Required = 2.00	4.55	4.10	4.42	4.54	4.58	4.72
42. Subordinated (SUB)	0	0	0	0	0	0
43. DS Coverage Required = 1.50	4.55	4.10	4.42	4.54	4.58	4.72
44. Commonwealth Guaranteed Indebtedness (CGI)	45,674	20,920	25,956	27,935	28,360	31,962
45. Commonwealth Supported Obligations (CSO)	0	0	0	0	0	0
46. Debt Not Covered Under the MAT	0	0	0	0	0	0
47. Total Debt Service Including Debt Not Covered Under the MAT, Net of Existing Deposits	\$276,464	\$271,711	\$276,746	\$278,724	\$279,148	\$282,749
48. DS Coverage on All Obligations (Coverage Required = 1.00)	0.98	1.00	0.97	1.00	1.00	1.00

^aNumbers may not add up due to rounding.

^bBased on projected results as presented in PRASA's June 25th, 2019 Revised Fiscal Plan.

^cIncludes additional revenues from rate increases and electronic bill discount, net additional billings from on-going initiatives, and the adjustment for billings not collected (net of collections from prior years).

^dProjected additional revenues from initiatives included in Fiscal Plan: P3 Project, Government Collections, New Disconnection Fee, and Adjustment Policy Revision.

^eProjected expense reductions from initiatives included in Fiscal Plan: Physical Losses Reduction, Universal Healthcare Plan, and Other Expense Reductions. Also includes Pension Reduction and Christmas Bonus Elimination which PRASA does not expect to implement but will work to identify equivalent savings to comply with the proposed total expenses.

^fIncludes amount to be deposited from FEMA funding reimbursement. FEMA funds shall be deposited to the credit of the Current Expense Fund as they are used to reimburse PRASA for Current Expenses.

^gAs adjusted to reflect the benefit of the federal debt restructuring.

^hDeficits to be addressed by PRASA either through additional controls of Operating Expenses, modification to projected deposits to the Capital Improvement Fund, additional rate increases, or through a combination of these actions.

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1 INTRODUCTION

1.1 Introduction

The Puerto Rico Aqueduct and Sewer Authority (PRASA) is a public utility responsible for the production and distribution of potable water, and collection, treatment, and disposal of a large portion of domestic and industrial pretreated wastewaters in Puerto Rico. PRASA serves a population of approximately 3.2 million residents² plus over 5 million visitors annually. PRASA can be considered a monopoly since it is the only water and wastewater utility in Puerto Rico, providing water and wastewater service to about 96% and 59% of Puerto Rico's population, respectively. While this is positive in terms of sales of services it also makes PRASA a critical entity for the wellbeing of Puerto Rico. The effective operation of this vital public service is essential to the health and economic prosperity of Puerto Rico and its citizens.

PRASA provides water and wastewater services throughout the island, which has an approximate area of 3,535 square miles. Because Puerto Rico is an island with varied topography, isolated demographic distributions, and a diverse mix of users, PRASA has a somewhat fragmented and localized system of water sources, treatment systems and delivery systems. As a result, PRASA has many more treatment facilities than most utilities serving a similar number of customers, and greater diversity in assets in terms of size, treatment technologies, and age when compared to systems in the United States (U.S.) and Canada, which tend to have more centralized systems with larger regional facilities. The size and diversity of assets add complexity to the management of the water and wastewater systems (collectively, the "System"), and contribute to higher operation and maintenance (O&M) costs compared to other utilities serving similar populations.

Based on the data obtained from PRASA's water and wastewater infrastructure geodatabase latest update (July 2018), PRASA owns and operates: eight dams, 113 Water Treatment plants (WTPs), 141 active Raw Water Intakes (RWIs), 51 Wastewater Treatment Plants (WWTPs), 276 wells, 977 Water Pump Stations (WPSs), 1,552 Water Storage Tanks (WSTs), 839 Wastewater Pump Stations (WWPSs), and more than 20,000 miles of water and wastewater pipelines island-wide³.

1.2 Consulting Engineer's Report Purpose and Requirement

Arcadis Caribe, PSC (Arcadis) has been retained by the PRASA as its Consulting Engineer to assist in the preparation of a Consulting Engineer's Report (CER) to satisfy the reporting requirements specified in Section 7.07 of the Master Agreement of Trust by and between PRASA and Banco Popular de Puerto Rico as Trustee, as amended.

As required by Section 7.07 of the MAT, unless the Senior Bonds have been rated investment grade by at least two Rating Agencies for 24 consecutive months, the Consulting Engineer shall prepare a CER to document the current condition and changes, if any, in PRASA's operation and the performance of the System. As a result of the credit downgrades of PRASA's bonds to non-investment grade level in FY2013

² Source: U.S. Census Bureau as of July 1, 2018.

³ Source: PRASA Geographical Information System (GIS), updated July 2018, considers elimination of Vega Baja WTP and RWIs.

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and FY2014, and in compliance with the MAT, Arcadis prepared this CER for FY2019 (2019 CER or the Report).

1.3 Conventions

PRASA's fiscal year begins on July 1st and ends June 30th. Throughout this 2019 CER, fiscal year is identified as "FY" followed by the calendar year in which the fiscal year ends, i.e., FY2019 is the fiscal year from July 1, 2018 through June 30, 2019.

1.4 Acronyms

A listing of acronyms or abbreviations of terms used in this report is included in the Table of Contents.

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2 PUERTO RICO'S CURRENT FISCAL SITUATION

2.1 Overview

Over the past several years, the Commonwealth of Puerto Rico has faced a challenging financial situation. As a result, PRASA has also been adversely affected. In addition to the economic downturn that has been experienced in Puerto Rico, like many other municipal water and wastewater utilities around the world, PRASA is facing several major challenges including service affordability, aging infrastructure, high volume of non-revenue water (NRW), regulatory mandates, and increasing renewal and replacement (R&R) needs.

The high costs of infrastructure repairs combined with lack of customer understanding of the value and cost of water services (as an essential service, the public resists paying for higher service rates), makes it very difficult for water and wastewater utilities to achieve a break-even operation while maintaining affordable service rates. Because of the complexity of their water and wastewater systems (hereinafter referred to collectively as the System) it operates, PRASA has inherently higher operating costs and capital investments needs than other utilities in North America.

To remain consistent with its mission of providing service at an affordable cost, from 2005 through 2016 PRASA financed its Capital Improvement Program (CIP) with revenue bonds and federal assistance provided by the United States Environmental Protection Agency (USEPA) State Revolving Fund (SRF) Program and United States Department of Agriculture (USDA) Rural Development (RD) Program. During this period, PRASA also successfully completed two bond transactions, in 2008 and 2012, issuing over \$3,000 million (M) in revenue bonds. In the midst of the Central Government's fiscal situation, during 2015, PRASA attempted to issue additional revenue bonds. However, the conditions for the bond issuance were not favorable as the Government's fiscal situation and rating downgrades had a major impact on PRASA's own bond ratings. Combined with other external factors, this limited PRASA's ability to access the capital markets to obtain financing to cover its immediate CIP related expenses.

PRASA used operating revenues to cover expenses related to its CIP projects for some time, assuming it would be able to access the municipal market in due course. However, PRASA's current rate structure was designed primarily to cover operational expenses and debt service, and only a limited maintenance budget. Without the ability to secure additional funding and after expending its surplus operating income to cover a portion of its unfunded CIP, PRASA was forced to essentially postpone and eventually terminate the execution of all CIP projects in FY2016. More than 140 infrastructure projects, with an investment totaling about \$600M were suspended and eventually cancelled and thousands of private sector workers are estimated to have lost their jobs because of the CIP suspension. Moreover, roughly \$150M was owed to CIP contractors and consultants at the beginning of FY2017. As of FY2019, PRASA paid off all outstanding payments due to contractors and CIP consultants.

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2.2 Puerto Rico Oversight, Management and Economic Stability Act (PROMESA) and PRASA's Fiscal Plan

On May 25, 2016, the United States (U.S.) Congress enacted Puerto Rico Oversight, Management and Economic Stability Act, also known as PROMESA. PROMESA addresses Puerto Rico's debt by establishing an oversight board, a process for restructuring debt, and expedited procedures for approving critical infrastructure projects. The Oversight Board established under this Act oversees the development of budgets and fiscal plans for Puerto Rico's Central Government and its instrumentalities, including PRASA. Also, it may issue subpoenas, certify voluntary agreements between creditors and debtors, seek judicial enforcement of its authority, impose penalties, and enforce territorial laws prohibiting public sector employees from participating in strikes or lockouts. The Oversight Board's responsibilities include:

- Certifying fiscal plans for entities designated as "covered entities" by the Board as well as the Government's Fiscal Plan
- Approving annual budgets
- Enforcing budgets and ordering any necessary spending reductions
- Reviewing laws, contracts, rules, and regulations for compliance with the fiscal plan

PROMESA also provides Puerto Rico's Government and its instrumentalities two distinct restructuring tools to address the island's fiscal crisis known as Title III and Title VI. Title VI of PROMESA focuses exclusively on restructuring the financial debt and relies on a voluntary group action mechanism to bind dissenting creditors to the agreement of the debtor and requires a supermajority of its creditors to restructure the debt. Whereas Title III of PROMESA is an in-court proceeding that follows a similar framework as a municipality bankruptcy under Chapter 9 of the Bankruptcy Code but is broader in scope. Title III incorporates the bankruptcy cram down power, which allows for a plan of adjustment (to be approved by only a single impaired class) for nonconsenting classes of claims. PRASA currently has not filed for either of these restructuring tools, nor has there been a request to do so by the Oversight Board or the Central Government.

Pursuant to the Oversight Board request/mandate for the submission of a Fiscal Plan, on June 25, 2019, the Oversight Board certified a revised version of PRASA's Fiscal Plan for FY2019 as developed by the Oversight Board, pursuant to Section 201(d)(2) of PROMESA (the 2019 PRASA Fiscal Plan). The 2019 PRASA Fiscal Plan has been developed to promote PRASA's mission of providing high quality drinking water and sanitary sewer service at the lowest possible cost. It provides for the required investment for the necessary infrastructure to restore the System after the impact of the September 2017 Hurricanes and to ensure compliance with required standards while promoting a much-needed economic growth throughout the island, the timely execution and implementation of its measures, and PRASA's long-term financial self-sustainability plan.

For the purposes of this Report and the analysis included herein, Arcadis used PRASA's six-year forecast covering FY2019 through FY2024 (the Forecast), and the certified 2019 PRASA Fiscal Plan as the official and latest fiscal plan, including the October 2019 amendment as approved by PRASA's Governing Board. Considering, however, that it may incur additional modifications. Variances between the Oversight Board certified FY2019 PRASA Fiscal Plan and PRASA's Forecast are noted in this Report.

The 2019 PRASA Fiscal Plan is discussed in more detail in Section 8.

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3 ORGANIZATIONAL UPDATES AND CHANGES

3.1 Introduction

As shown in **Figure 3-1**, PRASA is organized into five operational Regions (North, South, East, West, and Metro), as a result of the enactment of Act No. 92 on March 31, 2004 (Act 92-2004).



Figure 3-1. PRASA Regions

PRASA is managed by an Executive Management Team that provides the daily management oversight and coordination for all institutional activities. It is supported by various departments in the organization including, but not limited to, finance, customer services, and information systems. **Figure 3-2** shows PRASA's current organization.

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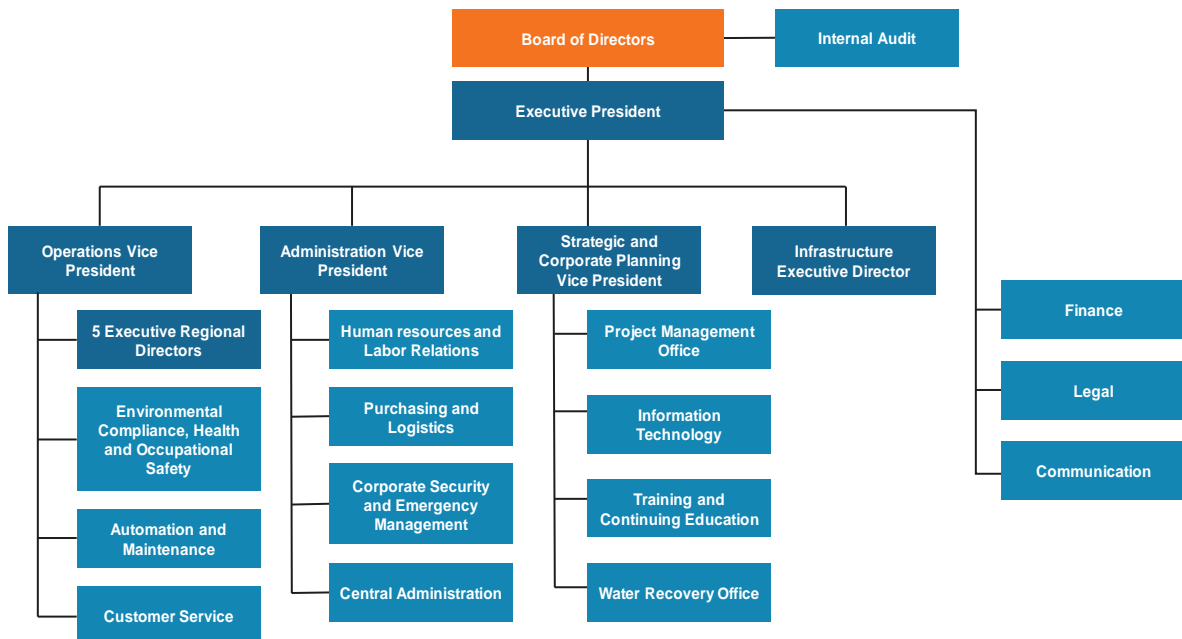


Figure 3-2. PRASA Current Executive Management Structure

3.2 Updates and Changes in PRASA's Organization and Management

3.2.1 Board of Directors (Governing Board)

As presented in **Table 3-1** and pursuant to restructuring as per Act No. 68 of 2016 (Act 68-2016), PRASA's Governing Board, is composed of eight members, which include:

- Four independent directors appointed by the Governor of Puerto Rico, comprising of:
 - a. One engineer licensed to practice in Puerto Rico with ten years of experience,
 - b. One authorized legal advisor with at least ten years of experience in Puerto Rico and admitted to practice in the Government,
 - c. One member with a wide knowledge and experience in the field of corporate finance,
 - d. One professional with expertise in any fields related functions delegated to PRASA.
- One AAFAF representative as per Act 2-2017.
- One Consumer Representative, a private citizen representing the Authority's customers, and
- Two ex-officio members, the Executive Director of the Association of Mayors and the Executive Director of the Federation of Mayors.

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Currently, PRASA's Governing Board has two Consumer Representatives since they were selected prior to the enactment of Act 68 and their current term expires in June 2020. However, after their term ends, PRASA's Governing Board will have only one Consumer Representative, as stated by Act 68-2016, bringing the total number of PRASA's Governing Board members to eight, as listed above.

Table 3-1. PRASA's Governing Board Members as of September 30, 2019

Name	Board Position	Position Description	Term Ends
Héctor J. del Río Jiménez, Esq.	President	Independent Director/Finance	July 12, 2022
Gerardo Lorán Butrón, Esq.	Interim Vice-President	AAFAF Representative	Ex Officio
Memphis Cabán Rodríguez, PE	Director	Independent Director/Engineering	July 12, 2021
Alberto J. Castañer Padró, Esq.	Director	Independent Director/Legal	July 12, 2021
Vacant	Director	Independent Director	
José A. Rivera Rodríguez	Director	Executive Director of the Mayors Association	Ex Officio
Isabelo Molina Hernández	Director	Executive Director of the Mayors Federation	Ex Officio
Héctor Sánchez Cardona, PE	Director	Consumer Representative	June 19, 2020
Félix Aponte Ortiz, PhD.	Director	Consumer Representative	June 19, 2020

Except for the Consumer Representative, the AAFAF Representative and the Executive Directors of the Association of Mayors and the Federation of Mayors, all other members of the Board are named by the acting Governor of Puerto Rico, with the advice and consent of the Senate of the Government of Puerto Rico.

Directors appointed by the Governor shall be selected from a list of at least ten candidates, vetted by a recognized executive search firm and according to objective criteria that includes professional and educational backgrounds of the candidates. The customer representative will serve for a three-year term and be chosen through a public selection process under the jurisdiction of and directed by the Puerto Rico Department of Consumer Affairs. Finally, the Governor-designated or elected Board members shall serve staggered terms: two members shall hold office for five years and two members for six years. As the terms of office for these Board members expire, the Governor shall appoint successors for five-year terms, following the same candidate identification mechanism. None of the members appointed by the Governor may hold such office for more than three terms.

PRASA's Governing Board is responsible for making or approving all major decisions taken by PRASA, including overall institutional policies, PRASA's strategies and programs, executive and key management

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manpower recruitments and removals, approval of union contracts, professional services contracts beyond the limits accorded to the Executive President, and all contract changes that are beyond the limits accorded to the Executive President.

PRASA's Governing Board is assisted by an Internal Audit Unit which is responsible for conducting internal audits for the Board, and by a Board Secretary, who maintains Board records, among other responsibilities.

The following material change as it relates to PRASA's Governing Board was reported by PRASA during FY2019 and the first quarter of FY2020: José A. Rivera Rodríguez replaced Gretchen Hau, Esq. as Executive Director of the Mayors Association. One Board position remains vacant (Independent Director with expertise in any fields related functions delegated to PRASA).

3.2.2 Executive Management Team

Since the enactment of Act 92-2004, PRASA has gone through some management changes at many levels of its organization including the executive level. A summary of PRASA's key Executive Management Team as of the date of this Report, including previous positions held and years of experience, is presented in **Table 3-2**.

Table 3-2. PRASAs Executive Management (as of September 30, 2019)

Name	Current Role	Term Ends	Prior Role	Experience Total/PRASA
Eng. Elí Díaz Atienza	Executive President	February 2022	Private Sector	14 years / 3 year
Eng. Doriel Pagán	Operations Vice President	Indefinite ²	Executive Director North Region	28 years / 26 years
Eng. Ryan Arrieta	Strategic and Corporate Planning Vice-President	Indefinite ²	Private Sector	19 years / 3 year
Keralia Moreda, Esq.	Administration Vice-President	Indefinite ²	Private Sector	14 years / 2 year
Mr. Efraín Acosta	Executive Director of Finance	Indefinite ²	Deputy Exec. Director of Finance PRIDCO	41 years / 15 years
Eng. José J. Rivera	Interim Executive Director for Infrastructure ¹	Indefinite ²	Auxiliary Director for Engineering	22 years / 8 years
Eng. Roberto Martínez	Executive Director Metro Region ¹	December 2019	Deputy Exec. Director Metro Region	32 years / 26 years
Eng. José Rivera	Interim Executive Director North Region ¹	Indefinite ²	Toa Alta Area Director	22 years / 20 years
Cheryl Ortiz McCormick	Interim Executive Director South Region ¹	Indefinite ²	Deputy Exec. Director South Region	21 years / 13 years
Eng. Enrique Rosario	Interim Executive Director East Region ¹	Indefinite ²	Deputy Exec. Director East Region	21 years / 11 years

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Name	Current Role	Term Ends	Prior Role	Experience Total/PRASA
Eng. Joel Lugo	Interim Executive Director West Region ¹	Indefinite ²	Executive Director West Region	20 years / 20 years

¹Legislated positions.

²Indefinite, as per amended Act 40-1945 (Ley 68-2016), which allows Executive Management members to be named as Interim, with no definite term of service.

The following material change was reported by PRASA during FY2019 and the first quarter of FY2020 regarding its organization and changes in leadership and management: Cheryl Ortiz McCormick was appointed as Interim Executive Director for the South Region in replacement of Eng. Hector Gierbolini, whose term expired during FY2019.

3.2.3 Staffing Profile

PRASA's existing staff is categorized into five primary categories described below:

1. Appointed Employees: This category includes the executive staff, deputy and department directors, area directors and administrative assistants that provide support to key management personnel of the utility.
2. Management Employees: These employees manage the day-to-day operations of the utility. They hold management positions both in the central and regional offices.
3. HIEPAAA Employees (*Hermanidad Independiente de Empleados Profesionales de la Autoridad de Acueductos y Alcantarillados*): These employees are the unionized professional staff that includes accountants, engineers, insurance specialists, project inspectors, and surveyors.
4. UIA-AAA Employees (Unión Independiente Auténtica de la Autoridad de Acueductos y Alcantarillados): These employees are the unionized plant and system operators, maintenance and support staff, meter readers, customer service specialists, and administrative assistants.
5. Temporary Employees: These employees are those that are hired and classified as temporary until formally assigned to a regular position. New hires are placed in a 90-day probationary period. They do not have full benefits during the probationary period. If still employed after probationary period, they either become full-time employees or their temporary employment contract is renewed.

At the end of FY2019, PRASA had a total staff of 4,593, of which 327 are pre-retired under Act 211-2015, as further discussed below. Overall, staff was reduced by 0.7% from FY2018 to FY2019. Based on the total number of employees for FY2019, the ratios of service accounts (counting the water service and sanitary sewer service for the same client, as two separate accounts)⁴ to employees was 434, which represents a decrease of 6.9% compared to FY2018 which was 466. Current industry for combined utilities operations averages range from 367 to 609, with a median of approximately 492 customer

⁴ By the end of FY2019, PRASA had a total 1,232,019 active accounts, 1,231,633 water accounts and 763,194 wastewater accounts.

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accounts per employee⁵. PRASA's customer account per employee ratio falls within the range for the industry.

Table 3-3 shows the staff levels by staff category over the last five fiscal years. Since FY2010, PRASA has implemented staff reduction initiatives, such as early retirement, re-training existing staff from overstaffed positions to reduce the need for new hires and using staff attrition as a means to reduce overall staffing positions.

Table 3-3. Staffing Levels

End of FY	Appointed Employees	Management Employees	HIEPAAA Employees	UIA-AAA	Temporary Employees	Pre-Retired Employees	Total Employees
2015	161	1,011	155	2,635	1,027	-	4,989
2016	159	1,188	149	3,293	9 (UIA)	-	4,798
2017	163	1,195	141	3,146	9 (UIA)	-	4,654
2018	154	1,058	117	2,952	9 (UIA)	335	4,625
2019	162	1,058	123	2,915	8 (UIA)	327	4,593
5-year CAGR	0.15%	1.14%	-5.62%	2.56%	-70.29%	N/A	-2.05%

Source: PRASA Human Resources & Finance Departments

PRASA reported net reduction of staff under 1% from FY2018 to FY2019, including a decrease of 37 UIA-AAA employees and one temporary employee and increase of eight appointed employee and six HIEPAAA employees.

The net reduction of employees reflects the effects of the delay in recovery from the 2017 Hurricanes and the Island's financial situation on PRASA's headcount. PRASA received many resignations from employees that were, for the most part, either emigrating from Puerto Rico or hired into new jobs. During FY2019 PRASA granted permanent positions to about 300 employees, including difficult positions to recruit such as operators and electromechanical staff. However, 15 electromechanical personnel resigned during FY2019.

The Voluntary Pre-Retirement Program seeks to reduce the workforce progressively and voluntarily, thus allowing for the economy to undergo a transition process. This may reduce expenses such as payroll and benefits but requires that the Office of Management and Budget (OMB) evaluate and certify that employees eligible for the program and under consideration result in savings for PRASA. Besides the reduction of expenses, Act 211-2015 stipulates that positions that become vacant upon implementation of the retirement program be eliminated, and that agencies take administrative or operational measures to accommodate for these eliminated positions. However, OMB may authorize to re-staff the position, if determined to be critical, and in accordance with the 2019 PRASA Fiscal Plan submitted by the agency. As it stands, some of the eligible employees currently occupy positions that are managerial or supervisory, which may result in organizational challenges.

⁵Source: 2018 AWWA Utility Benchmarking: Performance Management for Water and Wastewater.

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As a result of the fiscal crisis compounded by the impacts of the 2017 Hurricanes, AAFAF on behalf of the Puerto Rico Government circulated an Administrative Order (OA-2017-5) on November 7, 2017, which created the ERS⁶ Voluntary Transition Program intended to create an alternate program for eligible employees under the ERS. On April 18, 2018, a second Administrative Order (OA-2018-5; amended on June 29, 2018 as OA-2018-9) was circulated extending the program to a second phase, and on October 23, 2018, a new Administrative Order (OA-2018-13; amended on November 15, 2018 as OA-2018-14) further extended the program by adding a third phase. Employees will have until November 30 and December 15 of 2018, respectively to enroll in the programs. Eligible employees who enroll in the program and voluntarily resign their position shall receive economic incentives consisting of six-months salary, a medical plan, and up to 60 days payout of unused vacation. During the third phase, 92 employees were eligible and were approved of which 41 employees resigned effective November 30, 2018 and 51 resigned, effectively December 31, 2018.

PRASA's revised optimal staffing level to operate and maintain the System, and effectively manage the utility, as presented in the 2019 PRASA Fiscal Plan, stands at approximately 4,800 employees. As shown in **Table 3-3**, at the end of FY2019, PRASA's staff totaled 4,593 employees (of which 327 are pre-retired), which is significantly under PRASA's goal. However, this does not translate into PRASA achieving an optimum staff mix as there are critical staff needs that must be addressed such as treatment facilities operators and electromechanical staff, among others.

Furthermore, PRASA's current hiring plan focuses mainly on employing personnel for the departments impacted the most by the Voluntary Pre-Retirement and general employee resignations. These affected departments include: Maintenance, Customer Service and Operations Departments. Staff position needs identified include but are not limited to field workers; supervisors and electromechanics for the Maintenance Department; and wastewater treatment plant (WWTP) operators, WWTP and water treatment plant (WTP) supervisors, services coordinators, assistant directors, laboratory assistants, and sanitary sewer workers for Operations Department. The deficit in operations personnel has forced the Operations Department to incur in overtime hours to operate facilities, thus impacting payroll metrics. PRASA intends to keep identifying candidates and following hiring procedures to further optimize its staff and address needs in key areas.

3.2.4 Labor Relations

After the commencement of the elected government on January 2017, several laws that affect PRASA's labor relations came into effect. These laws are Act No. 3 of January 23, 2017 (Act 3-2017) and Act No. 26 of April 27, 2017 (Act 26-2017). These laws have supremacy over any other law or agreement regarding the same matters. The aspects of these laws that affect PRASA are discussed in the next sections.

⁶ Employees Retirement System of the Government of Puerto Rico.

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3.2.4.1 Act 3 of 2017 – “Ley para Atender la Crisis Económica, Fiscal y Presupuestaria para Garantizar el Funcionamiento del Gobierno de Puerto Rico”

The Government of Puerto Rico, through the enactment of Act 3-2017, declared a fiscal emergency and required that its instrumentalities (i.e., utilities, government agencies, and public corporations such as PRASA) implement certain measures to reduce its expenses. Act 3-2017 has primacy over any other previous law and will remain in place until June 30, 2021 or until certain economic and financial conditions are met. For FY2019, Act 3-2017 still requires, among others, the following measures (note that not all of these measures are applicable to PRASA as a public corporation of the Government of Puerto Rico):

1. No increase in economic benefits to employees (except minor exceptions).
2. No monetary liquidation of vacation days in excess of 60 days
3. No liquidation of sickness days⁷
4. Suspension of non-economic clauses under previous agreements that have an economic impact on the operations budget of the entity.
5. No negotiation of labor union agreements during the tenure of this act.
6. No creation or renovation of career positions
7. Appointed positions will be reduced by 20% unless previously approved by the Executive Director of OMB.
8. No funding for travelling outside Puerto Rico unless approved by the Secretary of Government.
9. No cellular phones or technological services will be provided
10. Reduction of energy consumption by 5% each year.
11. Reduction of potable water consumption by 5% each year, from FY2017 until FY2019, which shall reflect a 15% total reduction in the three years.
12. Reduction of 10% of Contracted services compared to expenses incurred in FY2015-2016 and maintain within that level unless previously approved by the Executive Director of OMB.

According to this Act, any agreement between PRASA and both UIA-AAA and HIEPAAA unionized personnel that has expired or expires during the active period of this law shall be extended until June 30, 2021 in terms of its non-economic clauses and those clauses not affected by Act 3-2017. As per Article 14 of Act 3-2017 those non-economic clauses that have a direct or non-direct economic impact on PRASA's operational budget, shall be suspended. Two explanatory letters from OMB, CC 144-17 and 145-17, were circulated clarifying Article 14 and stating that benefits and economic compensation for employees shall be maintained from the date of ratification of Act 66-2014.

Although these measures represent operational savings for PRASA, some of them affect PRASA's revenues, such as Measure 11 listed above. This measure requires that all agencies, instrumentalities, and public corporations under the executive branch reduce its potable water consumption by 5%, which

⁷ Refer to Table 3-4 for more detail.

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would in turn result in a reduction of revenues for PRASA. This Act also requires that PRASA comply with certain progress reporting requirements to the House of Representatives, the Senate of Puerto Rico, and the Office of the Governor of Puerto Rico. The report shall list all implemented measures and the results obtained. Stricter measures are stipulated in the later approved Act 26-2017 and discussed in further detail in the next section.

3.2.4.2 Act 26 of 2017 – Fiscal Plan Compliance Law

To assure compliance by the Government with the approved Fiscal Plan, Act 26-2017 was enacted. Act 26-2017 superseded all previous laws. This law covers several areas of the Government of Puerto Rico, including PRASA as listed below:

1. Marginal benefits standardization for all public service employees of the Government of Puerto Rico, including public corporations (Article 2.04 of Act 26-2017).
2. No temporary employment (derogation of Act 89-2016).
3. Revision to Mandatory Insurance Fee every two years (Amendment to Article 3 of Act 253-1995).
4. Additional Service Charge on Mandatory Vehicle Insurance (Amendment to Article 7 of Act 253-1995).
5. Transfer of remaining funds at the end of the FY of all government agencies, instrumentalities, and public corporations to the State General Fund.

Measure 1 in the list above standardized the marginal benefits of all government employees. Article 2.04 of Act 26-2017 affects the following marginal benefits:

- Vacation License: accumulation rate and maximum accumulation (depending on applicability of Act 8-2017: Human Resources of the Government of Puerto Rico Transformation and Administration Act)
- Sickness License: accumulation rate and maximum accumulation (depending on applicability of Act 8-2017: Human Resources of the Government of Puerto Rico Transformation and Administration Act)
- Maternity License
- Paternity License
- Breastfeeding Special License
- Unpaid Licenses
- Special Licenses
- Standardization of Holidays (15 holidays)
- Uniform Medical Insurance Employer Contribution (minimum of \$100 contribution)
- Only one bonus: Christmas bonus (\$600 per year)
- Overtime Compensation at a maximum of 1.5 times
- Vacations and Sickness Days Liquidation (no liquidation at the end of the year)

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This measure reduces operational costs in terms of payroll and benefits, specifically in the vacation, sickness, and overtime compensations, and Christmas Bonus.

Measures 3 and 4 as listed above may also have an impact on fleet operational cost, since they represent a potential increase in the payment of the mandatory vehicle insurance. The amount of increases are not known yet but are already approved by law. **Table 3-4** below compares and summarizes both Acts 3 and 26 of 2017 in terms of the effects these enacted laws have on PRASA.

Table 3-4. Impacts of Acts 3 and 26 of 2017 on PRASA

Category	Act 3-2017	Act 26-2017
Economic Benefits	<ul style="list-style-type: none"> • There will be no increase in economic benefits and no extraordinary monetary compensations as per Act 66-2014. Collective Agreements that have not expired to the date of approval of this law will be extended as stipulated on Article 8 of Act 66-2014. • Vacations accumulated in excess of 60 days shall be used within 6 months after the end of the natural year, otherwise the excess will be lost. Vacation accumulated days up to the date of approval of this law shall be retained by the unionized and non-unionized employee, but accumulated excess shall not be liquidated monetarily. • Sickness day accumulation in excess prior to the approval of this act and during the approval of this act will be frozen to the salary of June 30, 2014. Monetary liquidation will only be performed when the employee leaves public service. After approval of this law, accumulation of excess days by December 31st of each year shall be used by June 30th of the next year. After the latter excess accumulation balance will be lost. • Christmas bonus will be of \$600 each year for all employees of the Central Government and Public Corporations. • All public corporations shall suspend, during the effectiveness of this act, all non-economic clauses under the labor agreements that have a direct or 	<ul style="list-style-type: none"> • Marginal benefits will be the same for all employees of the Executive Branch, including all agencies, instrumentalities, and public corporations of the Government of Puerto Rico, except for the University of Puerto Rico. • Vacations shall be accumulated up to a maximum of 60 days at the end of each natural year. All employees will have the right to enjoy 15 days of vacation each natural year, for which no less than 10 days shall be enjoyed consecutively. If deemed necessary a public corporation shall concede vacations up to a maximum of 50 days in a year to those employees that have accumulated vacation days. • Accumulation of sickness days will be at a rate of 1.25 days per month of service for those employees contracted prior to Act 8-2017. For those contracted after Act 8-2017 the accumulation rate will be 1 day per month. Sickness days shall be accumulated up to a maximum of 90 days per natural year and no monetary liquidation is accepted. • The Christmas bonus will be of \$600 each year for all employees of the Central Government and Public Corporations.

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Category	Act 3-2017	Act 26-2017
	<p>indirect economic impact in the operation of the public corporation. Non-economic clauses with economic impact are defined under Act 66-2014.</p>	
<p>Negotiation of Collective Agreements</p>	<ul style="list-style-type: none"> Those agreements that expire before the approval of this act or that expire during the term of this act will only be extended in terms of non-economic clauses that are not affected by this act until June 30, 2021. At the end of the term of this law the labor unions that by July 1st, 2014 were represented in the Executive Branch of the Government will be able to negotiate new collective agreements. 	<ul style="list-style-type: none"> This law has supremacy over any collective agreement or contractual letter that interferes with the dispositions in this law.
<p>Employment Positions</p>	<ul style="list-style-type: none"> All vacant positions that were generated prior or during the effectiveness of this act will remain vacant until June 30, 2017. Vacant positions cannot be filled without the previous authorization of the OMB Director. No new career, regular, and transitory or irregular positions will be created or renewed, unless previously approved by the OMB Director. Appointed positions will be reduced by 20%. 	
<p>Operational Costs</p>	<ul style="list-style-type: none"> The use of public funds for travelling out of Puerto Rico is prohibited unless such travels are necessary for the adequate performance of such entity or that was previously approved by the Secretary of Government. No public funds will be used for the payment of cellphones or technological services. Energy consumption shall be reduced at least by 5% each year. The energy consumption of FY 2015-2016 shall be used as baseline for the calculation of the annual reduction. Potable Water Consumption shall be reduced by 5% each year. The potable water consumption of FY 2015-2016 	<ul style="list-style-type: none"> Mandatory Vehicle Insurance Fee will potentially increase, due to additional service fee and fee revision every two years. This will be reflected in the operation and maintenance costs of PRASA's fleet. All government instrumentalities, agencies and public corporations of the Executive Branch, except for the University of Puerto Rico, shall transfer a specific amount, as stipulated by the designated committee, from the surplus revenue at the end of each economic year to the State General Fund.

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Category	Act 3-2017	Act 26-2017
	shall be used as baseline for the calculation of the annual reduction.	
	<ul style="list-style-type: none"> Contract Agreements of Professional or Bought Services shall be reduced by at least 10% compared to FY 2015-2016. Contract Agreements of professional services of more than \$10,000 in the same FY shall be previously authorized by the Governor or a representative. 	
Purchase Costs	<ul style="list-style-type: none"> All purchase costs shall be reduced by 5% for FY 2016-2017. 	
Quarterly Report	<ul style="list-style-type: none"> All entities of the Executive Branch shall prepare a report that lists and details all the taken measures and the corresponding results. The first report shall be submitted 90 days after the approval of this act. 	

3.2.5 Training

PRASA continues to offer varied training programs to its employees to improve work management and productivity. Training topics range from technical-oriented seminars to conflict resolution and team building sessions. During FY2019, PRASA offered over 50,223 training hours to its employees; this represents an average of approximately 11 hours per trained employee for FY2019.

Overall, about 71% (3,254) of the total employees participated in training activities offered by PRASA during FY2019. PRASA continues to invest in personnel training to increase work ownership and productivity levels. Also, PRASA is reducing training contracts and preparing its own employees to handle those duties whenever possible. Furthermore, PRASA is working to establish a digital platform, using the free open source "Moodle" to incorporate trainings via internet. PRASA's training staff was targeting to incorporate about 11 courses to the digital platform by January 2019 and striving to have around 30 by Summer 2019, however, this was delayed for FY2020. Lastly, PRASA continues to support training and certification of its treatment plant operators, in compliance with requirements established by Regulatory Agencies. **Table 3-5** presents a summary of the number of operators by the type of license held.

Table 3-5. Operator Licensing FY2018

Facility	In Training	Type I	Type II	Type III	Type IV	Total
Water	50	20	44	84	254	452
Wastewater	12	3	8	24	92	139
Total	62	23	52	108	346	591

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3.3 Conclusions

The current organization continues to operate and manage the System, despite the difficult challenges it faced in FY2018 and FY2019. PRASA staff levels are under the Executive Management Team's established target level. However, the staffing mix is not yet optimal as many critical technical and operations positions are currently vacant. PRASA must align employees with required skill sets, either through recruitment or further workforce development, to fill technical and operator needs while maintaining optimal staffing levels. PRASA is implementing a digital training platform to help reduce training costs and allow for more efficient and timely training, which could further support workforce development. Also, PRASA should consider the impact of the employee retirement programs and workforce challenges on the island which will continue to affect not only its existing staff, but also their ability to recruit capable and experienced staff. PRASA continues to assess administrative and operational performance and implement organizational and policy changes focusing on customer service, System performance, and budget controls.

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4 CONDITION OF SYSTEM

4.1 Introduction

In FY2019, Arcadis assessed the condition and operation of PRASA's assets through an inspection program of selected facilities in the System to meet the following objectives: 1) to assess the current physical state of the facilities inspected; 2) to determine if the facilities are being operated and maintained in a manner to achieve their operating goals; and 3) to evaluate if PRASA's CIP is aligned with the System's identified needs. Given the significant reduction in capital and renewal and replacement investment over the past four years, Arcadis performed asset condition assessments of a selection of WTP and WWTP facilities that were highly impacted during the 2017 Hurricanes as per FY2018 Asset Condition Assessment Report (ACA Report), as well as a different sample of auxiliary facilities. Arcadis inspected facilities to assess the structural integrity and physical condition of structures and equipment; adequacy of operation and maintenance practices; as well as renewal and repair needs among other evaluation criteria. Arcadis also evaluated the compliance performance results for all PRASA WTPs and WWTPs for the period of January 1, 2018 through December 31, 2018. The facility inspections were performed between February 2019 and August of 2019. The next cycle of facility inspections will resume in FY2020 and will include PRASA's dams.

This section presents a summary of Arcadis's inspection results, findings and recommendations regarding PRASA's System based on the condition of the assets inspected during FY2019 and detailed in the FY2019 ACA Report.

4.2 Facility Inspections

A summary of the facilities inspected during 2019 is presented in **Table 4-1**. In total, 173 facility inspections were performed out of a total of 3,816 facilities that comprise the System, excluding active RWIs (141). Inspected facilities include: a number of WTPs and WWTPs, and a selection of wells, WPSs, WSTs and WWPSs. Dams were not included in this round of inspections because they were visited on February 2018 and included in the previous asset condition assessment report prepared by Arcadis. Approximately 31% and 39% of the WTP and WWTPs respectively, were inspected. Also, a small portion (about 3% in total) of the wells, water and wastewater pump stations and water storage tanks were inspected considering the lower risk impact these assets have on the System. It should be noted that no inspections were performed on the following assets: small dams and weirs, buried infrastructure, meters, ocean outfalls, buildings, land, and other ancillary facilities. Nevertheless, based on data provided by PRASA, a discussion of the buried infrastructure has been included in a later sub-section.

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Table 4-1. Percent of Assets Inspected by Asset Category

Asset Category	Total PRASA Facilities ¹	Inspections Performed	
		Quantity	Percent
Regulated Dams	8	0	0
Water Treatment Plants	113	35	31
Wastewater Treatment Plants	51	20	39
Wells	276	16	6
Water Pump Stations	977	32	3
Water Storage Tanks	1,552	40	3
Wastewater Pump Stations	839	30	4
Total	3,816	173	5

¹Data obtained from PRASA Geographical Information System (GIS), updated July 2018.

4.2.1 Inspections Methodology

Inspections were performed throughout PRASA's five Operational Regions: North, South, East, West, and Metro. **Table 4-2** shows the number of facilities inspected within each Region. It should be noted that the total number of inspections performed in the Metro Region is lower than those performed in the other Regions because it has fewer, but larger WTPs and WWTPs. Nevertheless, it was inspected in a manner consistent with the other Regions.

Table 4-2. Summary of Inspections by Region

Asset Category	East	Metro	North	South	West	Total
Water Treatment Plants	7	6	7	8	7	35
Wastewater Treatment Plants	5	3	6	3	3	20
Wells	0	0	6	4	6	16
Water Pump Stations	8	6	6	6	6	32
Water Storage Tanks	8	8	8	8	8	40
Wastewater Pump Stations	6	6	6	6	6	30
Total	34	29	39	35	36	173

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Following the same approach adopted by Arcadis in previous condition assessments, an attempt was made to obtain a random sampling of the wells, pump stations, and storage tanks (ancillary facilities) by inspecting a number of facilities within several specific Operational Areas across the island, rather than inspecting a uniform number of minor facilities within each Operational Area. As the specific assets to be inspected were not pre-determined, this approach provided some assurance that not only the best assets were inspected in each Operational Area. The Operational Areas visited were: Manatí and Arecibo (North Region), Ponce and Yauco (South Region), Caguas and Fajardo (East Region), Aguadilla and San Germán (West Region), and Guaynabo and San Juan (Metro Region). Since the Metro or East Regions did not have wells available, we visited additional wells at the North and West Regions.

Each facility was inspected using an inspection form developed by Arcadis, that included scoring criteria and criteria weighting customized for each specific asset category. Site visits were conducted in each facility. The purpose of the site visits was to determine the current state of repair and operation of the asset as influenced by age, historical maintenance and operating environment.

The evaluation criteria were chosen from the following list:

- Regulatory Compliance – degree to which the performance of the asset is in compliance with its permit limits and regulatory requirements.
- Operations / Process Control – degree to which asset condition and features allow it to be operated and controlled to meet its performance objectives.
- Equipment / Maintenance – assessment of the adequacy of the maintenance practices and the condition of the facility.
- Staffing / Training – assessment of the adequacy of facility staffing coverage and training.

Within each of the evaluation criteria, the asset inspected was assigned a numerical score between 0 and 3. An overall facility rating was then determined based on the calculation of a weighted average of the ratings for each criterion. For WTP and WWTP, a weighted average was used per equipment listing in the inspection form to account for the importance of critical equipment, then the average of each equipment rating was considered for the overall facility rating. The general interpretation of the numerical ratings is described below:

<u>Rating</u>	<u>Range</u>
• Good (Most of the criteria are adequately addressed)	2.5 – 3.0
• Adequate (Many of the criteria are adequately addressed)	1.5 – 2.4
• Poor (Many of the criteria are not adequately addressed)	0.5 – 1.4
• Unacceptable (Most of the criteria are not adequately addressed)	0.0 – 0.4

An overview of the results of the inspections for each asset category is discussed in the following section.

4.2.2 Inspection Results

According to the facilities inspections performed between February 2019 and August of 2019, an overall condition rating for each asset category was determined. The condition of each of the facilities varied

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from good to those requiring certain capital upgrades and/or operational/process control improvements. The inspection rankings and results per facility type are summarized in the following subsections.

4.2.2.1 Water Treatment Plants

PRASA operates 113 WTPs where it treats raw water to produce potable water for its customers. The island wide design production capacity of WTPs is approximately 621 MGD. The WTPs range in size from several thousand gallons per day up to 100 million gallons per day (MGD). For FY2019, PRASA reported a total water production of 542 MGD of which approximately 487 MGD came from water treatment plants.

A total of 35 WTPs (31% of total WTPs) were inspected as part of this assessment. Each assessment consisted of a site visit inspection and an interview with the operator, plant supervisor or designated personnel, and revision of available plant reports. Therefore, the information obtained was at least in part based on the understanding of the person that was being interviewed. **Table 4-3** presents the comparison of the average rating results of the facilities inspected by each category evaluated. The overall average rating of each evaluation criteria for 2008 through 2019 inspections is also provided. On average, the WTPs were rated as adequate with a score of 2.0. No WTPs were rated as Unacceptable or Poor in overall rating. Even though all WTPs were classified as Adequate, 16 of the 35 WTPs received a low-end rating that if not attended could deteriorate to a Poor rating.

Table 4-3. WTPs – Comparison of Average Inspections Results for 2008-2019

Criteria	2008	2009	2010	2012	2014	2015	2017	2019	Change 2019 vs. 2017
Regulatory Compliance	2.2	2.3	2.1	2.5	2.3	2.0	2.5	2.6	0.1
Operations/Process Control	2.2	2.5	2.6	2.7	2.2	2.2	1.9	1.6	-0.3
Equipment/Maintenance	2.1	2.3	2.3	2.3	2.4	2.1	1.8	1.7	-0.1
Staffing/Training	2.2	2.6	2.4	2.9	2.7	2.1	2.1	1.9	-0.2
Overall	2.2	2.4	2.3	2.6	2.3	2.1	2.1	2.0	-0.1

Although no facilities were rated as Poor or Unacceptable in terms of compliance, the overall rating of WTPs in this evaluation category increased slightly since the previous inspection. However, several compliance parameters had interim limits or only monitoring, which consequently did not adversely affect the compliance rating. One facility was rated as Poor, Ponce Nueva WTP (South Region) which has reported exceedances in all Safe Drinking Water Act (SDWA) parameters and dissolved oxygen, copper, and biological oxygen demand (BOD) for National Pollutant Discharge Elimination System (NPDES) parameters. The rest were rated as Good or Adequate. However, three facilities (9%) that were rated as Adequate should be closely monitored, since they received a score between 1.7 and 1.8 because of reported exceedances during the period of evaluation in SDWA parameters such as combined filter effluent (CFE) turbidity, Total trihalomethanes (TTHM) and Haloacetic acids (HAA); and, exceedances in dissolved oxygen, BOD, turbidity, residual chlorine, copper, among parameters under the NPDES permit. These facilities were Guaynabo-Los Filtros WTP, Sergio Cuevas WTP and Coto Laurel WTP.

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Operations/Process Control in the majority of WTPs inspected were adequate. However, seven facilities (20%) were rated as Poor and five (14%) were rated as Unacceptable. In general, the operations and process control rating decreased by 0.3 when compared to the FY2017 inspections. The common factors in these facilities are that lack of essential process control procedures and support documents. These facilities lacked or had outdated versions of O&M manuals, equipment manuals, emergency response plans (ERP), emergency numbers missing, among others. Process control strategies were not clearly communicated between plant staff making it difficult to obtain a good process control. In addition, jar tests were not being performed regularly or at all; of the 35 WTPs inspected, approximately 13 facilities (37%) were not performing jar tests. Also, almost all facilities lack potable water flow meter and a significant number lack chemical feed pumps calibration plans, proper security. Furthermore, at least 12 facilities (34%) had safety concerns due to existing conditions of the facility, one of its components or within the property limits.

Regarding the equipment/maintenance, out of the 35 facilities inspected, seven (20%) were rated as Poor and although rated as Adequate, 31 (89%) had a rating under 2.0 in terms of equipment and maintenance practices and should be closely monitored. The facilities rated as Poor in this category include: Hatillo-Camuy WTP, Negros Corozal WTP, Santa Isabel (Utuado) WTP, El Yunque WTP, Humacao WTP, Cayey Urbano WTP and Enrique Ortega-La Plata.

Pertaining to Staffing/Training, out of the facilities inspected, eight (23%) received a poor rating and, 23 (66%) received an adequate rating in this category mostly due to need of staffing. It has certainly been evident that qualified operators have migrated to the mainland as shown by the WTP's lack of licensed operators to cover the facilities operating hours effectively including vacations and absenteeism. Besides licensed operators, the findings shown multiple vacancies in STS operators, maintenance staff and operational service worker (TSOs for its Spanish acronym) and a few on lab personnel.

In comparison to the 2017 inspection results, the equipment/maintenance, operations/process control and staff/training criteria decreased significantly, and the regulatory compliance increased. This decline in ratings is likely a result of the lack of investment in capital improvements and R&R programs due to the fiscal situation and budget limitations. The greatest concern currently is the physical condition of the facilities, which continues to deteriorate year over year evidenced by the inspection scores.

PRASA is striving to invest in the training of its staff, focusing on achieving greater job understanding, productivity, and ownership. However, the ongoing fiscal situation has adversely affected PRASA's efforts with respect to staff development and the provision of adequate staff in certain facilities.

The facilities with the lowest overall score of the 35 WTPs inspected are summarized in **Table 4-4**. As shown below, all 16 (46%) facilities received a score in the lower end of the Adequate scoring range (below 2.0). Lastly, PRASA should address the shortcomings identified during inspections to improve the physical condition of these facilities and achieve/maintain continuous and consistent compliance.

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Table 4-4. FY2019 WTPs – Lowest Rated Facilities and Observations

WTP	2019 Score	Observations
Barrio Nuevo (Metro Region)	1.6	<p>During the evaluation period the facility compliance was rated as good. However, it had minor exceedance in turbidity for the SDWA parameters and several exceedances of Residual Cl and TDS in the NPDES parameters. According to the operator the water intake pumps have issues staying on. Without a good monitoring, the chlorine application continues application in the system causing excess of dosification. The facility operation and process control were rated as unacceptable. At the moment of the inspection, equipment manuals were not available, Emergency Response Plan (ERP) was not available, compliance testing records weren't received and maintained at the plant and compliance lab results weren't conveyed to the operators. Operators could not convey if WTP complies with CT after disinfection, lab equipment not adequate and chemicals/supplies no maintained on-site. Facility wasn't equipped with an emergency generator unit (damaged since hurricane). Also, no potable water meter and safety was not adequate for the operators in the sludge drying bed area. The facility equipment and maintenance were rated as barely adequate and the equipment condition portion was rated as poor. The intake pumps do not have a working generator. No inlet water turbidimeter, should have one for continuous monitoring. Sedimentation tube settlers need cleaning and may need replacement. Some of the structures are showing signs of concrete deterioration; this should be address. In addition, some pipelines and some pump motors have corrosion and should be painted and protected against corrosion. Moreover, at the moment of the inspection, it was noticed that there was not enough flow to operate filters adequately. Also, thickener needs maintenance; the dewatering system (SDBs) is out of service, as it needs structural repairs; and the EGU is out of service. Lastly, facility has corrective maintenance and procurement process challenges due to extended delays and no as-built drawings. Staffing and training are adequate for this facility and its operation hours. However, two operators in process of obtaining the proper license to operate the WTP (meet PRDOH requirements) and WTP compliance monitor remote operating not adequate.</p>
Aibonito-La Plata (East Region)	1.7	<p>During the evaluated period, the facility compliance was rated as good. There were no exceedances reported for drinking water parameters, however, for NPDES requirements there were minor lead, copper, turbidity, and BOD exceedances. Also, raw water has high pH and Iron/manganese, which to counter effect, operators apply hydrochloric acid and sodium permanganate, respectively. The facility operations and process control were rated as unacceptable. The O&M and equipment manuals were not available/used. Also, no jar test performed and need proper lab equipment. The facility lacks a working emergency power generator. There is no potable water meter, no additional security available, automatic entrance gate is not working, illumination is not adequate, and safety is inadequate as there are tripping/falling hazards. Finally, facility lacks proper communication tools. The facility equipment and maintenance were rated just about adequate. The plant lacks a functional emergency generator unit for WTP or raw water intake. Flocculation basin with excess solids. Sedimentation spyder system compressors out of service, deficient sludge removal. Multiple valve actuators are out of service and some corrosion on blowers. Distribution flow meter (CFE) not calibrated and pH monitoring unreliable. Thickener needs maintenance, EQ tank and centrifuge are out of service. Roof for the sludge drying beds not translucent and missing gates. Lastly, facility has corrective maintenance and procurement process challenges due to extended delays and lacks prioritization procedure for repairs. Facility personnel needs maintenance data and confined spaces training. Staffing needs at least two additional licensed operator to operate facility effectively.</p>

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WTP	2019 Score	Observations
Enrique Ortega-La Plata (Metro Region)	1.7	<p>During the evaluation period, the facility compliance was rated as adequate. There was significant non-compliance for THM and minor exceedances of HAA reported for SDWA requirements. There was also significant non-compliance for residual chlorine and lead and minor exceedances of turbidity and BOD for NPDES requirements. The WTP also deals with manganese and TOCs challenges which they address during operation and process control. The facility operations and process control were rated in the lower end of adequate. The operators perform the necessary sampling following the SOP's for adjustments to process. However, O&M manuals not updated, not all equipment manuals were available and no calibration plan for chemical feed pumps. Also, chlorine reagents were expired, no potable water meter at facility, no additional security available and illumination needs improvements. Finally, facility appearance and housekeeping inadequate as debris were laying around and several units in poor condition. The facility equipment and maintenance were rated as poor. Several equipment was out of service starting from the dam intake gates and raw water pumps; EGU at intake does not include pumps. Furthermore, coagulation and flocculation units are in poor condition and need improvements. Also, sedimentation concrete structure and controls deteriorated, spyder system out of service and tube settlers need replacement. Regarding filters, (9) were out of service and several observations made such as: media intermixed, uneven, mudballs; need media replacement; and no filter study has been performed in years. Each of those processes are essential in the treatment process, specifically, sedimentation and filters which are the core of the treatment process. Moreover, the STS system is in poor condition and needs improvements from holding tank (EQ), thickeners and dewatering units. Lastly, facility has corrective maintenance and procurement process challenges due to extended delays; maintenance shop housekeeping, tools and spare parts inventory are not adequate; no as-built drawings; and overall appearance inadequate. The training for this facility is adequate. Staffing has several needs to cover the facility operating hours effectively, including at least two licensed operators, two non-license operators, one STS operator, one heavy equipment operator, three TSOs and a laboratory technician, among others.</p>
Santa Isabel Utuado (North Region)	1.7	<p>During the evaluation period, the compliance was rated as good. There were no exceedances reported for drinking water parameters, however, there were minor residual chlorine exceedances of the NPDES requirements. The facility operations and process control were rated as unacceptable. There are no adjustments based on results of water quality changes are made. No plan for calibration of chemical pumps and no jar test are performed. Some of the piping is not colored adequately and there is no additional security. The EGU at the intermediate tank and the WTP are out of service. Also, some equipment debris laying around and access road needs improvement. The facility equipment and maintenance were rated as poor. No coagulant addition nor any type of mixing at sedimentation basin. At the time of the inspection, the tube settlers were observed in bad condition; need replacement. Also, effluent launders showings signs of corrosion and one of vacuum pumps and one blower of the membrane filtration system were out of service. STS & dewatering systems are out of service; waste is currently discharged directly into the outfall 001. The EGU is out of service. Lastly, facility has corrective maintenance and procurement process challenges due to extended delays and no as-built drawings. The training for this facility is adequate. Staffing needs at least two additional licensed operators and one TSO for effectively attending the facility's operating hours.</p>

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WTP	2019 Score	Observations
Negros Corozal (North Region)	1.7	<p>During the evaluation period, the facility compliance was rated as good. There were no exceedances reported for SDWA requirements, however there were several exceedances of NPDES requirements for dissolve oxygen, residual chlorine, and Copper. The facility operations and process control were rated as unacceptable. At the time of the inspection, the ERP was not available or used, the sampling data was not being used for process control and there were no adjustments made based on water quality changes. Also, jar tests are not being performed and stream current monitor is out of service. The emergency generator has been out of service since Hurricane María. The facility has no additional security, house/ground keeping, and maintenance are needed and the phone was out. Overall equipment and maintenance rating were poor. Critical operation components such as pumps at the water intake, intermediate tank, backwash, and distribution tank have only (1) pump in working order, no redundancy available. Facility, intake and intermediate generators are out of service since Hurricane María. Stream current monitor is installed but not yet programmed. Two out of the four flocculation slow mixers are out of service. No filter media study/replacement has been performed in years. STS and dewatering systems are out of service; sludge is being discharge directly into outfall 001. Lastly, facility has corrective maintenance and procurement process challenges due to extended delays and no as-built drawings. Facility personnel needs confined spaces training and update expired operator licenses. Staffing needs at least one licensed operators and one operational maintenance for the plant to operate at optimum level.</p>
Coto Laurel (South Region)	1.7	<p>During the evaluated period, the facility compliance was rated in the lower range of adequate. With regards to the SDWA parameters, the WTP experienced significant exceedances in TTHM and HAA. Also, BOD in NPDES parameters. According to the supervisor, TTHM and HAA exceedances were problems with organics loads coming from Toa Vaca lake. It was decided to eliminate Pre-Cl dosification, increase primary polymer application and add permanganate before in-line mixers. As to the NPDES parameters, the facility had minor exceedances in copper and BOD. BOD exceedances were caused by the increasing of primary polymer applied to comply with the TTHM and HAA but since there were exceedances in BOD, it was decided to change secondary polymer from (floc 2123 to LT22). According to the supervisor, after this change, the facility is complying with the parameters. The operation and process control of the WTP is rated as adequate. The operators perform the necessary sampling, following SOP'S for adjustments to process. However, at the moment of the visit, equipment manuals and compliance testing records were not available in the facility. Also, power failures have caused problems to the EGU, general safety was not adequate (illumination and crane conditions in the disinfection room) and the bathroom facility was found not adequate. In addition, facility needs additional security such as cameras or guards, needs general groundskeeping and facility fence needs repairs. The facility equipment and maintenance were rated in the lower range of adequate. Influent streaming current sensor not operating properly, Cerrillos Reservoir's In-line mixer needs maintenance and TOC analyzer is needed for the influent monitoring. Also, some structures such as the treatment modules have some cracks and filtrations, several pipelines need maintenance (paint) and the aeration system need maintenance. In addition, tube settlers at sedimentation units need to be replaced and structural repairs are required for the crane at disinfection building. Furthermore, WTP does not have distribution monitoring and sludge drying beds roof needs to be replaced. Lastly, facility has corrective maintenance and procurement process challenges due to extended delays, no as-built drawings, and overall appearance inadequate. Facility needs at least two licensed operators and one of the non-licensed operators must complete category 3 training and certification to cover the facility operating hours effectively.</p>

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WTP	2019 Score	Observations
Cayey Urbana (East Region)	1.8	<p>During the evaluated period, the facility compliance was rated as good. However, it had significant exceedance in turbidity for the SDWA parameters and for the NPDES parameter, it had significant non-compliance in residual chlorine and a minor exceedance in BOD. The facility operations and process control were rated as poor. The O&M manual not updated and equipment manuals were not available/used. also, emergency numbers not posted, jar test not performed and proper lab equipment missing. In addition, affection operations is the lack of automation due to defective equipment. There is no potable water meter nor control room; there is safety fall hazards due to several leaks; no additional security available; and need house/groundskeeping. The facility equipment and maintenance were rated as poor. La Central dam raw water intake is out of service (4 pumps), no EGU for raw water intake available and raw water pipe with significant corrosion. Another maintenance issue is the need to correct leaks through the facility. Also, some of the concrete structures like flocculation and sedimentation are showing signs of concrete deterioration and leak present at pre-Cl injection point. Sedimentation basin needs maintenance as well, as the filters actuators. In addition, facility lacks STS and dewatering system, thus currently discharging directly to point 001 and EGU diesel storage tank needs maintenance due to high corrosion. Lastly, facility has corrective maintenance and procurement process challenges due to extended delays and computerized maintenance management system not available. Training is adequate for this facility and its operation hours. However, staffing needs at least two additional licensed operator to operate facility effectively. Also, WTP compliance monitor remote was not operating adequately.</p>
EL Yunque (East Region)	1.8	<p>During the evaluated period, the facility compliance was rated as good. There were no exceedances reported for drinking water parameters, however, there were minor BOD exceedances of the NPDES requirements. The facility operations and process control were rated as poor. The WTP was severely impacted by Hurricane María. A major operational issue is that the facility lacks an emergency power generator. Also, facility lacks a potable water meter and adequate outdoor illumination. The perimeter fence condition is poor, scattered debris through the facility grounds, needs groundskeeping and some safety issues with corroded ladders and broken handrail. Finally, facility appearance not adequate. The facility equipment and maintenance were rated as poor. Half of the aeration system is out of service and there are safety issues with the handrails destroyed by the 2017 hurricanes. One rapid mixer and one slow mixer are out of service. The sedimentation basin equipment is defective and in poor condition and one of the filters is out. Also, filter media should be replaced, (1) IFE turbidimeter is out and (1) backwash pump is out of service. Disinfection scale system is antiquated and causes safety hazard to operators. Distribution flow meters are out, as well as (2) of the distribution pumps. The sludge treatment system is deficient as well as the old dewatering system. Currently using geotubes. Furthermore, the facility lacks a good standing emergency power generator and the discharge 001 flow meter is out of service. Lastly, there is no computerized maintenance management system available; facility has corrective maintenance and procurement process challenges due to extended delays; maintenance shop housekeeping, tools maintenance and spare parts inventory are inadequate; and facility appearance not adequate. The training for this facility is adequate. Staffing needs at least two additional licensed operators and two utility maintenance staff to cover the facility operating hours effectively.</p>

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WTP	2019 Score	Observations
Ponce Nueva (South Region)	1.8	<p>During the evaluation period, the facility compliance was rated as poor. There was significant non-compliance in CFE Turbidity, TOC, TTHM, HAA for SDWA requirements. Also, minor exceedances in dissolved oxygen, copper, and BOD for NPDES parameters. Also, polymer is applied to handle the high organics from the Toa Vaca raw water source. The facility operations and process control were rated as good. The operators perform the necessary sampling following the SOP's for adjustments to process. However, O&M manuals not updated, power failures cause generator problems, there is no potable water meter in the facility; bathrooms facility are not adequate and there is no additional security. Also, staff performs washing of treatment units to control algae. The facility equipment and maintenance were rated in the lower end of adequate. Influent monitoring should have turbidimeter for continuous monitoring and TOC analyzer was out. Aeration system structure showing signs of weathering, needs maintenance. Superpulsator system and auto sludge removal is out of service (tanks need to be cleaned manually). Also, (1) filter out, (1) backwash pump out and (2) distribution flow meters out. Holding tank is under capacity and no redundancy on pumps, which creates problems for handling the sludge. Also, thickeners need maintenance and vacuum pumps/system for vacuum assisted SDBs not working. Lastly, facility has corrective maintenance and procurement process challenges due to extended delays, no as-built drawings and overall appearance is not adequate. Facility training for staff was adequate. Staffing needs at least one licensed operators, three STS operators and two TSO to cover the facility operating hours effectively.</p>
Aguadilla (West Region)	1.8	<p>During the evaluation period, the facility was rated as adequate. There was significant non-compliance in THM and HAA and minor exceedance in TOC for SDWA parameters. No violations for NPDES parameters. The facility operations and process control were rated in the lower range of adequate. The operators perform the necessary sampling following the SOP's for adjustments to process. However, O&M manual and emergency response plan were not updated. Facility does not meet CT consistently, only half the time. Also, there is no potable water meter; no control room; some of the piping not colored adequately, needs maintenance; fence and gate are not in good conditions; illumination is not adequate; facility needs groundskeeping; and structures need better maintenance to have an adequate appearance. The facility equipment and maintenance were rated as barely adequate and the equipment condition component was rated as poor. Two raw water intake pump and (1) intake screening system; out of service. Also, (2) vacuum blowers for superpulsators were out of service and tube settlers need replacement. Furthermore, filters need improvements and (1) backwash pump from 1-6 filters was out; also, corrosion on other pumps and piping. Moreover, (1) distribution tank level sensor, (2) distribution flow meters and (1) holding tank sludge pump were out of service. Thickener tanks and dewatering system (SDBs) had been out of service for some time. Lastly, facility has corrective maintenance and procurement process challenges due to extended delays/funding and incomplete as-built drawings. Training for staff was adequate. Staffing needs at least two licensed operators and one TSO to cover the facility operating hours effectively.</p>

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WTP	2019 Score	Observations
Barranquitas Urbano (East Region)	1.9	<p>During the evaluated period, the facility compliance was rated as good. There were no exceedances reported for drinking water parameters, however, for NPDES requirements there were minor zinc exceedances and significant non-compliance in residual Cl. The facility operation and process control were rated as poor. Although the operators make the appropriate adjustments based on process control results and source water quality changes there were several deficiencies. The O&M and equipment manuals were not available/used, and emergency numbers not posted. Also, no jar test performed and need proper lab equipment. A major operational issue is the lack of automation due to defective equipment. No potable water meter available, general safety inadequate and no additional security available. Lastly, facility needs house/groundskeeping and the lack of staff causes operational challenges. The facility equipment and maintenance were rated as barely adequate and the equipment condition portion was rated as poor. Major equipment and maintenance issues include multiple valve actuators which are defective; stream current monitor is out of service; and screening at raw water intake and remote monitoring equipment are deficient. Also, excess sediments observed at flocculation and sedimentation basins. Backwash and distribution pumps lack of redundancy because of pumps being out, disinfection weight scales and dechlorination system heavily corroded and the automatic lamp cleaning system for the ultraviolet (UV) disinfection lamps is out of service. In addition, facility lacks STS and dewatering system, thus currently discharging directly to point 001. Lastly, facility has corrective maintenance and procurement process challenges due to extended delays and no as-built drawings. Training is adequate for this facility and its operation hours. However, staffing needs at least (2) additional licensed operator and (1) maintenance staff to operate facility effectively. Also, WTP compliance monitor remote operating not adequate. During the evaluated period the facility compliance was rated as good. There were no exceedances reported for drinking water parameters, however, for NPDES requirements there were minor zinc exceedances and significant non-compliance in residual Cl. The facility operation and process control were rated as poor. Although the operators make the appropriate adjustments based on process control results and source water quality changes there were several deficiencies. The O&M and equipment manuals were not available/used and emergency numbers not posted. Also, no jar test performed and need proper lab equipment. A major operational issue is the lack of automation due to defective equipment. No potable water meter available, general safety inadequate and no additional security available. Lastly, facility needs house/groundskeeping and the lack of staff causes operational challenges. The facility equipment and maintenance were rated as barely adequate and the equipment condition portion was rated as poor. Major equipment and maintenance issues include multiple valve actuators which are defective; stream current monitor is out of service; and screening at raw water intake and remote monitoring equipment are deficient. Also, excess sediments observed at flocculation and sedimentation basins. Backwash and distribution pumps lack of redundancy because of pumps being out, disinfection weight scales and dechlorination system heavily corroded and the automatic lamp cleaning system for the UV disinfection lamps is out of service. In addition, facility lacks STS and dewatering system, thus currently discharging directly to point 001. Lastly, facility has corrective maintenance and procurement process challenges due to extended delays and no as-built drawings. Training is adequate for this facility and its operation hours. However, staffing needs at least two additional licensed operator and one maintenance staff to operate facility effectively. Also, WTP compliance monitor remote operating not adequate.</p>
Guzmán Arriba (Metro Region)	1.9	<p>During the evaluation period, the facility compliance was rated as good. There were no exceedances in SDWA and a minor exceedance in copper in NPDES parameters. The facility operation and process control were rated as poor. Although the operators make the appropriate adjustments based on process control results and source water quality changes there were several deficiencies. The O&M and equipment manuals were not available/used onsite and no jar test are currently being performed. Also, the facility is not equipped with an emergency generator unit since Hurricane María, there is no potable water meter and the general safety is not adequate due to lack of illumination in few areas. The facility equipment and maintenance were rated in the lower range of adequate and the equipment condition portion was rated as barely adequate. WTP is processing and receiving more water than the design capacity. There is some equipment out of service such as: (1) screening system at intake, (2) emergency generator units, influent flow meter and the intermediate tank remote monitoring and control system. Distribution tanks and thickeners need concrete structure maintenance and protection and (1) of the weight scales is out of service; they are corroded as well. Lastly, facility has corrective maintenance challenges due to extended delays and no as-built drawings. The training and staffing are adequate for the facility operating hours. However, WTP compliance monitor remote operating not adequate.</p>

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WTP	2019 Score	Observations
Guaynabo-Los Filtros (Metro Region)	1.9	<p>During the evaluation period, the facility compliance was rated as adequate. There was significant non-compliance for TTHM and minor exceedances of turbidity and HAA reported for SDWA requirements. There were also several minor exceedances of dissolved oxygen, copper, turbidity, and biochemical oxygen demand and significant non-compliance in residual chlorine reported for NPDES requirements. The facility operations and process control were rated as adequate. The operators perform the necessary sampling following the SOP's for adjustments to process. However, the O&M manuals were not available, the equipment manuals were incomplete, and the emergency numbers were not posted. Furthermore, the facility does not have a potable water meter and some of the raw water intake pipes require labeling or adequate coloring. The general safety within the facility was also considered inadequate, even though they have a security guard. The facility equipment and maintenance were rated as adequate. However, several components of critical operation equipment were out of service including: (2) out of (8) slow mixers within the flocculation units; the equipment for sludge removal in the sedimentation basin; (3) out of (18) of the filter's IFE turbidimeters; the flow meter for monitoring from the distribution tank; (2) of the vacuum pumps for the SDBs; (1) of the recycling pumps is out of service; and one of the two EGUs has been out of service since Hurricane María. Notwithstanding, the working generator is capable of supplying power for the functional operation of the entire facility. Also, (3) out of (24) of the sludge drying bed valves were not opening correctly. Lastly, facility has corrective maintenance challenges due to lack of staff and extended delays, and no as-built drawings available. Facility personnel needs maintenance data training. Staffing needs at least two licensed operator and additional maintenance and/or utility personnel to cover the facility operating hours effectively.</p>
Las Delicias (North Region)	1.9	<p>During the evaluated period, the facility compliance was rated as good. However, it had minor violations for total coliforms in the SDWA parameters and for turbidity in the NPDES parameters. The facility operations and process control were rated as poor. The operators perform most of the necessary sampling following SOP's for adjustment to process. However, equipment manuals are not being used; O&M manuals and emergency response plan are outdated. Also, not performing jar tests and lab equipment not adequate. In addition, there is no potable water meter, the control room is out (operating manually) and no additional security available. There are safety issues due to access road condition and erosion near thickener. Finally, fence, illumination, and access road (inside WTP and dirt/pebble road towards WTP) need improvements. The facility equipment and maintenance were rated in the lower end of adequate and the equipment condition portion was barely adequate. One intake pump was out of service, providing no redundancy; and intake screening & EGU need maintenance/replacement. Also, influent flow meter and turbidimeter are out of service. Moreover, (1) of the pre-sedimentation mixers and the tank rake are out, no containment for polymer drums and the treatment modules slow mixers are out. Tube settlers seemed affected by sun (toasted) and should be evaluated. One of the sedimentation launders (perforated pipe) is out, as well as the intermediate turbidimeter and pH monitoring. In addition, (1) of the air scouring blowers is out, the gravity distribution flow meter is out and (1) of the distribution pumps is out. Thickener needs improvements, torque alarm and sludge removal system. Lastly, facility has corrective maintenance and procurement process challenges due to extended delays, lacks prioritization procedure for repairs and no as-built drawings available. Facility personnel needs maintenance data, confined spaces & hazwoper training. Staffing needs at least one licensed operator to cover the facility operating hours effectively and WTP compliance monitor remote operating not adequate.</p>
Guajataca (West Region)	1.9	<p>During the evaluated period, the facility compliance was rated as good. However, for the SDWA parameters, it had significant Non-Compliance of THM. Also, the operator mentioned issues with manganese since the 2017 hurricanes, for which they had to adjust to maintain within limits. The facility operations and process control were rated as poor. The operators perform the necessary sampling following the SOP's for adjustments to process. However, there is no calibration plan and the emergency generator has been out of service since the 2017 hurricanes. Also, there was no potable water meter and access roads, perimeter fence and illumination need improvements. Lastly, groundskeeping is needed and there was debris scattered within the facility. The facility equipment and maintenance were rated in the lower range of adequate. However, the raw water line was damaged during the 2017 hurricanes and there is a temporary force line to supply the WTP when levels are low. No EGU for intake force line. The thickener needs improvements; the geotubes should have roof and area should be landscaped. The WTP</p>

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WTP	2019 Score	Observations
Lajas (West Region)	1.9	<p>emergency generator has been out of service since the 2017 hurricanes. Lastly, facility has corrective maintenance and procurement process challenges due to extended delays and no as-built drawings. Staffing and training were adequate for the facility's operating hours.</p> <p>During the evaluation period, the facility compliance was rated as good. There were minor exceedances in THM and dissolved oxygen for SDWA and NPDES parameters, respectively. The facility operations and process control were rated as poor. Primarily because the emergency generator unit was out of service and the WTP currently does not have emergency power to run plant. Notwithstanding, the operators perform the necessary sampling following SOP's for adjustment to process. Staff performs jar tests and comply with most requirements within criteria except that there was no potable water meter available, equipment manuals were incomplete, and part of the fence is missing/needs repairs. The facility equipment and maintenance were rated in the lower range of adequate. There is no secondary containment on one of the secondary polymers; it should be provided. Also, the tube settlers on the sedimentation basins are deteriorated and should be replaced. The exhaust fan on the old disinfection building is out of service. Moreover, the emergency generator unit was out of service, the distribution flow meter was also out and similarly (1) distribution pump was out of service (although under repair). Lastly, facility has corrective maintenance challenges due to extended delays/funding and no as-built drawings. Staffing and training are adequate to comply with facility operational shifts.</p>

As mentioned, compliance results show that facilities are, in general, performing better with respect to compliance with limits of SDWA and effluent discharge parameters. However, results might be misleading since several NPDES parameters had interim limits or only monitoring and it is unknown whether the facility can meet the actual (permanent) limits when the interim/monitoring expires. It is safe to say that interim limits are likely to continue until PRASA can perform improvements, whether capital or non-capital, to improve the facilities equipment in order to enable them to meet compliance requirements.

Future regulations may require additional capital improvements to achieve higher levels of treatment at certain facilities depending on the characteristics of the source water and the distribution system, such as USEPA's residual chlorine, phosphorous (P) and nitrogen (N) recent criteria. At the issuance process for an updated NPDES permit, PRASA continues requesting interim limits, as determined by the Compliance Department, until the capital project for said facility is executed and completed. The project completion term would be subject to the Prioritization System. PRASA is vigilant of potential future regulations that may impact the System and the compliance of regulatory agencies requirements. One such case is the potential changes to the lead (Pb) and copper (Cu) limits.

The effects of these and other future regulations will not be known until PRASA performs data collection and studies to determine what, if any, additional capital improvements will be needed to comply with these future regulations (see Sections 6.5 and 6.6 for additional discussion on renegotiations with Regulatory Agencies, future regulations and other regulatory requirements). Notwithstanding the impact of future regulations, capital improvements are needed to modernize PRASA's infrastructure, prevent further deterioration, protect public health, safeguard environmental quality, allow continued economic development and help bring the System into compliance with all regulatory requirements.

4.2.2.2 Wastewater Treatment Plants

PRASA currently operates 51 WWTPs. The facilities range in size from several thousand gallons per day up to 80 MGD. The Island-wide design treatment capacity is approximately 402.8 MGD and the treated wastewater for FY2019 was approximately 209 MGD. In level of treatment, PRASA has seven plants designed to provide tertiary or advanced treatment, 38 plants are designed to provide secondary

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treatment, and the remaining six facilities (which account for 230 MGD of treatment capacity) provide primary treatment.

A total of 20 WWTPs (39% of total WWTPs) currently in operation were inspected in 2019. Each assessment consisted of a site visit inspection and an interview with the operator, plant supervisor or designated personnel. Thus, as with the WTPs, information was at least in part based on the understanding of the individual who was being interviewed. Also, for the equipment/maintenance criterion the inspections forms show scores distributed by type of processes, for ease of identification of deficiencies, as belonging to: Pretreatment; Primary Treatment; Secondary Treatment; Tertiary Treatment; Sludge Treatment and handling; Disinfection and discharge; and Miscellaneous (NPW, Back-up Power, Septage). **Table 4-5** presents the comparison of the average rating results of the facilities inspected by each category evaluated. The overall average rating of each evaluation criteria for 2008 through 2019 is also presented. Overall, WWTP facilities were rated as barely adequate with a score of 1.5. Of the facilities inspected, nine (45%) WWTP were rated as Poor in overall rating. Furthermore, 10 of the 11 WWTPs rated as Adequate in overall rating where in the lower end, close to being rated as Poor.

Table 4-5. WWTPs – Comparison of Average Inspection Results for 2008-2019

Criteria	2008	2009	2010	2012	2014	2015	2017	2019	Change 2019 vs. 2017
Regulatory Compliance	1.3 ¹	1.5 ¹	1.5 ²	1.4	1.5	1.8	2.3	1.3	-1.0
Operations/Process Control	2.4	2.4	2.3	2.4	2.3	2.0	1.9	1.8	-0.1
Equipment/Maintenance	2.2	2.2	2.4	2.2	2.3	2.0	1.8	1.6	-0.2
Staffing/Training	1.8	2.0	1.8	2.3	3.0	2.0	2.4	1.8	-0.6
Overall	1.9	2.0	2.0	2.0	2.0	1.9	2.0	1.5	-0.5

¹ Two WWTPs (Playa Santa and La Parguera) that discharge to underground injection were not evaluated under this criterion because they do not have an approved NPDES Permit.

² One WWTP (Playa Santa) that discharges to underground injection was not evaluated under this criterion because it does not have an approved NPDES Permit.

The WWTPs received an overall combined score of 1.3 in Regulatory Compliance, which falls in the Poor range. It is evident that the conditions of the equipment and having treatment units out of service has negatively impacted the compliance criterion. Despite some of the NPDES parameters having interim limits, the results show that there were still many exceedances. Of the 20 facilities that were inspected, five (25%) were rated as Unacceptable and four (20%) received a Poor rating under the regulatory compliance criterion. The rest were rated as adequate, except for Puerto Nuevo WWTP, which was rated as Good. The facilities that were rated as Unacceptable/Poor in this criterion include: Caguas WWTP, Aibonito WWTP, Dorado WWTP, Arecibo WWTP, San Germán WWTP, Ciales WWTP, Ciales WWTP, Utuado WWTP, Guayama WWTP and Isabela WWTP. In addition, six (30%) of the WWTPs that were rated as Adequate should be closely monitored, since they received a regulatory compliance score between 1.5 and 1.9 as a result of reported exceedances in fecal coliforms, total suspended solids (TSS), total nitrogen, phosphorous (P), dissolved oxygen (DO), ammonia (NH3), BOD and residual chlorine. Although PRASA intends to address requirements stipulated under the USEPA Consent Decree in order to achieve compliance objectives including new, more restrictive permit limits it is obvious that major improvements need to be implemented to achieve positive results. Therefore, PRASA must plan ahead

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and make the necessary improvements to meet current limits while considering that when interim limits are lifted, they have the necessary tools and conditions to meet the permanent limits.

Operations/Process Control in the majority of WWTPs inspected were Adequate, with a 1.8 overall rating. However, one (5%) received a rating of Unacceptable and four (20%) received a Poor rating under this criterion. These facilities were: Yabucoa WWTP (Unacceptable), Aibonito WWTP, Aguas Buenas WWTP, Barceloneta WWTP and Utuado WWTP. Process control continues to be a challenge in some of the facilities, even though the plant operators indicated that standard operating procedures and control strategies are followed. Some of the typical issues found during the inspections include: lack or outdated versions of O&M manuals, equipment manuals and emergency response plans; no calibration plan for chemical feed pumps; lab equipment or chemicals not adequate; not performing jar test; no control room; no additional security; lack of non-potable water (NPW) system; piping not colored/labelled appropriately; equipment debris and poor groundskeeping; fence, access road and illumination need improvements; presence of floating solids in effluent; and condition and overall appearance not adequate, among others. Also, Barceloneta WWTP and Puerto Nuevo WWTP have EGUs damaged, thus are without enough capacity to operate entire facility. Additionally, Humacao WWTP, Yabucoa WWTP and Utuado WWTP lack a proper EGU and are without one or using a provisional one. Finally, Dorado WWTP, located near residential/commercial areas, is without proper odor control measures.

The WWTPs generally range from Poor to Adequate condition with equipment/maintenance as the category of primary concern. The greatest current concern is the physical condition of the facilities, which continues to deteriorate due to slowdown and suspension of the CIP and significant reduction in R&R. Average rating for this criterion was 1.6, which is barely adequate. Of the 20 facilities that were inspected, seven facilities (35%) received a Poor rating under this criterion and the rest of the facilities were rated as Adequate. These facilities include: Aguas Buenas WWTP, Caguas WWTP, Aibonito WWTP, Dorado WWTP, Arecibo WWTP, Barceloneta WWTP and Maunabo WWTP. Moreover, despite the majority of the facilities being rated in the Adequate range (65%), at the time of inspection, most are on the lower end of the scoring range (score below 2.0) and, if unattended, could fall to Poor or Unacceptable rating in the future.

Pertaining to Staffing/Training, out of the facilities inspected, two (10%) facilities (Carolina WWTP & Guayama WWTP) were rated as Poor, one was rated as Good (Maunabo WWTP) and 17 (85%) facilities received an Adequate rating in this category. It has certainly been evident that qualified operators have migrated to the mainland as shown by the WWTP's lack of licensed operators to cover the facilities operating hours effectively including vacations and absenteeism. Besides licensed operators, the findings shown multiple vacancies in sludge dewatering operators, maintenance/housekeeping staff and TSOs. Although there were some non-licensed operators, the majority of operators are licensed as required by USEPA. PRASA mitigates the needs by having existing staff work overtime or by reducing shifts which, in turn, increases PRASA's overtime costs.

In comparison with the 2017 inspections results, the regulatory compliance and staffing significantly decreased, while the equipment/maintenance and operations/process control criteria scores decreased only slightly. The recent decrease in the regulatory compliance and equipment/maintenance criteria can be attributed in part to projects not being executed or being postponed in the last couple of years due to PRASA's and Puerto Rico's financial situation compounded by the impact of the 2017 Hurricanes. Likewise, PRASA staffing suffered significant losses of qualified personnel (particularly WWTP and STS

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operators), as well as other support staff after the 2017 Hurricanes and PRASA has not been able to fill those vacancies. Notwithstanding, PRASA is striving to invest in the training of its current and future staff, focusing on achieving greater job understanding, productivity, and ownership.

In summary of overall rating, of the 20 facilities inspected, nine (45%) received an overall Poor rating and 11 (55%) received an Adequate rating. Furthermore, 10 (91%) of the 11 WWTPs rated as Adequate in overall rating where in the lower end, close to being rated as Poor. The facilities with the lowest overall score of the 20 WWTPs inspected are summarized in **Table 4-6**. As shown below, all eight (35%) facilities received a score in the lower end of the adequate scoring range (below 2). PRASA should address the shortcomings identified during inspections to improve the physical condition of these facilities and achieve/maintain continuous and consistent compliance. These improvements may be related to new process equipment, process automation and or process control optimization.

Table 4-6. FY2019 WWTPs – Lowest Rated Facilities and Observations

WWTP	2019 Score	Observations
Aibonito (East Region)	0.9	The facility compliance was rated as unacceptable. There were significant exceedances of fecal coliform and several in TSS, BOD and an event in NH3. According to the operators, these exceedances could be because there were process equipment units out of service. Currently, the plant has no redundancy and is operating around half of its capacity. The facility operation and process control were rated as poor. During the inspections, the O&M manual was not available in the facility because it's under revision; equipment manuals were damage by the 2017 Hurricane and have not been restored; ERP was not updated; and lab equipment was not maintained adequately. In addition, facility lacks a calibration plan for the chemical pumps and no jar test are performed. Also, there is no control room, general safety and restrooms were not adequate, additional security is needed and telephone service should be restored. Lastly, the facility needs housekeeping, equipment debris around and general appearance is deficient. The facility equipment and maintenance were rated as poor. There were several units out of service: the mechanical screen, (1) primary clarifier, (1) secondary clarifier, (1) Bio filter, all the sand filters units and one of the compressors. Also, the flow meter is out of service and there is heavy corrosion visible in several of the equipment. Facility has corrective maintenance and procurement process challenges due to extended delays. Lastly, facility's appearance is not adequate and according to the manager the facility needs a new Bobcat to work in sludge drying beds. Training of the facility is adequate. However, the facility needs another supervisor, an "at large" licensed operator and two wastewater workers (TA, by its Spanish acronym) staff.
Dorado (North Region)	1.0	During the evaluation period, the facility compliance was rated as unacceptable. It had several parameters that do not comply with the limits. Several violations to fecal coliforms and DO parameters, as well as some exceedances in TSS, BOD and total nitrogen. It is suspected that having the RBC treatment train, nutrient removal tank and UV system out of service contributed to most of the exceedances. The operations and process control of the WTP was rated in the lower end of adequate. The operators perform the necessary sampling to adjust the process. O&M Manuals and ERP not updated. SDS not visible. Facility has no odor controls. Sufficient control parameters are measured and used for process controls. Lab chemicals are not stored properly, and lab location is not adequate. No jar test performed, no equipment. Unstable grounds unsafe. Damaged to fences and some debris laying around affecting the facility appearance. Facility has adequate emergency power but no redundancy. The overall condition of the equipment/maintenance of the facility was rated as poor. Most of the major equipment has some type of issue. There is just one part of the pretreatment system working (one mechanical screen), conveyor is out of service as well as the degritters. Anaerobic Tank for removal of nutrients is out of service, affecting nitrogen parameters. Lift station local controls are deteriorated, and one pump is missing, although the affluent can be handled by one pump. RBC system is currently out of service. One floating aerator in each of the biological reactor units of the A-A treatment train are out of service. Disc Filters are out of service. Also, the mixer (aerator) of sludge holding tank is out of service. Only one Belt Filter Press which provides no redundancy when damage. Septage pumps out of service,

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WWTP	2019 Score	Observations
		currently not receiving. No odor control system and foul odors are affecting nearby residents/commerce. No procedure to prioritize repairs and there are corrective maintenance and procurement process challenges. No As-built drawings available. Overall appearance not adequate. Training is adequate for this facility. Need at least two licensed operators and one "at large" to cover the facility operating hours effectively. Also, it needs an additional sludge dewatering operator.
Caguas (East Region)	1.1	During the evaluation period, the facility compliance was rated as unacceptable. There were continuous non-compliances of BOD and Residual Chlorine, also phosphorous. BOD violations could be because there several sludge removal equipment out of service such as primary clarifier tanks, secondary clarifier tank and dewatering system. Residual Cl violations could be lack of adjustment of dechlorination or monitoring. The operations and process control of the WTP was rated as adequate. The operators perform the necessary sampling to make adjustment to the process. Laboratory equipment and calibration was rated as good. However, O&M Manual is not updated. Emergency response plan is not updated. Not performing Jar tests. There is no control room and illumination is not adequate. Plant has 24/7 security and odor control, although some units are out. Lastly, there is a significant amount of debris, equipment, and the sort, laying around thus affecting the facility appearance. The overall condition of the equipment/maintenance of the facility was rated as poor mainly due to the poor equipment condition. Most of the major equipment of primary and secondary treatment has some type of issues. Two of the three mechanical screens are out of service, as well as the extractors. Three influent pumps out. There are no primary clarifier tanks working. The tank's domes for odor control were damaged during the hurricanes and have not been restored. The BNR has several components non-operational, including (3) blowers for the aerobic stages. Two of the four secondary clarifier scrapers are not working. One filter out. From the dewatering treatment, only the centrifuge is working; the sludge holding tank, pumps, belt filter press are out along with other components. Some equipment, particularly pumps do not have redundancy. Some of the odor control towers need repairs. Some equipment is controlled manually since the control panels are not working correctly. Septage not in use and two of the four NPW pumps out of service. Training is adequate for this facility. Need at least two licensed operators, one TA and another operator to cover the sludge dewatering operations to efficiently comply with the shifts.
Arecibo (North Region)	1.2	During the evaluation period, the facility compliance was rated as unacceptable. It had major exceedances of fecal coliforms and several TSS violations. These exceedances could be because pretreatment system is out of service or could be indicative of a need for secondary treatment. The fecal coliform parameter violations have been observed in previous inspections. The facility operations and process control were rated as adequate. The operators perform the necessary sampling following SOP's for adjustment to process. However, equipment manuals are not available or being used and the ERP is outdated. There is no calibration plan for chemical feed pumps and there was some trace of solids at effluent. In addition. The facility does not have a control room and its operation with several major equipment in bad conditions. WWTP has adequate emergency power for entire plant. The facility equipment and maintenance were rated as poor. Several equipment was in bad conditions. One mechanical screen and two of the three influent pumps are out of service. Grit from screens has to be removed by hand (extra work). No grit removal as entire degritter system is out of service and screen spacing is too big to hold rags, etc. Primary Clarifier underground structure as well as the influent building structure have exposed rebars and damaged concrete and spalling. One of the thickener tanks is out of service and the other one working as a holding tank, not serving their intended design purpose. Also, one of the BFPs is out and both have high corrosion, (1) sludge pump and grinder are out. Most building structures in bad shape and pipelines in every unit with high corrosion. Septic tank is not used (damaged), when septage is receive it is connected to thickeners. Lastly, there are corrective maintenance and procurement process challenges, there is no procedure for prioritizing repairs and As-built drawings were damaged by hurricanes. Training is adequate for this facility. Need at least another supervisor and one TA to cover the facility operating hours effectively. Also, it needs additional security guards to cover the 2pm-10pm and the 10pm-6am shifts.
Guayama (South Region)	1.3	During the evaluation period, the facility compliance was rated as poor. The WWTP had several exceedances on TSS, dissolved oxygen, BOD and fecal coliform. According to the manager and operators, these exceedances could be due to problems in the primary sludge

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WWTP	2019 Score	Observations
		<p>pipelines. Pumps were not operated adequately. Mechanical bar screens are out of service since hurricane; Problems with bio filters mechanisms; RAS pumps were operating with problems due to accumulation of sludge in secondary tanks. These tanks are operating as a holding tank, not as a secondary clarifier. Degritter tank and grit washers were not operating adequately due to the amount of solids. The facility operation and process control were rated as adequate. The operators perform the necessary sampling, following SOP's, for adjustment to process. The emergency generator provides power to the entire plant. However, missing some equipment manuals and O&M and ERP manuals need update. Facility lacks control room and does not have water flow meter. Some of the piping is not colored adequately. Fence, gates, and illumination are not in good conditions since hurricane. Ladies bathroom needs a shower for operators. Lastly, overall appearance not adequate. The facility equipment and maintenance were rated as barely adequate. However, the equipment condition component was rated as poor. Several equipment were not operating or in bad condition due to high corrosion: both mechanical bar screens; (3) lift pumps and (1) sump pump; (1) bio filter; (1) secondary clarifier, in addition to the other functioning as holding tank; (1) NPW pump; (1) septage screening system; and (1) anaerobic digester are out of service. In addition, the 2017 Hurricanes damaged the wall/roof protection to disinfection equipment. WWTP needs significant repairs. The staff needs confined spaces training and facility needs TA staff and a supervisor to effectively comply with the facility operation hours.</p>
Yabucoa (East Region)	1.4	<p>The facility compliance was rated as adequate. There were some exceedances of TSS and fecal coliforms and a nitrates violation. According to the manager these exceedances could be due to the state of the equipment, specifically screening & pretreatment system. The operation and process control of the facility was rated as unacceptable. The facility is missing the equipment manuals and the O&M manual and ERP manual are outdated. The package plant weirs had trace of solids at the discharge. According to the operator, blowers were not operating when he entered the shift, damaging the plant process and effluent water quality. Facility is without an emergency generator, currently using temporary one. Analysis are done off-site, taken to the Humacao WWTP. Facility lacks potable water meter and control room. Facility has a deteriorated appearance and needs severe housekeeping and removal old useless equipment. The facility equipment and maintenance were rated as barely adequate. However, the equipment condition component was rated as poor. Facility needs to improve its pretreatment, as there is no screening, comminutors and degritters are out of service. Influent building structure needs rehabilitation due to cracks and deteriorated appearance. Other structures are affected as well and need maintenance. One of the lift pumps is out of service and dry pit ventilation needs improvement. One of the geotubes and the emergency generator unit (EGU) are damaged. Facility has provisional EGU. Old plant should be demolished and removed, as well as the abandoned equipment like the BFP. Overall appearance of facility is poor. Training is adequate for the operation of this facility and its operating hours. Need at least one "at large" licensed operator and one TA for effectively attending the facility's operating hours.</p>
Utua (North Region)	1.4	<p>During the evaluation period, the facility compliance was rated as unacceptable. There were significant exceedances of fecal coliforms, plus several on TSS and an ammonia event. According to the operators and supervisor, fecal coliforms violations could be because the comminutors were out of service and the decanters in SBR were operating with problems. The facility operation and control process were rated as poor. The operators perform the necessary sampling following the SOPs, for adjustment in process. However, the facility is not equipped with an adequate EGU (out of service since hurricane). O&M and ERP manuals are outdated. In addition, facility should have restroom for both men and women, currently only one (unisex). Also, access road, fence and gate are not in good conditions since hurricane and facility needs landscaping. Current influent flow is below half the capacity. The facility equipment and maintenance were rated as adequate. Most of the equipment is in good conditions except for: (1) lift station pump, (2) decanters in SBR and (1) filter unit out of service. Most importantly, the facility lacks a working EGU to continue operations when power is out. According to the operators, UV system supposed to have two pumps for cleaning the system. These pumps are not currently installed, and it is urgent for the elimination of solids in the lamps of the system. Lastly, there are corrective maintenance challenges (delays). Training of the facility is adequate. However, the facility needs at least another licensed operator and a TA staff.</p>

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WWTP	2019 Score	Observations
Ciales (North Region)	1.4	<p>During the evaluation period, the facility compliance was rated as poor. There were significant exceedances in parameters of TSS and BOD. These exceedances could have resulted because there was only one train of biological nutrient reactor operating; digester tanks, and both dewatering systems were out of service. The operations and process control of the WTP was rated as adequate. The operators perform the necessary sampling, following SOP's for adjustments. No control room, O&M manual and ERP updates were lost in the hurricane, currently older (outdated) versions available. The WWTP has adequate emergency power. However, facility doesn't have NPW system, water meter and backflow preventer since hurricane. Also, it has a broken fence caused by a fallen tree and problems with illumination. No jar test performed, and facility lacks the equipment to perform it. No additional security available and access roads need improvement. The overall condition of the equipment/maintenance of the facility was rated as barely adequate, however the equipment condition component was poor. WWTP is operating below half of design capacity. There is (1) drum screen out of service; (1) BNR train out of service, including (2) floating mixers and (1) IMLR; Broken diffusers at aeration tanks and digester; (1) contact chamber operating with problems; (1) secondary clarifier out of service; NPW system out of service; and both pre-treatment (off-site) electrical grinders (comminutors) out of service. The entire dewatering system is out of service, the BFP and the SDBs, thus having to haul solids to other WWTPs. Training is adequate for facility. However, additional staffing (operators and TA) is required to comply with the facility operation hours.</p>
San Germán (South Region)	1.4	<p>During the evaluation period, the facility compliance was rated as unacceptable. There were significant exceedances in parameters such as TSS, NH3, phosphorous and residual Cl. Also, in total nitrogen prior to the interim limit and an event in DO. The exceedances of residual Cl were unknown since in this plant, chlorine is not applied at any point of the process. According to the manager, an investigation was conducted, but the problem was not found. Dechlorination system is planned to be added during the process to comply with the objectives. In addition, there is not an adequate equipment to measure the residual cl since the limit of permit is too low (0.011 mg/L) for the actual equipment. The facility operations and process control were rated as good. The operators perform the necessary sampling, following SOP's for adjustment in process. Currently, plant operates at a quarter of the design capacity, which creates problems for equipment maintenance and operations. Operations manual and emergency response plan are not updated. The WWTP has an adequate emergency power for entire plant. There is no control room and some old containers (polymer) should be removed. The facility equipment and maintenance were rated as adequate. However, the degritter system is not working, grit washers have high corrosion, ventilation system for lift pump station is not working (confined area). Two of the variable frequency drives (VFD) at the lift station are out of service. One BFP is out of service, but the WWTP has spare sludge drying beds. One secondary clarifier is out of service due to transmission. In addition, new mixing system for anaerobic/anoxic stages in the secondary treatment is not working correctly and four of the oxidation ditch tank rotors have damaged blades. Lastly, one of the blowers providing air for mixing at the sludge holding tank is out of service. Training is good for the operation of this facility and its operating hours. Need at least one licensed operator and a dewatering operator for effectively attending the facility's operating hours.</p>
Isabela (West Region)	1.5	<p>During the evaluation period, the facility compliance was rated as unacceptable. There were significant exceedances of BOD, TSS, fecal coliforms and Residual Cl. These exceedances could be because both comminutors were out of service, there were several events of heavy rains and the manual screen was too small for the influent pit causing water and excess of solids to pass over the screen. Also, there may be poor aeration in the treatment. (Note: The WWTP was not operating during inspection visit). The facility operations and process control were rated as good. The operators perform the necessary sampling following the SOPs for adjustment in process. The emergency generator provides power to the entire plant. Standardized files were very organized. No control room, some illumination was missing and facility needs some landscaping. The facility equipment and maintenance were rated in the lower end of adequate. However, the equipment criteria were barely adequate. The influent pit needs modifications for a higher flow capacity and better screening system. Both comminutors are out of service. During the inspection, it was observed that biological reactors (BR) and aerated digester tank were full of floating solids. Also, several of the floating aerators of the BR were out of service as well as the VFD control. There were two aerated</p>

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WWTP	2019 Score	Observations
		<p>digesters out of service and one mixing system. There was (1) secondary clarifier with high corrosion under repairs and the septic tanks area was overflowed. The sludge drying beds don't have a roof and corrosion on EGU was visible. Training is good for the operation of this facility and its operating hours. Need at least one licensed operator for effectively attending the facility's operating hours.</p>
Aguas Buenas (East Region)	1.6	<p>During the evaluation period, the facility compliance was rated as adequate. However, it had several parameters with interim limits or monitoring only. Several exceedances in residual chlorine and total suspended solids and one violation on phosphorous. The operations and process control of the WTP was rated as poor. The operator performs the necessary sampling to adjust the process. O&M manuals and ERP not updated. Equipment manuals incomplete. No jar tests being performed. Lab location not adequate, it needs relocation and chemicals storage needs door. No potable water meter, control room nor additional security. Access road needs improvement, too tight. Facility needs general maintenance and repairs to fence and illumination. The overall condition of the equipment/maintenance of the WTP was rated as poor. Half of the facility is out of service (Package Plant A). Pretreatment area with structural cracks and deterioration. Degritter unit out of service and comminutor with no redundancy. One pump out of service and corrosion visible. Ventilation not adequate. No redundancy on dosing pumps for coagulation at clarifier, dewatering and dechlorination. Also, dechlorination chemical storage not clean. Fuel storage for EGU with corrosion. Effluent area of discharge needs maintenance. Corrosion on NPW system. Delays in procurement process and as-built drawings are not legible and breaking apart. Overall appearance not adequate. Training is adequate for this facility. Need at least two licensed operators to cover the facility operating hours effectively.</p>
Maunabo (South Region)	1.7	<p>During the evaluation period, the facility compliance was rated as barely adequate. There were several exceedances of BOD, residual Cl, TSS, phosphorous and total nitrogen. According to the manager, during this period the Residual Cl permit limit was modified to one more stringent and the facility was not notified on time; also, several equipment was out of service or were operating with problems. The facility operation and process control were rated as good. The operators perform the necessary sampling to adjust the process. However, no control room and no security available in the facility. Additionally, the fence was damaged during the hurricanes and needs repairs, exacerbating security issue. ERP is not updated. Plant operates around half of design capacity, which could create process control/operational issues. Emergency generator has the capacity for entire plant. The facility equipment and maintenance were rated as poor. There were significant equipment out of service such as (1) influent pump, the entire grit removal system, (1) RBC unit, (1) BNR mixer, (1) secondary clarifier, Disk filters, UV system and (1) pump for sludge removal at Thickener. Furthermore, facility has only one dewatering unit, no redundancy; if damaged, trucks must collect the sludge incurring in added costs. Lastly, operating with low flow can create process control and operation issues. The staffing and training are adequate for the operation of this facility and its operating hours.</p>
Barceloneta (North Region)	1.7	<p>During the evaluation period, the facility compliance was rated as adequate. There were some exceedances of parameters in TSS and BOD. These exceedances could be because degritter equipment, primary clarifiers and dewatering system are out of service since Hurricane María. A provisional centrifuge was added to the system but does not have the capacity for the total solids produced at the facility. The operations and process control of the WTP was rated as poor. The operators perform the necessary sampling, following SOP's for adjustments. However, EGU is not adequate for the facility, as one unit is out of service and facility needs all three units to operate entire plant. Also, the transfer switch automatic function does not work, currently manual, and the EGU equipment in general looks deteriorated. O&M and ERP manuals are outdated. There is no potable water meter nor control room at facility and some of the piping is not colored adequately. Lastly, the illumination needs improvements. The facility equipment and maintenance were rated as poor. Mechanical screens chains are deteriorated and (1) unit is out of service, two lift pumps are out, there is no grit removal equipment (grit washers, grit pumps, conveyance system) and both primary clarifiers are out of service (currently being bypassed). Also, (1) secondary clarifier is deteriorated; four out of the five blowers for aeration system for holding tank and biological reactors are out of service; one of the digester blowers is also out; one of the gravity belts is out; and there is not an adequate dewatering system for the facility, as the provisional centrifuge is inadequate. Furthermore, backup power (EGUs) are in bad conditions and</p>

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WWTP	2019 Score	Observations
		<p>currently do not have enough capacity to run entire plant; (1) unit out of service, need all three. Lastly, overall appearance is inadequate. Training is adequate for the WWTP. Need at least two licensed operators (currently two in training) and three TAs to cover the facility operating hours effectively. Also, it needs an additional sludge dewatering operator.</p>
<p>Bayamón (Metro Region)</p>	<p>1.7</p>	<p>During the evaluation period, the facility compliance was rated as adequate. However, several parameters exceedances in fecal coliform, TSS and residual Cl. The supervisor indicated that the dewatering system, clarifier tanks and screening system were out of service or working in bad conditions during this period and attributed these non-compliances to solid overload at the thickener tank operation. The facility operation and process control were rated as adequate. The operators perform the necessary sampling, following SOP's for adjustment to process. The emergency generator has capacity to operate entire plant. However, WWTP lab needs jar test and cleaning equipment upgrade. Also, there is no potable water meter nor control room and there is equipment debris that needs removal. Finally, access roads, fence (including gate) and illumination need improvement. Overall, the facility equipment and maintenance were rated as adequate. However, the equipment component was barely adequate. The influent wet pit needs to be repaired, one mechanical screen and two degritter units are out of service, and one lift pump is out as well. Also, the following deficiencies were observed: primary clarifiers concrete structure has cracks and two out of the six units are out; the traveling bridges in primary clarifiers with heavy corrosion, as well as the weirs and pipelines; two sludge pumps and a grinder out of service; several blowers out of service; and a thickener unit is out of service and hasn't worked for years. Similarly, the control panel room from the dewatering system is in bad condition and electrical equipment located in a room that floods. Likewise, one of the belt filter press is out of service as well as one of the sludge pumps and one of the effluent vertical pumps. Also, the effluent pump station has structure cracks and its control panel is in bad condition. Lastly, one of the NPW pumps is out and there are corrective maintenance (delays) and procurement process challenges. The training is adequate for this facility but need to complete the programmed hazwoper training. Staffing needs at least a licensed operator and a TA for effectively attending the facility's operating hours.</p>
<p>San Sebastián Nueva (West Region)</p>	<p>1.7</p>	<p>During the evaluation period, the facility compliance was rated in the lower end of adequate. There were several exceedances of TSS and fecal coliform. As informed by supervisor, sludge and scum pumps from clarifier tanks were out of service. After the repairs, due to the amount of scum and sludge accumulated, pipelines were damaged (scum pipe from primary clarifiers and sludge pipeline from secondary clarifiers); sludge pumps from clarifier tank were replaced one year after hurricane. Also, the facility is in a flood zone. The facility operation and process control were rated as adequate. The operators perform the necessary sampling, following SOPs for adjustment to process. Several equipment manuals are missing. O&M and ERP manuals not updated, and emergency numbers not posted. The facility has adequate EGU for the capacity of the plant. There is no NPW system and no control room in the WWTP. Some debris laying around and facility appearance a bit deteriorated. The facility equipment and maintenance were rated in the lower end of adequate. The comminutor in the pre-treatment and the degritter system were out of service. A lift pump was out of service. The primary and secondary clarifier were working as a holding tanks due to problems with pipelines of sludge and scum distribution; green grime floating in tanks. Additional one unit of the secondary clarifiers was out. The exhaust fan in the disinfection building was out, needs replacement. The motor control center (MCC) of WWTP equipment is very old and needs to be replaced. EGU appears deteriorated. Trainings are adequate for the facility operation. However, at least two licensed operators and one supervisor are needed to effectively comply with the facility operation hours.</p>
<p>Toa Alta (North Region)</p>	<p>1.8</p>	<p>During the evaluation period, the facility compliance was rated as barely adequate. Several parameter exceedances in BOD and fecal coliform present during the evaluation period. These could be due to raining events, degritter system being out of service and/or package plant operational problems. The facility operation and process control were rated as adequate. The operators perform the necessary sampling to make adjustment to the process. However, some equipment manuals were not available, and ERP not updated; Plant does not have NPW system nor water meter; As-built drawings not available during the inspection; and there is no control room nor security in the facility. The facility equipment and maintenance was rated in the lower end of adequate. There is only one package plant, so there is no redundancy. The entire degritter system is out of service. Extractor for lift station</p>

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WWTP	2019 Score	Observations
		<p>missing. One blower was out of service. One geotube was missing. SDBs roof needs maintenance or replacement. Only (1) emergency generator unit, no redundancy if its damaged. No NPW system available. Dechlorination system should have roof. Septage station is not in use, so it should be eliminated. Facility staff operate one shift only. Additional licensed operators and maintenance staff are necessary to effectively comply with the facility operating hours. Sometimes supervisor must operate the plant due to lack of personnel. The training is adequate for the operation of the facility.</p>
<p>Carolina (Metro Region)</p>	<p>1.8</p>	<p>During the evaluation period, the facility compliance was rated as adequate. However, the facility had some exceedances in fecal coliforms, total suspended solids and BOD. This could be due to some of the sludge removal and sludge treatment equipment being out of service. The facility operations and process control were rated as adequate. The operators perform the necessary sampling, following SOP's, for adjustments in process. However, effluent had a bad appearance and some floating sediments were present. In addition, the O&M manual is outdated, compliance lab results are not being passed down to operators, facility lacks chemical feed pump calibration plan and there is no potable water meter. Also, there is no control room, some piping is not colored adequately, illumination is inadequate and there are some equipment debris laying around facility. Currently, plant operates at around a little over half of the design capacity and WWTP has adequate emergency power for the entire plant. The facility equipment and maintenance were rated as barely adequate. Several of the process equipment has been damaged since the 2017 Hurricanes. One of the pista grit units is out of service, meaning some of the influent flow is not going thru the grit removal process as it is being bypass through the old degritter channels straight to the distribution chamber. The primary clarifiers (Traveling bridge type) are in poor conditions, high level of corrosion, damaged control panels and some of the traveling bridge and scrappers are misaligned; some of the telescopic valves are clogged. Sludge pumps should consider grinders. Sludge holding tank mixer system is damaged, sludge sensor not calibrated and (1) sludge pump is out. Sludge holding tank system control room with inadequate ventilation. Also, one belt filter press is damaged and one of the alarms in the disinfection room has malfunctioned. Currently under planning to replace gas chlorine disinfection system to liquid chlorine disinfection system. Lastly, there are corrective maintenance (delays) and procurement process challenges and equipment debris should be disposed of. Staff needs confined space training. Need at least one licensed operator and another sludge dewatering operator for effectively attending the facility's operating hours and colleagues' vacations.</p>
<p>Humacao (East Region)</p>	<p>1.9</p>	<p>The facility compliance was rated as adequate. However, there were some exceedances of BOD, TSS and an event with fecal coliforms. These exceedances could be due to several equipment being out of service. The facility operation and process control were rated as adequate. Operators make necessary adjustment following SOPs. However, during the inspection period, O&M manual and emergency response plan were not updated; No control room at facility; Substantial amount of solids were observed in effluent discharge due to tank cleaning; some equipment/materials debris laying around; and facility currently has a provisional (rental) EGU since after the 2017 Hurricanes. The facility equipment and maintenance were rated in the lower end of adequate. However, the equipment condition component was rated as poor. Most of the equipment have high corrosion and there were several important units out of service such as: (1) mechanical screen, (1) influent pump, (1) degritter unit, (1) primary clarifier, (1) sludge pump, (1) Bio filter, (1) Anaerobic digester, (2) blowers; all gas burners and disinfection system working with incomplete equipment. At its current condition, if flow increases the facility will have issues treating it due to all out of service equipment. Also, since thickener system is not in use, if there is no plan to activate, equipment should be eliminated. Some maintenance to control algae production should be performed. Training is adequate for the facility. However, need at least one licensed operator and one TA staff to effectively comply with the facility operating hours.</p>
<p>Ponce (South Region)</p>	<p>1.9</p>	<p>The facility compliance was rated as adequate. However, there were exceedances of fecal coliforms, TSS, DO and one flow event. According to the supervisor, exceedance of flow was due to the raining events in the area of Juana Diaz and Villalba and exceedances of DO were due to a cleaning in the influent wet pit and that this could have affected the process. Fecal coliforms could be due to lack of sufficient treatment (secondary) or digestors. The facility operations and process control were rated as adequate. The operators perform the necessary sampling, following SOP's for adjustment in process plant has good process control procedures and adjustments are performed by operators as a result of sampling. O&M</p>

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WWTP	2019 Score	Observations
		<p>is outdated, lost 2013 version during Hurricane Maria. Process analyses performed at Guayama WWTP not onsite. There is no control room, access roads need improvement and several structures need painting and concrete treatment. No sludge treatment, from clarifiers to sludge drying beds. WWTP is operating at a little over half the capacity. The equipment and maintenance of facility was rated as adequate. However, most of the intake structures had cracks with visible rebars high corrosion and filtration in the roof. Additionally, one lift pump out of service; aerated system and grit pumps on degritter system with issues; two out of the four sludge pumps were out; and the sludge drying beds show concrete deterioration and have no roof. Digester are out, in plans to eliminate. Training is adequate for the operation of this facility and its operating hours. Need at least three licensed operator and five TA for effectively attending the facility's operating hours.</p>

4.2.2.3 Wells

PRASA has reported that it owns and operates 276 water wells, most of which deliver water directly into a distribution system with little or no treatment, except for disinfection by chlorination. PRASA's wells vary in size from 100 to 1,200 gallons per minute (gpm). A total of 16 wells (equivalent to 6% of total wells) from the Operational Areas of Arecibo, Manatí, Yauco, Ponce, Aguadilla and San Germán were inspected in FY2019. The sample of wells inspected represent 13.6% of the total (118) ancillary facilities inspected. Each assessment consisted of a site visit inspection and an interview with the designated personnel. The results of the assessment of those wells are described below. The facilities were evaluated using the following criteria: facility specific and regional specific criteria. The facility specific evaluation criterion considers operations, process control and equipment aspects, which are related to a specific facility. The regional specific criterion considers maintenance aspects which are carried out either on a regional or operational area basis and, also, the staffing and training aspects. Staffing and training was included to evaluate the adequacy of PRASA's assigned monitoring and operations personnel. The facility specific (operations/process control/equipment) criterion was assigned a weighting factor of 75%, while the regional specific (maintenance/training/staffing) criterion was assigned a weighting factor of 25%.

The inspection results for previous years were compared to the inspection results from the 2018 inspection to analyze condition changes. **Table 4-7** illustrates the comparison of the average rating for 2008 through 2019 of all facilities using the overall rating since the equipment evaluation was merged with the operations/process control criterion. This merged criterion was performed using the same deductions and weighted score than previous asset condition assessment reports thus the impact on the overall score was not altered. Out of the 16 wells inspected, 13 received a rating of Adequate and three were rated as Poor, for the overall rating. The wells rated as Poor include Cabo Rojo 3, Camino del Sur and Comercial. Furthermore, it is important to point out that although only three wells were rated as Poor, six (equivalent to 30% of the wells inspected) of the 13 wells rated in the Adequate range received an overall rating below 2.0 and, if left unattended, their condition could deteriorate, downgrading their rating to Poor or Unacceptable rating in the future. Of particular note is the condition of the Matadero 10 well, which was barely adequate (1.5).

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Table 4-7. Wells – Comparison of Average Inspections Results for 2008-2019

Criteria	2008	2009	2010	2012	2014	2015	2017	2018	2019	Change 2019 vs. 2018
Overall	2.0	1.9	2.1	2.2	2.2	1.9	1.8	1.7	1.9	0.2

In general, the average results slightly increased when compared to the 2018 results. Although most wells were generally observed to be in Adequate condition, there were a number of factors that resulted in several wells receiving a lower score and rating.

In general, the facility specific deficiencies noted were due in part to deterioration in equipment conditions. According to the inspection performed the most notable deficiencies were:

- 63% of the wells inspected are not remotely monitored;
- 19% of the wells inspected need painting and protection on piping and appurtenances;
- 13% of the wells inspected have leaks;
- 44% of the wells inspected have corroded pipelines and fittings;
- 69% of the wells inspected do not have an EGU; and
- 25% of the wells inspected did not have a satisfactory appearance.

The observed deficiencies in terms of the Regional evaluations for Arecibo, San Germán, Aguadilla and Ponce Operational Areas for potable water systems, which were rated as Poor, were the following:

- Unavailability of O&M/vendor manuals
- Challenges in the parts procurement process
- Lack of plan to implement major improvements
- No official schedule for outstanding work orders
- Lack of written procedures to handle emergencies
- Maintenance parts inventory inadequate
- Unavailability of as-built drawings
- Insufficient staff

The other operational areas evaluated, Yauco was rated as barely Adequate and had similar deficiencies. As for the Manatí Operational Area, which was rated as Adequate, it had only a few of those deficiencies.

The average rating of the evaluated wells was adequate. However, some of the wells presented a poor condition in the facility specific criteria. As much as nineteen percent of the wells visited were rated as poor in the facility criteria and deterioration has been observed through the years since there has not been capital improvements works. Also, the regional evaluation average rating was poor and PRASA should look to mitigate some of the deficiencies cited herein. Nevertheless, for the time being, these wells are expected to continue to serve their intended function of supplemental water supply. One of the main concerns is the lack of backup power at the majority of the well facilities inspected. This lack of backup power compromises the quality of service to PRASA's clients, making the potable water supply an intermittent one during events of electrical power problems. Also, corrosion was a repeated observation in

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several wells. Notwithstanding, most of the deficiencies noted can be addressed through PRASA's R&R program and may not require major capital improvements. Note, however, that financing of PRASA's R&R program has also been negatively affected given PRASA's fiscal situation. In terms of operational deficiencies, the lack of monitoring of 63% of the wells evaluated in this year's assessment is of concern, since the quality of the product (safe potable water), may be compromised. Furthermore, future regulatory requirements may require either the implementation of significant capital improvements to include and achieve additional treatment capabilities at well facilities, or the closure of certain wells. Currently, PRASA continues conducting the comprehensive study at all active groundwater wells island-wide to assess source water protection and identify potential groundwater under the direct influence (GWUDI) of surface water the GWUDI program. Results of the GWUDI evaluations currently being conducted by PRASA should prove beneficial to identify additional needs in these facilities. For additional information regarding the GWUDI program please refer to the Compliance Department summary in Section 5 of this report.

4.2.2.4 Water Pump Stations

PRASA has reported that it owns and operates 977 WPSs. WPSs consist of two major categories: 1) above ground pumps and 2) below ground pumps in vaults with heavy covers that cannot be readily removed by field inspectors, such as underground booster stations (these are not inspected). PRASA's WPSs vary in pumping capability from less than 100 gpm to over 9,000 gpm. A total of 32 above ground WPSs (3.3% of total WPSs) were inspected. Each assessment consisted of a site visit inspection and an interview with the designated personnel. The results of the assessments of those stations are described below. The facilities were evaluated using facility specific and regional specific criteria, in order to have a better understanding about the facility's conditions and obtain an overview of the maintenance and staffing practices of the region/operational area. One criterion considers operations, process control, and equipment aspects which are related to a specific facility. The other criterion considers maintenance aspects, which are carried out either on a regional or operational area basis and, also, the staffing and training aspects. Staffing and training was included to evaluate the adequacy of PRASA's assigned monitoring and operations personnel. The facility specific (operations/process control/equipment) criterion was assigned a weighting factor of 75%, while the regional specific (maintenance/training/staffing) criterion was assigned a weighting factor of 25%.

The average WPSs overall rating resulted in the lower end of adequate with a rating of 1.7. As previously stated, the facility specific criterion accounts for 75% of the weighted factor, as it is the key criterion for assessing the condition of the WPSs. Two facilities, Cerro Marquez (North Region, Arecibo) and La Finca-Cruz (South Region, Yauco) were rated Unacceptable under the Facility category. In addition, 11 facilities were rated as Poor under this category, these included: Cupey (Metro Region, San Juan), Bo. Ríos II (Metro Region, Guaynabo); Dos Millones and Saldaña, both from the Fajardo Operational Area (East Region); Quebrada Arenas (North Region, Manatí); Ciénega 2 and Medio Millón, both from the Arecibo Operational Area (North Region); Consejo 1 (South Region, Yauco), Marías 2 (West Region, Aguadilla); and Molinas 2 and Santana 2, both from the San German Operational Area (West Region). Furthermore, it is important to point out that besides the 13 WPS rated as Unacceptable or Poor in overall rating, nine facilities received an overall rating below 2 and, if left unattended, their condition could deteriorate downgrading their rating to Poor or Unacceptable in the future. Moreover, in contrast with previous assessments, the overall Regional Evaluation of Operational Areas was rated as barely adequate.

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The inspection results for previous years were compared to the inspection results from 2019 inspection to analyze performance changes since the previous inspections. **Table 4-8** illustrates the comparison of the average rating of all facilities by each category evaluated. The overall average rating of each evaluation criteria for 2008 through 2019 is also presented.

Table 4-8. WPSs – Comparison of Average Inspections Results for 2008-2019

Criteria	2008	2009	2010	2012	2014	2015	2017	2018	2019	Change 2019 vs. 2018
Overall	2.2	2.2	2.3	2.4	2.2	2.2	2.3	1.7	1.7	0.0

As shown in **Table 4-8**, there was no change in the overall rating (lower end of Adequate) compared to the 2018 results, which reflect the impact of the 2017 Hurricanes.

Although about 60% of the inspected WPSs were generally observed to be in adequate or good condition, there were several factors that resulted in 40% of the WPSs being rated lower. According to the inspections performed, some of the most notable deficiencies include the following:

- 22% of the WPSs inspected lack remote monitoring;
- 35% of WPSs inspected had at least one pump out of service;
- 69% of the WPSs inspected were observed to have leakage with severity ranging from minor to severe;
- 69% of the WPSs inspected were observed to have corrosion ranging from minor to severe;
- 25% of the WPSs inspected did not have a flow meter;
- 16% of the WPSs inspected did not have a satisfactory appearance; and
- 60% of the WPSs inspected did not have an EGU.

The observed deficiencies in terms of the Regional evaluations for Arecibo, San Germán, Aguadilla and Ponce Operational Areas for potable water systems, which were rated as poor were the following:

- Unavailability of O&M/ vendor manuals
- Challenges in the parts procurement process
- Lack of plan to implement major improvements
- Lack of procedure to prioritize repair
- No official schedule for outstanding work orders
- Lack of written procedures to handle emergencies
- Maintenance parts inventory inadequate
- Unavailability of as-built drawings
- Insufficient staff

The other operational areas evaluated, Yauco was rated as barely adequate and had similar deficiencies. As for the Manatí Operational Area, which was rated as adequate, it had only a few of those deficiencies.

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The WPSs are generally in adequate condition (1.7), although a higher amount was found in poor conditions, it reflects the significant degradation from FY2017 to FY2018, after the impact of the 2017 Hurricane. Note that 13 facilities (40% of the evaluated facilities) were rated as Unacceptable or Poor. Nevertheless, they are expected to continue to serve their intended function of delivering drinking water throughout the distribution systems. The deficiencies noted are related to lack of features to optimize O&M practices, and condition of equipment of facilities. Other noted deficiencies, such as leaks and overgrown vegetation can be addressed through routine maintenance or PRASA's R&R program and do not require major capital improvements. The most significant deficiencies observed were, the lack of an operating EGU and different severity of leaks in the facilities, followed by pumps out of service, then the lack of flow meters, and lastly the lack of remote monitoring of the facilities and equipment corrosion.

4.2.2.5 Wastewater Pump Stations

PRASA has reported that it owns and operates 839 WWPSs, these vary in pumping capability from less than 100 gpm to over 10,000 gpm depending on the population density and its proximity to the receiving WWTP. A total of 30 WWPSs (3.6% of total WWPSs) were inspected in FY2019. Each assessment consisted of a site visit inspection and an interview with the designated personnel. In general, the inspected facilities predominantly use wet pit type submersible pumps, although several dry pit type stations were also inspected. The results of the assessments of those stations are described below.

The facilities were evaluated using facility specific criteria and regional specific criteria, in order to have a better understanding about the facility's conditions, and obtain an overview of the maintenance, training and staffing practices of the regional/operational area. One criterion considers operations, process control and equipment aspects, which are related to a specific facility. The other criterion considers maintenance aspects, which are carried out either on a regional or operational area basis and, also, the staffing and training aspects. Staffing and training were included to evaluate the adequacy of PRASA's assigned monitoring and operations personnel. The facility specific (operations/process control/equipment) criterion was assigned a weighting factor of 75%, while the regional specific (maintenance/training/staffing) criterion was assigned a weighting factor of 25%.

Out of the 30 WWPSs inspected, 21 received an overall rating of Adequate, four received an overall rating of Good and five were rated as Poor. The facilities rated as Poor included: Villas de Castro (East Region, Caguas); Allen Grup and Barriada Obrera, both from the Fajardo Operational Area (East Region); and Montaña and San Antonio-Vieja, both from the Aguadilla Operational Area (West Region). As previously stated, the facility specific criterion accounts for 75% of the weighted factor, as it is the key criterion for assessing the condition of the WWPSs. Therefore, highlighting this criterion, the WWPSs rating distribution for this evaluation period is as follows: none Unacceptable, three Poor, 17 Adequate, and ten Good. In addition, this inspection cycle had more Operational Areas in the Regional Evaluation category rated in the Poor range.

In addition to the facilities rated as Poor in the Facility criterion, although rated as Adequate in that criterion, five WWPSs (equivalent to 17% of WWPS inspected) received a rating below 2.0 and, if left unattended, their condition could deteriorate downgrading their rating to Poor or Unacceptable in the future. These facilities were: UM-49 WWPS and Villa Andalucía WWPS, both from the San Juan Operational Area (Metro Region), Altos de la Fuente WWPS (East Region, Caguas), Campo Alegre WWPS (north Region, Manatí), and Jacanas WWPS (South Region, Yauco).

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The inspection results for previous years were compared to the inspection results from 2019 to analyze the performance. **Table 4-9** presents the comparison of the average rating of all facilities by each category evaluated. The overall average rating of each evaluation criteria for 2008 through 2019 is also presented.

Table 4-9. WWPSs – Comparison of Average Inspections Results for 2008-2019

Criteria	2008	2009	2010	2012	2014	2015	2017	2018	2019	Change 2019 vs. 2018
Overall	1.7	2.0	2.0	2.1	2.3	2.4	1.8	1.8	1.9	0.1

The overall condition of WWPSs slightly increased, still in the lower end of Adequate, compared to the 2018 results. There has not been a significant improvement, which can mostly be attributed to the lack of investment in improvement works the last few years due to the ongoing fiscal situation and the effects of the hurricanes that impacted the island in 2017.

In general, some of the most significant deficiencies encountered during the inspections revealed the following:

- 97% of the WWPSs inspected were not remotely monitored;
- 13% of the WWPSs inspected had recorded overflows during the evaluation period;
- 33% of the WWPSs inspected had exhaust fans out of service, missing or operating in manual mode;
- 27% of the WWPSs inspected had pumps out of service or did not have elapsed time meters;
- 27% of the WWPSs inspected did not have audible alarm;
- 23% of the WWPSs inspected did not have an EGU or it was out of service
- 20% of the WWPSs inspected had issues with site illumination; and
- 13% of the WWPSs inspected did not have a satisfactory appearance

The observed deficiencies in terms of the Regional evaluations for Arecibo, Fajardo, Caguas, San Germán, Aguadilla and Ponce Operational Areas for wastewater systems, which were rated as Poor, were the following:

- Unavailability of O&M/vendor manuals
- Challenges in the parts procurement processes; very slow
- Challenges in the parts procurement process; very slow
- Lack of plan to implement major improvements
- Lack of procedure to prioritize repairs
- Lack of sufficient maintenance tools
- Maintenance parts inventory inadequate
- Unavailability of as-built drawings
- Insufficient staff

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The other operational areas evaluated, Yauco was rated as barely Adequate (1.5) and had similar deficiencies. As for the Guaynabo and San Juan Operational Areas, which were rated as Good, the only issues reported were: O&M/vendor manuals and as built drawings availability, and lack of a good maintenance parts inventory.

Overall, the WWPSs are in Good to Poor condition. Although the about the same overall average rating compared to FY2018, it is still in the lower end of Adequate. In past years, there has been a trend on increase deterioration due to the lack of capital improvement invested, as a result of the fiscal situation, and compounded with the damages caused by the 2017 Hurricanes. While only 13% of the visited facilities had recorded overflows during this evaluation period, it is still of concern. Even though most of the visited facilities had an EGU, overflows were still reported. Therefore, this problem can be attributed to the fact that 97% of the facilities visited are not remotely monitored, 27% of the facilities do not have an exterior alarm, and 27% had pumps out of service, among other potential issues. Having remote monitoring will help PRASA prevent overflows in the System and adding a comminutor (grinder type) to those facilities which receive vast amounts of solids would help maintain the entryway clear of debris. PRASA's Operational Regions continue their effort with IMP to install telemetry at all facilities to enable monitoring from the ROCs but they are addressing the WSTs and WPSs first, thus the WWPS are lagging.

4.2.2.6 Water Storage Tanks

PRASA has reported that it owns and operates 1,552 water storage tanks (WSTs) that vary in storage capacity (size) from 100 to 10,000,000 gallons. A total of 40 water storage tanks (2.6% of total tanks) were inspected in FY2019. Each assessment consisted of a site visit inspection and an interview with the designated personnel. The results of the assessments of those stations are described below. **Table 6-1** summarizes the two evaluation categories and corresponding weighting factors used in the evaluation of water storage tanks, same as the previous inspections. The facilities were evaluated using facility specific criteria and regional specific criteria, in order to have a better understanding about the facility's conditions, and obtain an overview of the maintenance, training and staffing practices of the region/operational area. One criterion considers operations, process control and equipment aspects which are related (limited to) a specific facility. The other criterion considers maintenance aspects, which are carried out either on a regional or operational area basis and, also, the staffing and training aspects. Staffing and training were included to evaluate the adequacy of PRASA's assigned monitoring and operations personnel. The facility specific (operations/process control/equipment) criterion was assigned a weighting factor of 75%, while the regional specific (maintenance/training/staffing) criterion was assigned a weighting factor of 25%.

Out of the 40 WSTs inspected, 30 received an overall rating of Adequate, four received an overall rating of Good and six were rated as Poor. The facilities rated as Poor included: Quebrada Arenas (North Region, Manatí); El Junco (North Region, Arecibo); Julio Morales 2 and Rincón 1 Millón, both from the Fajardo Operational Area (East Region); Altos de la Fuente (East Region, Caguas); and Cupey (Metro Region, San Juan). Furthermore, it is important to point out that although the average overall rating was in the adequate range (1.90), ten WSTs (equivalent to 25% of tanks inspected) received an overall rating below 2.0. Moreover, in contrast with previous assessments, the overall Regional Evaluation of Operational Areas was rated as barely adequate. As previously stated, the facility specific criterion accounts for 75% of the weighted factor, as it is the key criterion for assessing the condition of the wells.

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Therefore, highlighting this criterion, the WSTs rating distribution for this evaluation period is as follows: no Unacceptable, six Poor, 25 Adequate, and nine Good.

The inspection results for previous years were compared to the inspection results from 2019 inspection to analyze performance changes since the previous inspections. The overall rating was in the adequate range, with an overall rating of 2.3. **Table 4-10** illustrates the comparison of the average rating of all facilities by each category evaluated. The overall average rating of each evaluation criteria for 2008 through 2019 is also presented.

Table 4-10. WSTs – Comparison of Average Inspections Results for 2008-2019

Criteria	2008	2009	2010	2012	2014	2015	2017	2018	2019	Change 2019 vs. 2018
Overall	1.9	1.6	1.6	1.9	2.4	2.3	2.4	1.9	1.9	0.0

On average, the overall rating remains the same, in the lower end of Adequate, compared to the 2018 results, which reflect the impact of the 2017 Hurricanes. However, in contrast to FY2018 where no WSTs were rated as Unacceptable or Poor, six WSTs (15% of inspected tanks) were rated as Poor in FY2019. In addition, four of the ten WSTs rated as adequate in overall rating but below a 2.0, were borderline adequate in the facility criterion and, if left unattended, their condition could deteriorate downgrading their rating to Poor or Unacceptable in the future. These facilities are: Fair View WST (Metro Region, San Juan), Dos Millones WST (East Region, Fajardo), Vista Verde WST (West Region, Aguadilla) and La Finca-Cruz WST (South Region, Yauco).

In general, some of the most significant deficiencies encountered during the inspections revealed the following:

- 60% of the WSTs inspected did not have a local level indicator;
- 60% of the WSTs inspected have deteriorated concrete walls, with cracks ranging from minor to moderate degree.
- 55% of the WSTs inspected did not have a high/low level alarm;
- 40% of the WSTs inspected are not remotely monitored;
- 28% of the WSTs inspected had minor to moderate degree leakage.
- 25% of the WSTs inspected had an unsatisfactory appearance and lacked proper insect protection on vents or float valve
- 20% of the WSTs inspected had roof surface defects and lack emergency numbers;
- 18% of the WSTs inspected did not have adequately secured access hatches; and
- 5% of the WSTs inspected were not visited daily

Even though not all tanks are visited daily, PRASA stated that all tanks are in compliance with the Tank Monitoring Program established in the 2006 PRDOH Settlement Agreement, as amended.

The observed deficiencies in terms of the Regional evaluations are the same as described in the WPS and Well sections for potable water systems.

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The WSTs are generally in Adequate condition and are expected to continue to serve their intended function of providing potable water storage throughout the distribution systems. The most significant deficiencies observed were lack of local level indicator, minor to moderate cracks, lack of high/low level alarm, lack of remote monitoring, minor to moderate leaks, minor to moderate roof surface defects, and lack of adequately fitted/ locked access hatches. These deficiencies may not require significant capital upgrades, but rather a modification to O&M practices (e.g. removal of overgrown vegetation and periodic tank internal inspections) or can be addressed through PRASA's R&R program (e.g. repairs to tank hatches, vents, level alarms, and security fences). Deficiencies that could require capital upgrades, such as tank refurbishing, deteriorated concrete, and significant leakage through walls were observed in 28% of the visited tanks.

In addition, remote monitoring is recommended as an optimization measure and as a preventative measure against water losses in the distribution system; consequently, PRASA had started with this initiative, providing remote monitoring to those tanks that have been identified as critical in the distribution system. Although PRASA's Operational Regions are at different stages of WST visualization level achieved, some at more advanced than others, all have established goals to reach high levels of WST visualization and will continue implementation until reaching 100%.

4.3 Buried Infrastructure

Although buried infrastructure (i.e. water meters, water mains and distribution pipes, buried valves, sewer trunks and collection pipes, and manholes) was not inspected, the following sections provide some discussion regarding indirect indicators of the condition of buried infrastructure. Since FY2005 PRASA has invested in and continues to develop and update its Geographical Information System (GIS) database to allow for a better control, record and management of its buried assets. Also, PRASA slowly continues with its buried infrastructure R&R program, mainly managed and implemented by the Operational Regions and as their assigned budget allows. R&R of distribution (water) and collection (wastewater) pipes, which targets pipe breaks and leak-prone areas, are identified by PRASA's Operational Areas and prioritized according to severity of the problem. Meter replacements are programmed and managed through PRASA's Non-Revenue Water (NRW) Reduction Program.

4.3.1 Water Meters

PRASA owns over 1.4 million water meters ranging from 1/2 to 12 inches in diameter. PRASA has continued its meter replacement initiative under the Revenue Optimization Program. As reported by PRASA, about 731,000 small meters (1-inch in diameter or less) and over 5,400 large meters (greater than 1-inch in diameter) were replaced between FY2009-FY2019. However, due to PRASA's current fiscal situation the implementation of the initiatives included in the Revenue Optimization Program have been slowed down and meter replacements are on hold. About 7,144 small meters and 117 large meters were replaced during FY2019. These replacements were mainly due to maintenance, theft or special client requests.

PRASA is currently focusing its efforts in the planning and implementation of the 2019 PRASA Fiscal Plan which includes the implementation of a key initiative: a P3 Project to modernize PRASA's metering system, enhance customer service activities and customer satisfaction, improve billings and collections,

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and reduce NRW. Through this initiative, PRASA will reactivate its meter replacement initiative utilizing advanced metering technology.

4.3.2 Water Distribution System

Based on the latest published PRASA Accountability Report (1st trimester of FY2016), PRASA owns over 14,753 miles of water pipelines, which include both transmission and distribution pipes with sizes ranging from two inches to 72 inches in diameter. As in previous years Arcadis did not inspect the water transmission and distribution system. However, it is reasonable to assume that a portion of the water distribution system will require structural repairs, as well as rehabilitation to reduce leakage.

4.3.3 Non-Revenue Water

NRW is water that has been produced but is not billed to customers. However, not all NRW is due to water losses. As shown in the water balance summary presented in **Figure 4-1**, NRW has three main components: unbilled authorized consumption, commercial (apparent) losses and physical (real) losses. Combined, commercial and physical losses make up the System's water losses. Unbilled authorized consumption is in turn composed of unbilled metered and unbilled unmetered consumption which includes water used by PRASA (measured and estimated) for operational and internal purposes and water used for firefighting. Examples include potable water service provided to PRASA's facilities, water used for washing and cleaning PRASA's tanks and sanitary pipelines, tanker trucks for communities with deficient water service, firefighter's usage, etc.

Table 4-11 provides a summary of key water distribution system metrics since FY2012, including current estimated levels of water production, water losses, and NRW, as reported by PRASA. PRASA's NRW levels have been consistently declining except for FY2018 where there was a slight increase.

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System Input Volume (Dispatched Water)	Authorized Consumption	Billed Authorized Consumption	Billed Metered Consumption	Revenue Water
			Billed Unmetered Consumption	
		Unbilled Authorized Consumption	Unbilled Metered Consumption	Non-Revenue Water
			Unbilled Unmetered Consumption	
	Water Losses	Commercial Losses (Apparent Losses)	Unauthorized Consumption (theft)	
			Customer Metering Inaccuracies	
			Data Handling (Billing) Errors	
		Physical Losses (Real Losses)	Main Line Leakage	
			Storage Tank Overflows	
			Service Connection Leakage	

Source: American Water Works Association and International Water Association

Figure 4-1. Water Balance Summary

Table 4-11. Water Losses and Non-Revenue Water

Fiscal Year	Total Water Production (MGD) ¹	Water Losses	Non-Revenue Water
		(MGD)	(MGD)
FY2012	647	381	399
FY2013	617	354	363
FY2014	598	343	351
FY2015	557	299	307
FY2016	508	291	298
FY2017	507	293	299
FY2018	507	308	314
FY2019	542	342	349
Difference FY2018-2019	35	34	35
Cumulative Difference FY2012-2019	-105	-39	-50

¹Includes a metering-error adjustment identified by PRASA in its water balance audits.

As shown in **Table 4-11**, from FY2012 to FY2019, PRASA reports to have reduced the amount (volume) of water produced (105 MGD reduction), amount of water losses (39 MGD reduction), and NRW (50 MGD

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reduction). In FY2019, water production increased due to the slow recovery process, slower repair response of pipe leaks and breaks, damaged metering equipment, and filtration plants overcompensating these deficiencies with increased production. PRASA estimates the FY2019 total water production at approximately 542 MGD and NRW at approximately 349 MGD. Of the total volume of NRW, unbilled authorized consumption was about 7 MGD while water losses, which total an estimated 342 MGD, consist of approximately 39.4 MGD in apparent (commercial) losses and 302.7 MGD in real (physical) losses. PRASA projects that water audits and NRW estimated values will be refined as metering efforts (both at the production point and customer service points) get underway.

Following the industry's recommended NRW data analysis and reporting, PRASA is reporting NRW in terms of volume reduced in its annual water audits, and no longer as a percentage of the water production. The American Water Works Association (AWWA) recommends not to use NRW as a percentage of water production as a performance indicator of NRW efforts because this method may show confusing and misleading results. NRW as a percentage of water production does not necessarily represent NRW performance efforts. For example, when comparing FY2016 and FY2015 results included in **Table 4-11**, the volume of water produced, volume of water losses and volume of NRW were all reduced. However, when calculated as percentage of volume of water produced, no reductions in water losses nor in NRW are obtained.

Since FY2012, PRASA began measuring the Infrastructure Leakage Index (ILI) which is an indicator that is used to measure the level of physical losses in the water distribution system. More specifically, the ILI is defined as the current annual real losses divided by the unavoidable annual real losses. The unavoidable annual real losses represent the lowest technically achievable annual real losses for a well-maintained, well-managed system and is the likely lower bound on water losses. As a performance indicator, the ILI represents a measure of the combined performance of three infrastructure management methods for real losses: the speed and quality of repairs, active leakage control, and asset management. Factors that affect the ILI include the pipe age and material, customer density, and system pressure. The ILI was introduced in 2000⁸ and is also defined and calculated in AWWA's M36 Water Audits and Loss Controls manual. An ILI between 1 and 3 is considered excellent. U.S. utilities with combined operations currently measuring the ILI for their systems reported values ranging from 1.12 to 4.17, with a median of 2.20⁹. Globally, systems in developed countries report lower values of 5; while in developing countries, values range from 10 up to about 50. In FY2012, PRASA reported an ILI of about 18. However, since then, PRASA's ILI has reduced by about 43% until the reported value of 10.19 in FY2018 as a result of the 2017 Hurricanes. In FY2019, while still under the recovery effects of the 2017 Hurricanes, PRASA reported an ILI of 12.16, an increase of 19% from FY2018.

PRASA has been calculating these AWWA indicators (ILI and volume of commercial and physical losses per connections per day) as part of the annual water audit process. However, PRASA indicated that to do so, a high amount of estimation takes place, which may affect the validity of the results. Therefore, PRASA's NRW team is redefining the NRW goals and metrics and developing new initiatives to obtain more reliable results based on real data measurements (i.e. flow, tank water levels, systems' pressures).

⁸ Source: Alegre, H. Hirner, W., Bapista, J., and Parena, R. (2000). "Performance indicators for water supply services" IWA Manual of Best Practices.

⁹ Source: 2018 AWWA Utility Benchmarking: Performance Management for Water and Wastewater.

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PRASA attributes the reductions in NRW to the following main contributing factors and measures:

- Greater understanding and improvement of management practices regarding NRW and water losses.
- Improvements in data management and quality (better production measurement).
- Reduction in events and duration of water storage tank overflows.
- Reduction in the time to repair leaks.
- Leak detection with specialized equipment.
- Pressure management in the distribution system.

Notwithstanding the recent improvement in NRW, PRASA's level of NRW is still higher than the average utility benchmarks results. U.S. and Canada average results of apparent (commercial) losses per service connection per day and average results of real (physical) losses per service connection per day for utilities with combined (water and wastewater) operations range from 3.04 to 13.16 gallons (median of 7.00) and from 24.80 to 78.00 gallons (median of 41.83)¹⁰, respectively.

PRASA recognizes that reducing its NRW and water losses volume and, in turn, its water production, will have positive effects on not only its operations, but also on its financial results (lower O&M expenses and higher revenues, for example), and on its sustainability practices. Therefore, reducing NRW is one of the top priorities and is one of the main objectives of the 2019 PRASA Fiscal Plan.

Additionally, PRASA's NRW office is focused on refining the validity and credibility of the data of the annual water audits and reducing NRW by among other measures, continuing the Revenue Optimization Program, installing flow meters at PRASA facilities to measure a more significant percentage of the authorized unbilled consumption, and reducing the unmetered production by installing additional flow meters at WTPs to adequately measure daily production to distribution flows. PRASA's goal is to reach a metered reading of 80% of the production supplied by FY2020. Measuring the most amount of water production increases the credibility of the results and decreases the probable over estimation of the NRW results. Nonetheless, as previously mentioned, PRASA is currently redefining the NRW goals and metrics, with this one particular goal under review. In addition, PRASA's Operational Regions plan to install meters to measure the water discarded as part of the water system's programmed drainages implemented as part of the measures to meet compliance with DBP levels in the water system.

4.3.3.1 Leak Monitoring and Control

As shown in **Table 4-12**, leaks reported in FY2018 and FY2019, were 45,873 and 57,997, respectively. **Table 4-12** also shows the average annual leaks occurrence per 100 miles of water piping for recent fiscal years. The total annual reported leaks for FY2019 increase approximately 7% compare to FY2014 and 26% compared to FY2018. The previous increasing trend observed over FY2015 and FY2016 shifted for FY2017 and FY2018. However, Arcadis has not made an independent evaluation to identify the root causes of this recent decrease. For FY2018 part could be attributed to the 2017 hurricanes that impacted the island, a period when PRASA refocused efforts to recovery activities and other more critical matters. As such, in FY2019, after the normalization of PRASA's operations the annual reported leaks went back up.

¹⁰ Source: 2018 AWWA Utility Benchmarking: Performance Management for Water and Wastewater.

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Despite the recent decrease trend prior to the increase in FY2019, PRASA's reported rate of leak occurrence continues to be extremely high compared to other utilities in the U.S. and Canada (average annual combined leaks and breaks per 100 miles are between 11.8 and 36.4)¹¹. Although this high rate is not surprising, given the existing infrastructure's age, size, complexity, and significant changes in elevations of the System, it still influences PRASA's NRW. Aging infrastructure is another contributing factor to the high rate of leaks in addition to the decrease of funding available for pipeline R&R.

Table 4-12 Reported Leaks from FY2014 to FY2019

Fiscal Year	Total Annual Reported Leaks	Annual Leaks per 100 miles Using 14,753 miles of Water Pipeline
2014	54,154	386 ¹
2015	63,503	430
2016	62,079	421
2017	54,810	372
2018	45,873	311
2019	57,997	393

Source: PRASA Systems, Applications, and Products in Data Processing (SAP) (Commercial) Database
¹Water pipeline total length used for previous fiscal years (FY2011-FY2014) was 14,031 miles.

The average weekly reported and repaired leaks per fiscal year, as well as the percentage of repaired leaks with respect to the number of leaks reported in each fiscal year are shown in **Figure 4-2**. For FY2019, PRASA reports an average of leaks per week of approximately 1,115. Comparing the weekly reported leaks in each fiscal year, it can be observed that from FY2014 to FY2015, the weekly reported leaks increased approximately 17%. However, from FY2015 to FY2016, the weekly reported leaks decreased about 4%. The same trend is observed with the weekly repaired leaks. From FY2014 to FY2015 a steady increase was being achieved in weekly repaired leaks. However, from FY2015 to FY2018, the weekly reported leaks decreased annually by approximately 4%, 10% and 15%. Then it increased again from FY2018 to FY2019 by approximately 26%. The same trend is observed with the weekly repaired leaks. Also, the percent leaks repaired has remained at 99% from FY2017 to FY2019.

¹¹ Source: 2018 AWWA Utility Benchmarking: Performance Management for Water and Wastewater.

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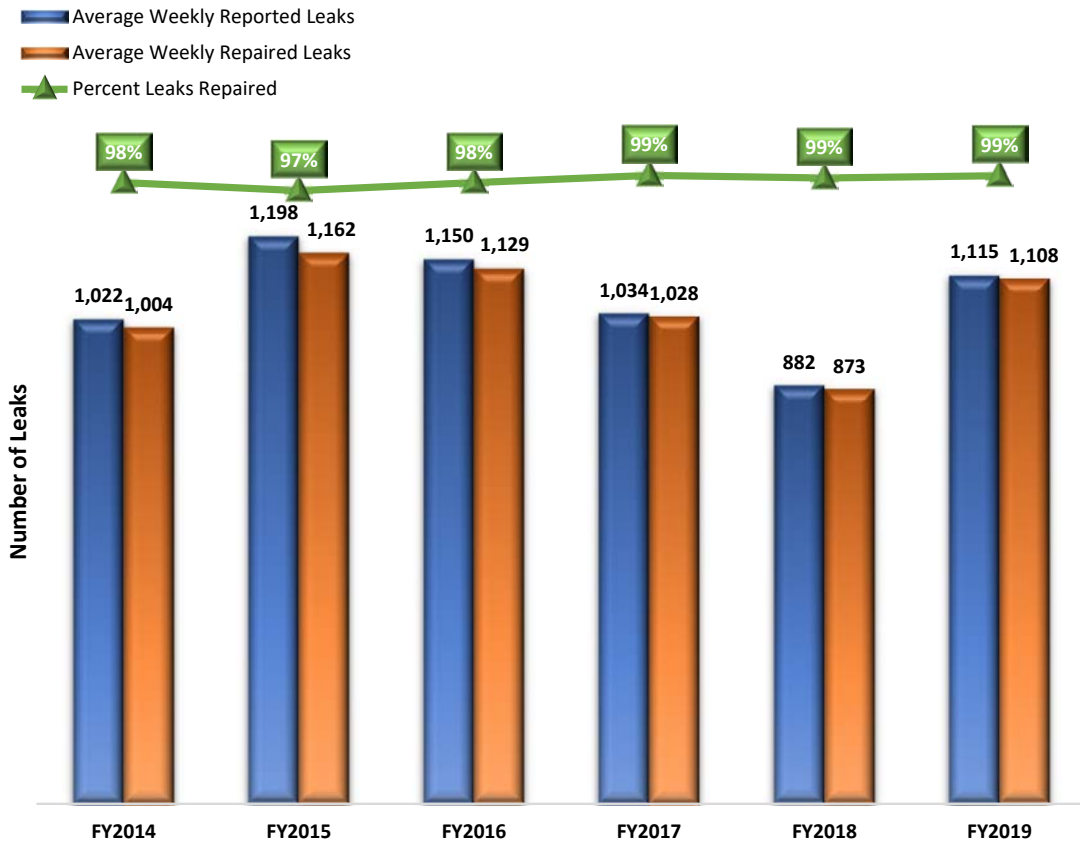


Figure 4-2. Island-Wide Weekly Average Leaks Reported and Repaired

Figure 4-3 shows the active leaks with duration greater than seven days before being repaired for recent fiscal years. In FY2015, there was a slight upturn in correlation with the increase in reported leaks as PRASA reported to have ended the fiscal year with a total of 3,049 pending leaks with duration greater than seven days and 62 weekly average pending leaks with duration greater than seven days. However, in FY2016 the number of leaks with duration greater than seven days was reduced to a total of 2,698 pending leaks with duration greater than seven days and 54 weekly average pending leaks with duration greater than seven days. Furthermore, in FY2017 the number of leaks with duration greater the seven days was significantly reduced to a total of 365 pending leaks with duration greater than seven days and 8.1 weekly average pending leaks with duration greater than seven days. However, the month of June 2017 data was not available. For FY2018, not enough data was obtained to generate a good trend for the year since the only data available was from March 2018 to June 2018. This was mostly due to the impact of the 2017 Hurricanes and the recovery efforts, damage to the communications infrastructure and the fact that the responsible personnel were temporarily relocated to attend the more urgent recovery and restoration of the System. For FY2019, while still in recovery of the 2017 Hurricanes, the number of leaks with duration greater than seven days significantly increase to a total of 13,291 pending leaks with

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duration greater than seven days and 288.9 weekly average pending leaks with duration greater than seven days.

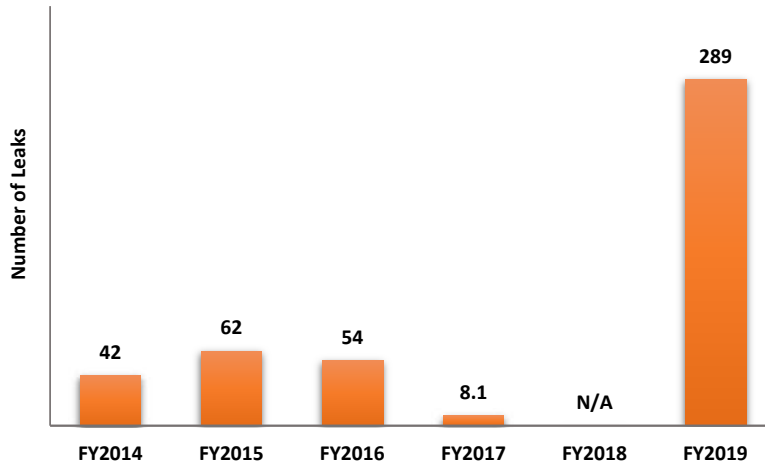


Figure 4-3. Island-Wide Weekly Average Pending Leaks with Duration >7 Days

Table 4-13 provides a summary of the average repaired leaks per working day and average backlog. Based on the weekly average pending leaks and weekly average pending leaks with duration greater than seven days, it can be observed that in FY2019 PRASA averaged a backlog of approximately 3.9 days of pending leaks and a backlog of approximately 1.3 days of pending leaks with duration greater than seven days. This increase from the previous declining trend is a result of the 2017 Hurricanes and its aftermath with the slow recovery process. The average backlog days for pending leaks has decreased since FY2014 by reducing 17% in FY2015 and has continued its improvement every year up to FY2018 when Puerto Rico was hit by the 2017 Hurricanes and not enough data was obtained to generate a good trend for the year. The 2017 Hurricanes affected the improvement trend from previous years that last reflected, in FY2017, a significant decrease of 80% in average backlog days pending leaks >7 days compared to FY2016. Furthermore, PRASA's effectiveness in repairing pending leaks in a timely manner has continued to improve year after year since FY2011 up to the 2017 Hurricanes that have negatively impacted the trend for FY2018 (no data) and FY2019.

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Table 4-13. Annual Average Backlog of Pending Leaks

Fiscal Year	Average Weekly Pending Leaks	Average Weekly Pending Leaks >7 Days	Average Repaired Leaks per Working Day ¹	Average Backlog Days for Pending Leaks	Average Backlog Days for Pending Leaks >7 Days
2014	460	72	205	2.3	0.4
2015	434	62	232	1.9	0.3
2016	354	54	234	1.5	0.2
2017	263	8.1	210	1.3	0.04
2018	N/A	N/A	N/A	N/A	N/A
2019	864	289	222	3.9	1.3

¹ Assumes five working days per week. Source: PRASA SAP (Commercial) Database.

Regarding water storage tank overflows issues, PRASA has been implementing continuous monitoring of water storage tanks across its operational regions as a measure to help control and minimize overflow (water losses) occurrences, as the fiscal situation and repair prioritization allows. It is still PRASA's goal to reach 100% monitoring in water storage tanks. Finally, as a measure to help optimize the System's operation and reduce potential leaks through valves, PRASA has included its pressure regulator/sustaining valves in the IMP and has indicated that it is providing training to its employees to carry out the necessary maintenance activities. Additionally, the Water Recovery Office (WRO) has initiatives like pressure management (reduce pressures, pressure gage at tanks, validation & replacement, valves) and Leak Detection Program, which will consequently help with overflows.

PRASA intends on implementing WRO initiatives to reduce leaks and tank overflows in parallel with the repair/replacement of damage buried infrastructure as the fiscal situation and availability of funding allows. PRASA also indicates that although the meter replacement initiative has slowed down, minor replacements have been performed, either due to maintenance, theft or special client requests. However, as part of the P3 initiative included in the 2019 PRASA Fiscal Plan, meter replacement/maintenance and leaks/overflows metrics are expected to be addressed.

4.3.4 Wastewater Collection System

Based on the latest published PRASA Accountability Report (1st trimester of FY2016), PRASA owns approximately 5,994 miles of wastewater pipelines. Although the wastewater collection system was not inspected, it is reasonable to assume that a significant portion of the wastewater collection system will require some structural repairs, as well as rehabilitation (replacement) to reduce inflow and infiltration and overflow occurrences and to address the impacts of the 2017 Hurricanes.

4.3.4.1 Overflow Monitoring and Control

As shown in **Table 4-14**, PRASA indicates that overflows reported in FY2019 were 27,253. Data is not available regarding frequency of overflows in (a) combined sewer systems compared to separate systems or (b) dry weather overflows compared to wet weather overflows. Dry weather overflows are often caused

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by (a) insufficient cleaning and maintenance of the collection system, resulting in a buildup of roots or grease, restricting, or blocking flow or (b) pump station failures due to old or insufficiently maintained equipment, poor design, or lack of reliable backup power supply. Wet weather overflows are an indicator of leaking sewers, storm water connections to sanitary sewer systems, or under-sized pipes or pump stations.

Table 4-14 also shows the average annual overflows occurrence per 100 miles of sewer. In FY2019, an average of 455 overflows per 100 miles of sewer were reported. There was an increase of total annual reported overflows of about 6% from FY2014 to FY2015 and about 6% from FY2015 to FY2016, which could be due to an increase in the actual number of overflows occurrences, an increase in the number of people reporting overflows (as a result of PRASA's communication initiatives and increased social media presence), the additional pipeline miles included in the analysis or a combination of the three. However, in FY2017 and FY2018, there was a decrease in reported overflows of 5% and 16% when compared to FY2016 and FY2017, respectively. In FY2019, there was an increase of 16% in reported overflows, which could be due to the 2017 Hurricanes impact to the buried infrastructure and WWPSs. Again, as with the increase in FY2015 and FY2016, Arcadis has not made an independent evaluation to identify the root causes of this increase. Notwithstanding, PRASA's reported rate of overflow occurrence continues to be extremely high compared to other utilities in the U.S. and Canada with combined operations (average annual overflows (non-capacity & capacity) per 100 miles are between 0.2 and 4.3 overflows¹²). However, this high rate is not surprising given the size and complexity of the System. Other contributing factors to this high rate of overflows include aging infrastructure, damages from 2017 Hurricanes, and inadequate customer use (i.e., illegal connections and discharges).

Table 4-14. Reported Overflows from FY2014 to FY2019

Fiscal Year	Reported Overflows	Annual Overflows per 100 miles Using 5,994 miles of Wastewater Pipeline
2014	26,937	506 ¹
2015	28,569	477
2016	29,991	500
2017	28,510	476
2018	23,819	397
2019	27,253	455

Source: PRASA SAP (Commercial) Database

¹Wastewater pipeline total length used for previous fiscal year (FY2014) was 5,325 miles.

PRASA's average weekly reported and repaired overflows per fiscal year for recent fiscal years are shown in **Figure 4-4**. For FY2019, PRASA reports an average of approximately 524 per week. In FY2015 and FY2016, the average weekly reported overflows experienced an increase of 6% and 5% compared to FY2014 and FY2015 results, respectively. Conversely, in FY2017 a decrease of 3% was observed when compared to FY2016 and continuing the decrease trend, a 15% drop from FY2018 to FY2017. However, FY2018's significant reported drop may be an outlier because of the lower reporting in the aftermath of the 2017 Hurricanes. Lastly, in FY2019 an average weekly reported overflows increase of 14% was

¹² Source: 2018 AWWA Utility Benchmarking: Performance Management for Water and Wastewater.

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observed when compared to FY2018. Also shown in **Figure 4-4** is the percentage of repaired overflows with respect to the number of overflows reported in each fiscal year.

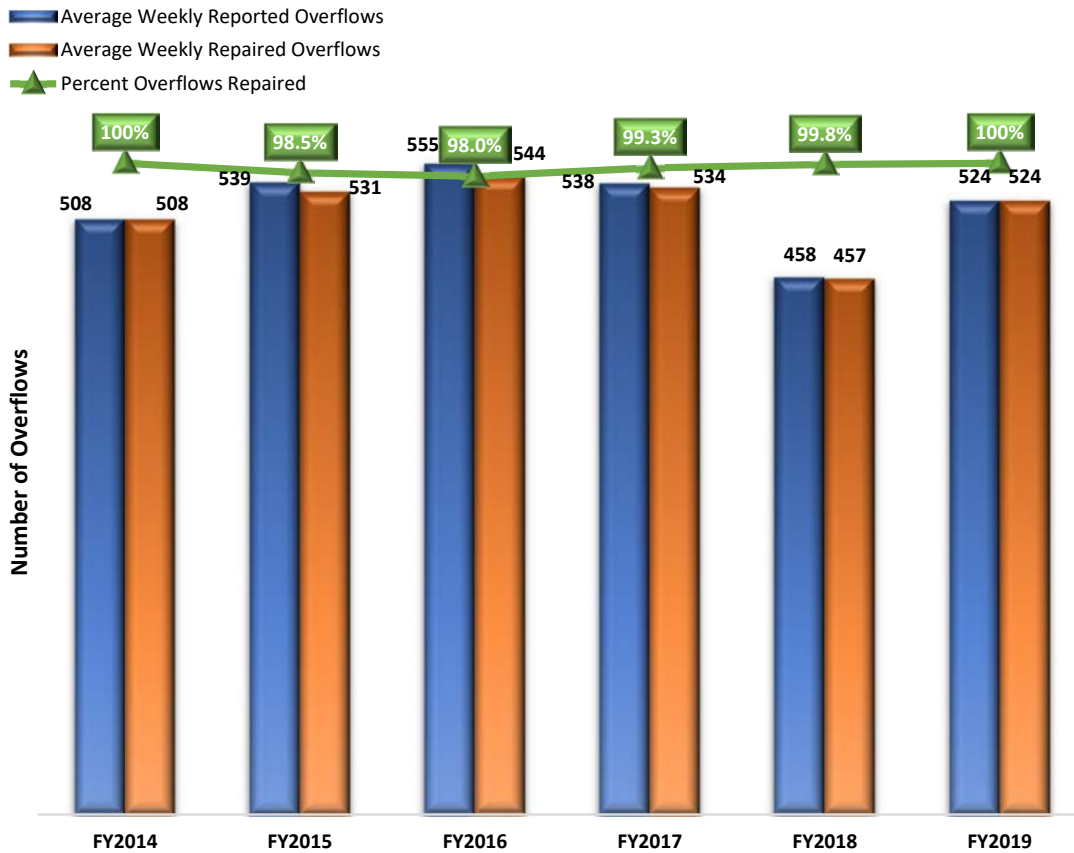


Figure 4-4. Island-Wide Weekly Average Overflows Reported and Repaired

Figure 4-5 shows the pending overflows with duration greater than seven days for recent fiscal years. As shown in the figure, the number of pending overflows with duration greater than seven days slightly decreased in FY2015. In FY2016, there was an increase in the weekly average pending overflows with duration greater than seven days of about 30%. Conversely, in FY2017, there was a decrease of 62% in the weekly average pending overflows with duration greater than seven days. For FY2018, not enough data was obtained to generate a good trend for the year since the only data available was from March 2018 to June 2018. This was mostly due to the impact of the 2017 Hurricanes and the recovery efforts, damage to the communications infrastructure and the fact the responsible personnel were temporarily relocated to attend the more urgent recovery and restoration of the System. However, in FY2019 there was a significant increase in pending overflows compared to the last reported fiscal year. This could be due to slow recovery process and non-repaired impact to the buried infrastructure and WWPSs as a result of the 2017 Hurricanes. However, Arcadis has not made an independent evaluation to identify the root causes of this increase.

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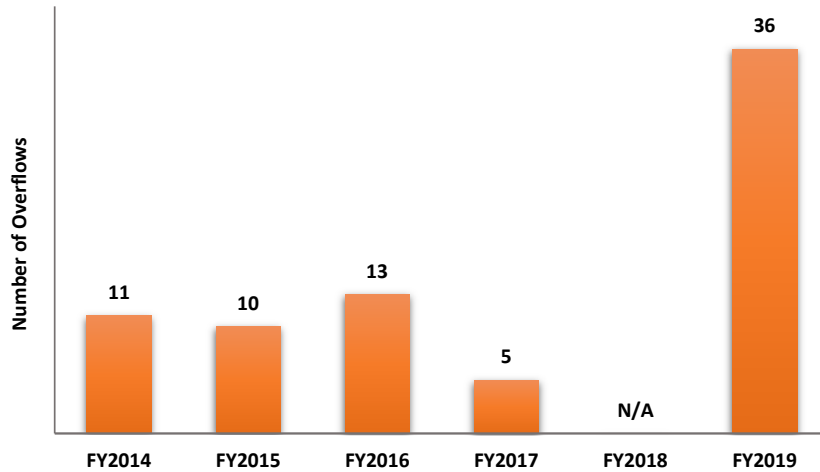


Figure 4-5. Island-Wide Weekly Average Pending Overflows with Duration >7 Days

Table 4-15 provides a summary of the average repaired overflows per working day and average backlog. As shown, in FY2015, FY2016 and FY2017, PRASA reported a decrease trend with 108, 104 and 75 average weekly pending overflows, respectively. In FY2017, PRASA also improved its average backlog achieving approximately 0.7 days of pending overflows as well as the backlog of pending overflows with duration greater than seven days to 0.05. These results represent a reduction of about 22% and 58%, respectively, compared to FY2016 results. PRASA's effectiveness in repairing pending overflows in a timely manner has continued to improve year after year since FY2014, particularly those with duration greater than seven days, except for FY2016. For FY2018, not enough data was obtained to generate a good trend for the year since the only data available was from March 2018 to June 2018. Furthermore, FY2019 reflects the effects of the 2017 Hurricanes as all criteria increased significantly from the last reported available data, in FY2017.

Table 4-15. Annual Average Backlog of Pending Overflows

Fiscal Year	Average Weekly Pending Overflows	Average Weekly Pending Overflows >7 Days	Average Repaired Overflows per Working Day ¹	Average Backlog Days for Pending Overflows	Average Backlog Days for Pending Overflows >7 Days
2014	169	18	104	1.6	0.17
2015	108	10	106	1.0	0.09
2016	104	13	113	0.9	0.12
2017	75	5	109	0.7	0.05
2018	N/A	N/A	N/A	N/A	N/A
2019	156	36	105	1.5	0.35

¹ Assumes five working days per week. Source: PRASA SAP (Commercial) Database

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As with leaks, PRASA expects to improve its sewer overflows response time and metrics tracking using the new mobile technology currently being implemented across its operational regions. Also, PRASA continues with the Fats, Oils and Grease (FOG) program, which should continue to have a positive impact on overflows. PRASA contracted a third-party consultant to perform site visit inspections at different commercial establishments to educate people on the program with the intend that owners limit the discharge of fats, oils and grease into PRASA's wastewater network. In addition, as part of the FOG program, in the Metro Region, PRASA is focusing on recurring overflows areas to identify those commercial/industries that may be impacting the network and coordinate site visits. Other regions are also implementing that strategy. PRASA intends on implementing sanitary sewer evaluations and repair plans to reduce levels of infiltration and inflow (I/I) that must be treated in their WWTPs when funds become available.

4.4 Conclusions

Table 4-16 presents a summary of the overall rating results for the 173 facility inspections completed by Arcadis between February and August of 2019. The data indicates that 79% of the facilities inspected in FY2019 are in the Adequate to Good range. Although, most of the treatment facilities were rated as Adequate (46 of 55, 84%), there is a concern pertaining to the physical condition (the equipment/maintenance criterion) as 35 (64%) of the facilities visited where rated below 2.0. Facility ratings decreased in equipment/maintenance, operations/process control and staff/training criteria compared to the 2017 inspections. This decline in ratings is likely a result of the lack of the capital improvements and R&R investments due to the fiscal situation and budget limitations.

Table 4-16. 2019 vs 2018 Asset Condition Inspections Results Summary

Asset Category	Unacceptable		Poor		Adequate		Good		Total	
	2019	2017 / 2018	2019	2017 / 2018	2019	2017 / 2018	2019	2017 / 2018	2019	2017 / 2018
Water Treatment Plants ¹	0	0	0	0	35	69	0	1	35	70
Wastewater Treatment Plants ¹	0	0	9	1	11	21	0	1	20	23
Wells	0	0	3	6	13	13	0	1	16	20
Water Pump Stations	1	0	12	11	15	18	4	2	32	31
Water Storage Tanks	0	0	6	2	30	27	4	1	40	30
Wastewater Pump Stations	0	0	5	5	21	13	4	2	30	20

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Asset Category	Unacceptable		Poor		Adequate		Good		Total	
	2019	2017 / 2018	2019	2017 / 2018	2019	2017 / 2018	2019	2017 / 2018	2019	2017 / 2018
Total	1	0	35	25	125	161	12	8	173	194
Percent of Total	1%	0%	20%	13%	72%	83%	7%	4%	-	-

¹For the WTP and WWTP comparison, the FY2017 Condition assessment was used, since the FY2018 for those facilities was related to damage by the 2017 Hurricanes. All ancillary facilities were compared to the FY2018 condition assessment.

Process standardization and providing more tools and training to operators for process controls and actions could result in improved plant operations and performance. Moreover, PRASA should consider operational improvements including new process equipment and process automation to reduce operators' dependence on less efficient manual operations. Physical condition deterioration of WTP and WWTP facilities was observed. Process control also continues to be a challenge in some of the facilities, even though plant operators indicated that standard operating procedures and control strategies are followed. While there was no significant change in the compliance score of WTPs, the overall compliance score for WWTPs decreased significantly since the previous inspection. In addition to considering more stringent, permanent compliance limits (in lieu of interim limits currently in place), PRASA should consider the stricter residual chlorine, fecal coliforms parameters for WWTPs with ocean outfalls and stringent phosphorus and nitrogen limits. Bringing facilities into consistent and sustained compliance with discharge parameters, addressing the shortcomings identified during inspections and additional operational improvements including new process equipment, process automation and process control optimization are some of the measures that PRASA could undertake to continue to improve the condition and operation of treatment facilities.

The overall rating of ancillary facilities did not materially change. Most of the deficiencies noted in ancillary facilities can be addressed through PRASA's R&R program and may not require major capital improvements. PRASA continues to work on its leak detection and monitoring practices and continues to address leak occurrences, although occurrences have not decreased in the last five years. Where able, PRASA is remotely monitoring tank levels to avoid overflows and improve the water balance in the distribution system. PRASA continues conducting periodic water audits which are used to implement the necessary controls and develop action items to address NRW.

Although the number of sanitary overflows is also high compared to the U.S., PRASA has maintained its response time and attention/repair effectiveness to minimize the duration of these overflow events and their environmental impact. Prompt identification and actions enabled by remote monitoring should help PRASA mitigate overflows in the System, and adding pre-treatment (screens, comminutors) and preventive maintenance to facilities would help lessen overflows.

Given the size and complexity of the System, it is reasonable to state that the System will continue to require significant capital investments and continuous maintenance and repairs, in addition to the repair required after the 2017 Hurricanes. Also, as the System continues to age and as new compliance regulations are implemented, an increase in the O&M budget may be necessary to address maintenance and repairs and compliance matters related to the wastewater collection system.

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5 O&M PRACTICES AND STRATEGIC PLAN

5.1 Introduction

Arcadis assessed the adequacy of PRASA's O&M practices based on compliance with regulatory requirements, interviews with PRASA personnel, and facility observations by field inspectors obtained through the asset condition assessment efforts described in detail in Section 4. There were several WTP and WWTP facilities that reported exceedances in compliance treatment parameters during the evaluation period and/or lacked the appropriate operational tools (i.e., O&M manuals, equipment manuals, process controls, and laboratory equipment). A key finding detrimental to O&M practices were the lack of a working EGU at several facilities which was due because of the extensive use during the 2017 Hurricanes that damaged them, no jar testing performed and deficient house/grounds keeping. Despite some operations and process control issues, the water treatment facilities are generally delivering potable water adequately, but in contrast, the wastewater treatment facilities are struggling to treat wastewater adequately. The latter struggles also include the facilities equipment and maintenance conditions, lack of staff and compliance deficiencies. In addition, it is important to highlight that regulatory compliance results might be misleading, since there are several parameters with interim limits, or some are only being monitored per consent decree and agreements with Regulatory Agencies. Notwithstanding, there is still room for further improvement with respect to prioritization, scheduling, and execution of corrective and routine maintenance activities, and optimization and strengthening of the System (through permanent rehabilitation projects).

Despite of all the challenges faced by PRASA in FY2018 and slow recovery in FY2019, most of the facilities have been brought to operational status and, at least in the short term, continue to serve their intended purpose of providing potable water supply and treating used water. However, the 2017 Hurricanes affected the conditions of most of PRASA's facilities, and it becomes more imperative that projects necessary to address the damages and improve conditions are implemented to guarantee the production of safe drinking water and treatment of wastewater in compliance with applicable regulations. PRASA continues to address operational challenges resulting from intermittent power supply and budget constraints. Conversely, PRASA expects that the CIP is reactivated during FY2020 and anticipates the implementation of projects will address some of the major issues.

A summary of the O&M budgets, O&M highlights provided by PRASA's support departments and Regional personnel, and a detailed summary of PRASA's Strategic Plan, programs and Operational Initiatives are included in this section.

5.2 O&M Costs

Over the past five fiscal years, PRASA's O&M expenses have fluctuated from \$695M in FY2013 to \$867M (includes non-cash adjustments and prior to expected reimbursement from the 2017 Hurricanes) in FY2018. PRASA continues its effort to become more efficient by exercising greater management controls to reduce its O&M costs and by implementing various operational programs and initiatives.

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PRASA's FY2019 O&M expenses preliminary projection for the water and wastewater system (combined) prior to expected reimbursement from the 2017 Hurricanes is approximately \$782M, of which \$694M are directly related to the O&M of the System. The other \$87M are related to commercial activities and provision of customer services, including but not limited to staffing and operation of customer service offices island-wide; meter reading; connection and disconnection services; invoice preparation, printing and distribution; and customer service call centers, amongst others. PRASA estimates that during FY2019 approximately 73% of its System's O&M budget (\$507M) was allocated to the water system and the remaining 27% (\$188M) to the wastewater system. Estimated costs per million gallons (MG), per customer account and per 100 miles of pipe for combined utilities operations are summarized in Tables 5-1 and Table 5-2 below. A comparison to benchmark values is also provided.

Table 5-1. PRASA FY2019 O&M Water System Budget Benchmarks

Performance Indicator	FY2019 PRASA	2018 AWWA Benchmark Median ¹
Cost per Account ²	\$411.00	\$470.00
Cost per MG Processed ³	\$2,561.00	\$2,425.00
Cost per 100 miles of pipe ⁴	\$3,404,467.00	\$2,904,472.00
Preliminary O&M System FY2019 Costs	\$507M	-

¹Source: 2018 AWWA Utility Benchmarking: Performance Management for Water and Wastewater.

²Based on number of accounts at the end of FY2019 of 1,231,633 (water accounts) and 763,194 (wastewater accounts).

³Based on FY2019 total production and distribution of approximately 542 million gallons per day (MGD) of potable water.

⁴Based on 14,883 miles of water pipeline.

⁵Values are rounded.

Table 5-2. PRASA FY2019 O&M Wastewater System Budget Benchmarks

Performance Indicator	FY2019 PRASA	2018 AWWA Benchmark Median ¹
Cost per Account ²	\$246.00	\$353.00
Cost per MG Treated ³	\$2,460.00	\$2,318.00
Cost per 100 miles of pipe ⁴	\$3,130,358.00	\$2,698,845.00
Preliminary O&M System FY2019 Costs	\$188M	-

¹Source: 2018 AWWA Utility Benchmarking: Performance Management for Water and Wastewater.

²Based on number of accounts at the end of FY2019 of 1,231,633 (water accounts) and 763,194 (wastewater accounts).

³Based on FY2019 total treatment of approximately 209 MGD of wastewater.

⁴Based on 5,994 miles of wastewater pipeline.

⁵Values are rounded.

5.3 Support Departments and Regional O&M Highlights

Arcadis conducted meetings with key PRASA department directors and other personnel to obtain an update on the status of the different departments, operations, and initiatives. A summary of the information provided by PRASA is detailed in the following sub-sections below.

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5.3.1 Department Updates

5.3.1.1 Human Resources

PRASA's human resources (HR) Department is currently focusing on two main tasks: 1) achieving PRASA's headcount goal of 4,800 employees by FY2021 (with no vacant positions) as presented in the 2019 PRASA Fiscal Plan and 2) understanding and implementing the requirements included in the series of acts (Act 211-2015, Act 3-2017 and Act 26-2017) that have been passed in recent years.

In FY2017, PRASA completed identifying the roster of employees that classify for the Voluntary Pre-Retirement Program as defined by Act 211-2015. About 327 employees previously qualified for this program, resigned by June 30, 2019. For further detail refer to Section 3.2.3 Staffing Profile of this Report.

Lastly, the HR Department ongoing initiatives include:

- Updating and developing KPIs that adjust to HR Department changes.
- Utilization of System Applications and Products in Data Processing (SAP) to manage Health Plan Insurance information.
- Contractor currently working on employees' classification studies to evaluate salary scales.

5.3.1.2 Customer Services

PRASA's Customer Service Department continues to focus on measuring and implementing metrics to further improve the following: invoicing, collections, billing adjustments, customer service complaints, service interruptions, service quality, meter actual reading, and waiting time in commercial offices as well as in the call center.

The Customer Service Department has been impacted by the fiscal situation as well as by limitations in personnel. Currently, there is a staff shortage that affects the ability to handle complaints in a timely manner, delays on meter replacements, longer waiting time in commercial offices, among other issues associated to the limited personnel in the department.

PRASA operates 12 commercial offices with an average rate of 1,200 people per day visiting the offices for invoice payments and service requests. On June 30, 2019, the Bayamon Commercial Office reopened. Although the reopening might have reduced impact (waiting time) on other offices, since opening it is only receiving approximately 125 customers visits/day which is significantly lower volume than before its closing due to the 2017 Hurricanes impacts.

Actual meter readings versus estimation was included as new KPI on August 2017 to drive a reduction in meter reads estimation, increase invoice accuracy, and reduce adjustments. Meter replacements have been significantly reduced compared to previous years. Current inventory of 5/8-inch meters typically used for residential and commercial customers is estimated at about 4,000 and is being used strictly for new service connections or critical replacements. On February 2019, it was approved to acquire 50,000 water meters progressively to last until the end of FY2020. Inventory will continue to be replenished as necessary until the P3 Project Agreement is executed and the Contractor, who will assume all

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responsibilities for meter replacements, is fully transitioned. The department's ongoing initiatives are summarized below:

- Revision of Customer Service Protocols for alignment with the most recent version of Regulation 8901 are currently on hold. It is now expected to be completed by the end of FY2020.
- Upgrade of cashiers and other equipment at the commercial offices (subject to schedule of implementation of the P3 Project).
- Upgrade of meter reading portable terminals (TPL, for its Spanish acronym) to improve the investigation of service claims (subject to schedule of implementation of the P3 Project). Currently a significant number of TPLs are not working, thus data recording is done manually. Approximately, over 125 employees need TPL upgrade to perform task adequately.
- Expansion of breadth of services provided by the call centers' private contractors. To achieve this, PRASA is revising the automatic operator format to be able to program investigation appointments by phone. Services were established in 12 locations: Mayaguez, Aguadilla, Arecibo, Caguas, Río Piedras, Metro, Cayey, Guayama, Fajardo, Manatí, Naranjito, and Ponce. There are currently two private companies managing the call centers and these private contracts are renewed every three years; Services were extended until the end of FY2020 and may be transitioned to the P3 Project Contractor.
- In response to requests by several Mayors, Customer Service Mobile Units were implemented to provide mobile customer services in specific communities across the island. There are currently two units which are on standby due to budget cuts; however, PRASA expects to continue service until it is eventually transition to the P3 Project Contractor.
- Encouraging PRASA customers to enroll in electronic billing (paperless) to reduce printing costs, offering \$1 discount on electronic bills.

PRASA's fiscal situation has caused a slow down on the implementation of the above-listed initiatives. With respect to other government initiatives, such as the Central Government's Integrated Services Offices, PRASA has not provided staff for such offices and the decision to participate is currently on hold.

5.3.1.3 Purchasing and Logistics

PRASA's Purchasing and Logistics Department continues to operate mainly from the central administration building, although certain purchasing and logistics personnel are permanently assigned to the regions. As established during FY2018 orders below \$3,000 do not have to be approved by the director of the department, but rather by the different regional managers resulting in a more expedite approval workflow process.

The backlog of orders that was created in the aftermath of the 2017 Hurricanes has been substantially reduced. Although there are some pending orders, specific to EGUs and some others, the backlog is minimal.

Rehabilitation works were performed in both distribution centers, Trujillo Alto (serving Metro, East and part of the South Regions) and Aguadilla (serving the North, West and part of the South Regions) and are fully operational. These are interconnected and communicate with each other mostly via SAP. PRASA

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continues to report greater inventory controls. Moreover, as part of their effort of maintaining control of PRASA's purchased materials, staff performs daily counts using SAP at all their facilities.

The Puerto Nuevo WWTP storage yard (which houses large diameter materials and equipment) and transshipment station (used to store decommissioned materials and equipment) are operational and completed their rehabilitation and improvement works.

The Materials Requirement Planning (MRP) is fully operational at both Aguadilla and Trujillo Alto Storage Warehouses and Distribution Centers. This system automatically sends POs once the inventory has reached certain amount of inventory.

- MRP is expected to be implemented during FY2020 at the Puerto Nuevo WWTP storage yard and transshipment station.
- Also, PRASA is modifying the system to limit repetitive POs and to buy those materials in bulk, thus streamlining the process and saving time and money.

Procedure 400 for purchasing process is still under revision. The elimination of Lotus Notes has created some delays.

- PRASA is expecting the revision of the Emergency 331 component of the process because of its importance attached to health, water and wastewater service provision and security needs. At the time of the interview, it had an Administrative Order under revision by PRASA's President. When given the go-ahead, it will be implemented.

Regarding purchases, the department adheres to the following:

- Express Purchase (known in PRASA as "*Rapidita*") < \$10,000 – Only needs approval by the different regional managers.
- Open Market process between \$3,000 - \$100,000
- Public Bid > \$100,000 – Requires Purchase Manager, Regional Manager and President approvals.
- The Government of Puerto Rico had approved a waiver during the 2017 Hurricanes emergency, in which PRASA was exonerated from the Central Government PO approval process. PRASA is only required to notify the Central Government but did not need to request approval from them. This waiver no longer applies. However, the Governor has delegated the responsibility to approve POs over \$100,000 to PRASA's President instead of Central Government and/or OMB.

The department's ongoing and future initiatives are summarized below:

- Bar Code initiative has been implemented and is functional in both the Aguadilla and Trujillo Alto Storage Warehouses and Distribution Centers.
- Updates to the SAP system which include changes in the purchase release and improvements in the visibility of the purchase status.
- The "*liberador sustituto*" initiative implemented during FY2018 continues. This initiative consists in assigning two substitute employees to each key person within the PO process algorithm and both substitute and key person can have visibility and power of approval at the same time. This initiative has been useful and provides advantages to expedite the approval process.

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- The mobile system Fiori (SAP) initiative is functional.
 - For purchasing it has been operational since FY2018 and for logistics during FY2019.
 - Mobile system allows to access SAP and approve POs; create POs; look at stock in warehouses; perform warehouse management, etc. These mobile units are provided by PRASA and can also receive phone calls. However, they do not make calls.
- The Insurance Department is also improving their amendment (PO Review) approval process, which has a positive effect to the Purchase and Logistics Department.
- The inventory labeling initiative continues implementation by product.
- Being implemented in FY2020 is an initiative to track in SAP the whereabouts of chlorine gas cylinders (150lbs & 1-ton) from original shipment from provider to each WTP, to storage and back for refill.
- Another new initiative is to include in SAP, the validation process for insurance requirements for service and chemicals POs, so that everyone can view the status. Also, include that amendments to POs return to Insurance Department for validation.
- New initiative to create record for suppliers on database to have annual insurances already on record and help expedite the process.

No significant impact regarding the fiscal situation was reported.

5.3.1.4 Systems and Information Technology

PRASA Systems and Information Technology (IT) Department continues developing the information technology management areas and the implementation of the Global Technological Innovation for PRASA's Renovation Program (INTEGRA for its Spanish acronym). INTEGRA is no longer used to refer as the umbrella of multiple initiatives. The initiatives under this umbrella continue ongoing.

During FY2019 the following initiatives and programs were implemented:

- Lotus Notes
 - Elimination is dependent on the acquisition of SAP HANA. This is ongoing. PRASA expects to have this effort completed by the end of FY2020.
 - This project has to be submitted to the FOMB for approval due to the fact it exceeds \$10M.
- SAP improvements
 - Integration of SAP with QPLUS, which is a software that utilizes android platform. This initiative is specific for Preventive Maintenance Department. Also, it seeks to replace the handheld computers (tablets) used in the field to generate orders.
 - Provision of 100 android devices for the Customer Service Department while waiting for the implementation of the P3 project. This will mitigate issues of lack/defective devices. Contract has already been approved and is currently in the purchasing department.
 - Warehouse Bar code initiative was completed and implemented.

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- After the firewalls were completed in May 2018, the *Arin* Application was expected to be implemented during FY2019, but it has been delayed. Neptuno consultant is currently working on this initiative. Design of the software is completed; pending to purchase routers. It is expected to be completed by December 2019.
- Banking Transactions Security – An upgraded encryption application, TLS 1.1, was implemented for such purposes. The implementation of TLS 1.2 was completed.
- The SAIA App implementation was completed during FY2018; however, the Contract is still awaiting sign off by the PR Fire Department and PRASA. This app enhances the hydrants inspection process.
- VHF radios and P-25 radios acquisition
 - VHF radios were not purchased, instead P-25 radios were acquired for communication during emergencies. P-25 radios work on a specific band for public safety and are located in strategic areas such as Offices of Emergency Management, PRASA's Main Building, and Municipalities with dams.
 - PRASA purchased (14) P-25 radios for the following facilities: PRASA's Main Building, West Regional Operations Office (Sultana del Oeste), South Regional Operations Office (El Tuque), North Regional Operations Office (Arecibo Operations), East Regional Operations Office (Angora), La Plata Dam, Sergio Cuevas WTP, Carraízo Dam, Operations Carolina, Loíza Dam, Operations Trujillo Alto, Operations Toa Alta, Operations Dorado and Operations Bayamón.
- Inventory initiative, consultant Accenture Puerto Rico LLC (Accenture) is managing this initiative. Currently on user test status. Expected to go live on October 2019.

PRASA's IT future initiatives include the following:

- SAP HANA initiative. Equipment was received in June 2019 and it is expected to go live on October 2019.
- SAP Single Sign-On initiative. It will facilitate and reduce the use of multiple passwords which result on less help desk tickets and increased employee productivity.
- Digitalization to eliminate manual procedures (Open Text)
- PS and SAP Grants – will facilitate Grants management and disbursement (for Infrastructure Department). Licenses are already available, pending configuration of the App.
- New Website initiative. Language was changed to increase security and make it easier to perform updates. This will also allow access to specific parts of the Website without having to modify the entire structure.
- Dynatrace Software (Artificial Intelligence) initiative. This will help to identify errors, diagnose, and fix performance issues and find the root cause analysis of the issues
- Developing KPIs. Currently on phase 1 (user test).

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- Payment Gateways – It consists in the consolidation of all payment methods under one (Pay Admin App), which will facilitate the system updating process. During FY2019 this initiative still in working progress in phase 2 and is expected to be completed by April 2020.
- Portal Life Ray – This will segregate applets within the website which will ease the safe addition of content to the website. Initiative was completed and is waiting for communications coordination to go live. It is expected to launch in Jan 2020.
- Developing for P3 project
 - SAP HANA
 - Low power wide area network. Developed in Europe, new technology in Puerto Rico. PRASA is currently evaluating this technology; pilot testing is ongoing.

No significant impact regarding the fiscal situation was reported. Positions that were vacant in FY2018 were mostly filled.

5.3.1.5 Communications

PRASA's Communication Department has been focusing efforts on moving forward in this social media era and improving the utilization of PRASA's website as well as the different social media platforms such as Instagram, Twitter, and Facebook. During FY2019, there was a substantial increase of followers for the social media applications mentioned. Due to the quick availability of information and images received through social media, it allows PRASA to respond faster to the clients and in a more efficient manner. In addition, this have had a positive impact on customers' perspective towards the service offered. PRASA is continuing to use social media as an educational platform by continuously sharing tidbits on treatment processes, how their infrastructure works, among others. Social media platforms are also being used to share information on repair status (including pictures of crews working), service interruption, etc. to keep the public informed of on-going and resolution of operational situations. Press conferences and other events are also shared on social media.

The Communications Department, in coordination with the IT Department, continues updating and improving PRASA's website, which includes consent decree information, press releases, virtual office, information related to seasonal events (e.g. hurricane season, water conservation, etc.), among others. PRASA's website is currently under reconstruction and it is expected to be completed and re-launched on December 2019. All government agencies websites will follow the same template for consistency.

Over the fiscal year the Communication Department faced some challenges where had to handled unexpected events that required highly media presence to educate citizens. Some of the most notable events were the water reduction plans, the manganese level situation, and the water service disconnection fee. PRASA's Communications Department allocated resources got involved with subject matter experts related to each of the events, which resulted on a successful media performance. On the other hand, tours of facilities for groups is no longer allowed. The Open Plants Day is no longer available, due to safety issues after the hurricanes and suspicious requests. PRASA is currently working with the Legal Department to make a confidentiality document with requirements and restrictions to allow public access to the water plants in the future. Also, safety measures are being reevaluated.

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Despite PRASA's financial situation and limited personnel throughout the departments, the Communication Department had a successful year in general. Below are some of the most relevant achievements during FY2019:

- Launched the FOG and Petroleum, Oil, Gas and Sand (POGS) Campaign in multiple type of media: social media, radio, PRASA website, radio, flyers, etc. This was a joint effort with the Compliance Department.
- Achieved certification of social media sites: Facebook, twitter, and Instagram. This was an important accomplishment because prior this certification anyone was able to report the site and eventually get shutdown. After the certification, no one can close the sites.
- Substantial increase of followers in the main social media sites: Facebook, twitter, and Instagram.
- A "tweet" was utilized for news media. This accomplishment implies the importance of the social media now a days that this type of notification is even used by other media to develop news.
- Communication Department presence at 90% community service events.
- Multiple events with the Potable Water Truck for: community events, service fairs, 5ks, etc.
- Created the art in house for vehicles lettering and uniforms.
- Puerto Rico Water and Environment Association (PRW&EA)- Fast Track program consisted of workshops in the different regions to provide technical training as well as exposure to new technologies to PRASA personnel.
- Susan G Komen – pink electronic billing and pink illumination in selected water facilities (Carraízo, Op. Camuy, and Op. Yauco).
- In FY2019, a new administrator of the communication department was integrated to the team and a key position for the Educational Program is pending to be filled in FY2020. The Communications Department Future initiatives include the following:
 - Water Conservation Campaign
 - Awareness of Hydrants Management
 - Billing Campaign - Discount of \$1.00 if enroll in electronic billing, otherwise will be charged this amount. PRASA's Governing Board is requesting this campaign and the Communication Department expect to have it completed by Feb 2020.
 - Service Connection Campaign - Inform and educate people about the process of being connected, costs, fees, etc.
 - Customer Service Campaign
 - Breast Cancer Awareness – Provide truck with equipment to perform mammography and consults. Expected to launch by Feb 2020.
 - P3 discussions with PRASA Departments involved to delineate a communication plan once the project is confirmed for implementation.

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- Announcement of Capital Improvement Projects and Resiliency Projects once FEMA funds become available.

5.3.1.6 Compliance

PRASA's Compliance Department continues to monitor regulatory compliance in PRASA facilities and continues to maintain open channels of communication with Regulatory Agencies. After the 2017 Hurricanes, PRASA's Central Laboratory was completely devastated, and therefore inoperable. At this point 100% of the samples collected were contracted out to external laboratories due to the inability to process them. Over 2 years after these events, PRASA Central Laboratory operations have been slowly bringing back up, although the original laboratory facility could not be restored. This facility is currently on the demolition phase for eventually the construction of a new laboratory in the premises.

For PRASA being able to start processing samples, multiples mobile office trailer units were acquired, and a temporary laboratory complex was installed, obviously with a much smaller capacity of sampling analysis as well as office spaces limitations. Currently, the temporary PRASA Central Laboratory is partially certified and only can handle between 60-70% of the sample analysis, the rest of the samples are contracted out to private laboratories. Regarding the smaller scale laboratories located at strategic points on the island, only PRASA Mayaguez Laboratory is operating as normal. On the other hand, PRASA Camuy Laboratory is no longer in operations. PRASA is evaluating other alternatives such as the location of another laboratory in Aguadilla area.

After the 2017 Hurricanes PRASA requested Force Majeure protection and a hold for a period of time for ongoing and upcoming work and deadlines and stipulated penalties with both Regulatory Agencies. Ongoing negotiations with USEPA and PRDOH are being conducted on a case by case basis. Further detail is included in Section 6.

PRASA is currently in the process of implementing several operational strategies and initiatives in the system to reduce DBPs, which PRASA acknowledges to be the biggest compliance challenge at the time after the implementation of the Stage 2 Disinfectant By-Products Rule (D/DBPR). Complying with Stage 2 D/DBPR is more challenging since averaging results across monitoring locations within a system is no longer applicable. Hence, reporting for the DBPs running annual average (RAA) per location has resulted in more violation instances. PRASA has continued to implement several operational strategies in the System to reduce these incidences. In the past PRASA performed water quality modeling to identify the root cause of these non-compliance events to establish corrective actions and implement control measures. Since FY2017, PRASA has developed an action plan to address exceedances to DBPs and continued to implement in FY2019, which consists of, but is not limited to a combination of the following corrective measures:

- Elimination/reduction of pre-chlorination
- Increasing frequency of process tanks/systems wash
- More frequent drainage of systems
- Change in coagulants
- Hydraulic modeling to reduce retention time in tanks

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- Lowering pH
- Training
- Evaluation of new chemicals for pre-disinfection and coagulation (e.g. polymers, chlorine dioxide)

PRASA recognizes that no single corrective action will solve the DBP issues; but rather, corrective measures will need to be combined and the different departments involved must collaborate to achieve compliance. Therefore, PRASA created a task force team by regions that include personnel from different areas such as: managers, area supervisors, compliance, and distribution system. Monthly meetings are performed to discuss operational adjustment, challenges, findings, among others in an effort to learn necessary steps to improve in this area.

As part of their efforts to comply with the requirements stipulated by the Regulatory Agencies regarding the optimization of preventive maintenance protocols and corrosion prevention, new opportunities to improve the preventive and corrective maintenance program are required to ensure the proper O&M of all critical facilities. PRASA began implementation of the Corrosion Control Plan with site visits conducted on September 3rd, 2019. As indicated by the Compliance Department, the implementation of the Sewer System Operation and Maintenance Plan (SSOMP) program for Puerto Nuevo WWTP, which includes mapping pipelines, cleaning and flushing program, assessment of System's condition, among others, is ongoing and the sewer cleaning of the High Priority Areas (lines <30") is expected to be completed by the end of FY2020. The Compliance Department also reported that they continue with the implementation of the FOG Program, performing monthly visits, delivering educational material, locating, and focusing areas prone to overflows, among others.

Also, in compliance with the consent decree requirements, PRASA continues the implementation of the Process Control System (PCS) at treatment facilities in accordance with potable water and wastewater industry standards. The PCS aims to keep current and revised to address, as appropriate, new regulations, treatment process changes, new equipment and/or treatment units installed/eliminated, and addition/elimination of chemicals. PRASA is currently conducting meetings with the consultant and it is expected to have completed Metro and West (STS and WWT) regions by the end of FY20. The rest of the regions are expected to be completed by the end of FY2021. Also, the department continues focusing on the implementation of remedial measures and commitments to improve the separate and combined sanitary sewer system operating efficiency to minimize sewer overflow impacts.

Furthermore, the department continues as the responsible party for PRASA's Health and Safety Program, which includes talks, meetings, and task risk assessments to improve O&M practices and employee safety. A delay on the development and implementation of the Health and Safety Plan occurred due to a significant personnel reduction (approx. 30%) as of December 2018.

Lastly, the Compliance Department is working on the logistics to submit a revised schedule for expected compliance with the 2015 USEPA Consent Decree and 2006 PRDOH Settlement Agreement. Additional details on Consent Decree programs are provided in Section 6.

5.3.1.7 Legal

The Legal Department deals with 1) claims, which include courts and extra-judicial; and 2) litigations, which include damages, contract non-compliance (class action lawsuits, service & contractors Contracts),

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bid injunctions, bankruptcy and administrative (bills, water theft, injunctions). The department consists of the director, three auxiliary directors (Litigation, Opinions/Counsel, Contracts) and a pool of 9 lawyers; down from 11 in FY2018, as two lawyers resigned under the pre-retirement programs. Also, for damages and pre-judgements litigation related to insurance claims they use contracted external counsel. There are about ten firms under contract, during FY2019, to handle litigations. However, the fiscal situation has forced the legal department to use in-house lawyers to minimize the contracting costs. Invoice objection and water theft litigations are managed through administrative proceedings, with an average rate of about 10 administrative hearings per day. As for PRASA's financial debt negotiations and Fiscal Plan counsel, these are managed exclusively by external law firms.

The department reports that there has been a decrease in litigation cases, mainly due to the CIP continuing to be suspended as well as a decrease in claims in general. During FY2019, the legal department concentrated its efforts on existing litigation, mainly related to damages and prejudice claims, also some Awarded Bid appeals. Customer bankruptcies are usually handled by the Customer Service Department, but Legal aids as needed. There were no criminal active cases. Also, during FY2019 the department provided guidance and legal advice to the Compliance Department regarding the 2015 USEPA Consent Decree and review of its amendments. The Legal Department expects by December 2019 to finalize agreements regarding the 2015 USEPA Consent Decree. The 2006 PRDOH Drinking Water Settlement Agreement continues negotiations through the individual systems vehicles provided under the Agreement.

The legal department continues to provide support to PRASA's land acquisition for sales and expropriation cases, if any. Also, provides support to PRASA for the P3 project process.

The department has vacancies in the following areas: two lawyers' vacancies; two administrative staff for aid in administrative hearings; and one for general administrative duties. Furthermore, the department has had reductions regarding contracts, travel, etc.

Legal Department has a FY2020 initiative that consists in providing a weekly report on extraordinary issues to PRASA's President.

The Puerto Rico Legislative House of Representatives passed a series of bills and amendments as a result of the slow recovery of the island in terms of essential services regulated by the General Administration Services (ASG by its Spanish acronym). These laws have an impact on operational aspects such as: costs, delays, and service procurement. Such laws are included below:

- Law 42 2018 - "*Ley de Preferencia para Contratistas y Proveedores Locales de Construcción*"
 - Given the need to address critical infrastructure identified on the island, this legislation enacted gives preference to local businesses and construction suppliers in order to incentivize the economy and the development of individuals and businesses in Puerto Rico. This law was established with the purpose of reserving at least 20% of the purchase and contracting of construction services for local businesses or suppliers that render said services to government agencies and entities. In the event that PRASA does not benefit from the services of the ASG, it shall conform its procedures and/or regulations to fully comply with the provisions of the Law.
- Orden Ejecutiva ("Boletín Administrativo Núm. OE-2018-033")

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- Any construction project financed totally or partially with funds from the Government of Puerto Rico, its agencies, instrumentalities, and public corporations will have as a condition that the contractor pays the employees who work there a minimum salary of fifteen dollars (\$15.00) per hour. This requirement will also apply to subcontractors. Any other aspect of federal legislation and regulations regarding how the minimum wage is paid, hours of work, which employees and occupations are exempt from the minimum wage, and what constitutes hours or hours of work shall apply. A certification confirming that the cement to be used for the project was produced in Puerto Rico, shall be issue as a contract requirement for concession of a construction project.
- The provisions of this Executive Order shall form part of the communications issued by agencies requesting proposals or auction bids for procurement for any matter subject to the provisions of this Executive Order. Contracts between the Government and its contractors must include that the subcontractors shall comply with the requirements of this Executive Order.
- Law 73 2019 - "*Ley de la Administración de Servicios Generales para la Centralización de las Compras del Gobierno de Puerto Rico de 2019*"
 - Establishes that the ASG is the governmental entity authorized to establish and carry out all procedures for the acquisition of goods, works and services of the Government of Puerto Rico, in order to establish a uniform procedure centralized for the acquisition, evaluation, and review of purchases made by government instrumentalities.
 - The provisions of Law 73 will govern the processes of purchases and auctions of goods, works and non-professional services of PRASA. According to the definitions of this law, PRASA is considered an Exempt Entity until the validity of the current Fiscal Plan (PROMESA) expires, and then it will be considered a Government Entity. Once the Fiscal Plan expires, it will be considered a Governmental Entity, therefore shall comply with the law stipulations.
 - Upon completion of the validity of the Fiscal Plan, the provisions contained in Chapter III of the Law regarding auxiliary services will be mandatory for PRASA. This means that, at the end of the validity of the Fiscal Plan, the ASG will have under its jurisdiction the administration and control of all means of transport (land, air and sea) that are owned or used by the Executive Branch, including the acquisition of all either, (fuels, equipment or replacement parts necessary for the operation, repair or maintenance of the means of transport) and to negotiate contracts for repair and maintenance services for the means of transportation.
 - Law 73 establishes that any Exempt Entity such as PRASA must prepare an Annual Procurement Plan, which must include a list of all the non-professional goods, works and services deemed necessary and whose purchase is probably acquired during the fiscal year for which the plan is made The Annual Procurement Plan must be submitted to the ASG on or before March 31 of each year. In addition, PRASA will be required to review the estimates in the Annual Procurement Plan quarterly.
 - The law also establishes the bidding methods that will be performed in the procedures for purchases and auctions of goods, works, non-professional services, and professional

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services. It also includes general provisions on bidding processes, purchase and auction request processes, billing process, and compliance with general standards and preferred public policies, as applicable.

PRASA's legal team continues communication and discussion with ASG and the Central Government regarding the impacts of these laws on PRASA's procedures and the potential schedule and cost increase that might result. As for new initiatives, the legal department is actively working closely with other PRASA's departments to provide legal guidance.

5.3.1.8 Infrastructure

PRASA's Infrastructure Department continues to oversee and manage PRASA's CIP. However, as previously mentioned, most of PRASA's CIP continues to be suspended until funding is identified. Most of the Department's efforts since the 2017 Hurricanes has been guided to the recovery efforts, the Insurance settlements for damages incurred and negotiations with FEMA for funding of damages not covered by Insurance. The Infrastructure Department has managed the asset damage assessments and estimates for claims negotiations with PRASA's insurance company and FEMA. The department has continued its support during the ongoing claim negotiations and is working closely with FEMA. Currently, the Interim Executive Director for Infrastructure, in coordination with PRASA's Executive Management Team and FEMA, has undertaken the process to reactive the CIP. The Infrastructure Department is also responsible for the management of the Comprehensive Energy Management Program, the Plant Automation Program and Planning Department.

PRASA received the funds associated for Hurricane María claims and continues the process of negotiations for the claims for Hurricane Irma and the Rains events after Hurricane María. Please refer to the Insurance section in this Report for details.

During FY2019, five CIP projects were submitted to FEMA to obligate funds via a Project Worksheet (PW) with the expectation of funds being available for December 2019. These projects were: PRASA's Central Lab, Enrique Ortega WTP Rehabilitation, Dorado WWTP rehabilitation, Buena Vista Water Storage Tank restoration and the Guajataca Reservoir Intake works.

In addition, the Department is running a Bid for the demolition of the Central Lab in Caguas. It will also include a Design/Bid of the new Lab with the CIP.

Of notice is that during FY2019 PRASA published a Bid requesting proponents for a Statement of Qualifications (SOQ) to serve as Program Management Consultant (PMC) of PRASA's CIP. PRASA expects to continue the process by issuing a request for proposal (RFP) during FY2020. Also, PRASA indicated that they have engaged designers for revising design of several projects that were cancelled during the previous CIP so that they are in an advance stage when the CIP is reactivated.

The Department also played a key role in the negotiations with the Regulatory Agencies for the restructuring of outstanding debt with USDA and USEPA, which opens access to USEPA state revolving funds (SRF) from USDA Rural Development (RD) funds that can be used in the CIP implementation.

Regarding the Energy Management Program, the Energy Performance Contracts (EPCs) with Honeywell were cancelled but the Solar Power Purchase Agreement (PPA) contract continues with Windmar Renewable Energy.

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The following material changes occurred during FY2020:

- Infrastructure published a bid announcement to receive support from a Consultant with the allocation of funding with FEMA's Program of Public Assistance (20-RFP-DAC). PRASA expects selection during FY2020. In addition, PRASA is analyzing alternatives to develop a funding strategy between funding sources that maximizes the funding for each project.
- Infrastructure published the RFP for PMCs to manage the CIP. PRASA expects that the CIP implementation starts during FY2020.

5.3.1.9 Strategic and Corporate Planning

PRASA's Strategic and Corporate Planning oversees and manages the Project Management Office (PMO), the IT Department, Training and Continuing Education Program and the WRO. Most of the efforts are guided towards the WRO and the NRW reduction efforts, the development of the PMO, and in finalizing the Strategic Plan (2020-2025).

The PMO is currently in the development phase and will be designed to establish Standards and Procedures through all the operational Regions, that can be implemented with any type project. Furthermore, the PMO will work closely with the Consortiums to be able to share best practices in the CIP as well as, Internal Initiation projects. To provide a "Best Practices" approach to help improve operations and maintenance performances, become less reactive and more preventive, incorporate and use lessons learned, and maximize available data (data mining), thus enabling the Operational Regions to make informed and smart decisions.

The WRO focusses in water recovery and operational optimization. The NRW component has been discussed previously in Section 4.3.3 and in more detailed in Section 5.5.2 of the Report. However, it is important to highlight the leak detection plan, for which the WRO has requested funding to implement the program and eventually transition to each Operational Region. Regarding Operational Optimization, the WRO goals are to provide continuous support to PRASA Operations, specifically on reducing costs, optimizing income, becoming more cost efficient, increasing visibility of the Systems, support on determining where to invest and get the most benefits, and standardizing programs through all Regions, among others.

For more details on the Strategic Plan refer to Section 5.4 of the Report.

5.3.2 Regional Updates: Challenges and Initiatives

Meetings with all five regional directors were conducted during the month of October 2019. The purpose of these meetings was to assess the progress of the region based on the established KPIs, the impact of Puerto Rico's fiscal situation, the issues and challenges after the 2017 Hurricanes, the programs and initiatives developed in each operational region during FY2019, achievements, overall operational activities, and future initiatives.

The Regions presented issues and challenges as a result of limited operational budgets, slow recovery from damages caused by the 2017 Hurricanes, and delay on FEMA funds disbursements, among others. Some of the most common issues and/or challenges among all regions are listed below:

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- Lack of personnel for O&M functions, mainly due to hiring freezes and low workforce supply caused, in part, by the population emigration to the U.S., and the Voluntary Pre-Retirement Program. There are mechanisms available to fill positions of difficult recruitment and currently efforts are focused to cover these vacancies. One of the greatest challenges that O&M regional experience is the ability to find plant operators and electromechanics, among others.
- Although a considerable number of systems have restored the visualization after the 2017 Hurricanes, there still telemetry systems pending to be installed to achieve full visualization of the water systems. Wastewater systems in general have limited visualization.
- Although new fleet vehicles were purchased in FY2019, PRASA still faces limited availability of fleet vehicles, mainly due to deterioration of vehicles, long repair times and limited budget for purchasing new vehicles.
- Delay in obtaining approvals of POs.
- Aging infrastructure and lack of maintenance.
- Length of time to address and close out work service orders.
- Challenges to maintain and/or reach compliance with the DBPs regulations, mainly due to limited budget, which prevent investment for repairs, additional sampling, exploration of new technologies, among others.

During FY2019 all the regions reported a shortfall in employees which have caused an increase in overtime costs and a direct impact on the operations of the systems that have resulted in delays on repairs as well as making more challenging the ability to maintain and/or reach compliance with regulations. In addition, DBPs compliance has been another common challenge identified throughout the regions. PRASA's efforts to maintain and/or reach compliance with these parameters (THMs, HAA5, TOC) are currently focused in operational adjustments although in some cases it may require a capital project to address the issues. Because capital projects are subject to funds availability they are currently on hold or moving slowly. Also, the Regions are continuing their efforts to control costs and optimization of the systems. However, other programs that were implemented during previous fiscal years are currently on hold or proceeding at a slow pace due to the current lack of personnel and funding. These programs are the following: reduction of sanitary sewer overflows (SSOs) and combined sewer overflows (CSWOs), NRW reduction, Energy Consumption Reduction, among others.

Delay of FEMA reimbursements have left on hold recovery efforts. Currently, the rehabilitation of systems is being affected by the insufficient funds to perform such activities which only exacerbates the physical deterioration of the facilities and may ultimately impact their operation. Also, the vehicles fleet availability has been severely impacted in all regions due to deterioration, age and lack of funds to replace such fleet, thus putting at risk PRASA Operations Department performance. During FY2019 PRASA was able to acquire and distribute a limited number of vehicles for each region, however it was reported by all regions that there is still a significant need regarding fleets.

There are other issues specific to each Region, that are important to be highlighted. For example, in the West Region repairs are taking too long to be resolved, partly because of purchasing, logistics and payment challenges. Once that repairs are completed, replacing asphalt on the work area has become an issue due to the current elevated cost. In addition, STS present a significant equipment and management

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issues in the region. The North Region continues experiencing issues associated to pipes bursting because of high pressures in the water system. The region is working to reduce water system pressures by switching several wells to standby mode and installing pressure regulators at strategic locations. The North Region still dealing with the saline intrusion in the Islote trunk sewer and the rehabilitation of the Manatí trunk sewer which collapsed in several segments. Lastly, East Region visualization capabilities diminished as low as 10% after the 2017 Hurricanes. Also, this region experiences delays on installation of pressure regulators, line repairs, among other necessary work for optimization of the systems due to limitations in personnel and funding. **Table 5-3** summarizes some of the initiatives and projects being implemented or planned during FY2019 and initiatives to be implemented during FY2020, subject to funding availability.

Table 5-3. New and Future Initiatives and Projects by Operational Region

Region	Initiatives/Projects	Description
West	Optimization Initiatives	<ul style="list-style-type: none"> • Elimination of water pump stations at strategic locations. • Elimination of San Sebastián Nueva and Vieja WTPs. • Increase visualization of wastewater components. • Elimination of Wastewater facilities • Infiltration study
	Water Compliance Actions to meet DBPs	<ul style="list-style-type: none"> • Rehabilitation of Aguadilla (Montaña) WTP and dredging of the water source. • University of Puerto Rico at Mayaguez (RUM) collaboration on additional sampling.
	Asphalt Cost Reduction	Coordination with Municipalities to establish Memorandums of Agreement (MOAs) or Contracts so that Municipalities address asphaltting needs after a repair. Municipalities already included in this program are: San Sebastián, Hormigueros, Aguada and Añasco. This is an ongoing program.
	Projects	<ul style="list-style-type: none"> • Mayaguez Submarine Outfall - repair of pipeline rupture, to address violations to the discharge permit. • Installation of fixed EGUs in pump stations related to Guajataca. • Rehabilitation and expansion of Culebrinas WTP. • Improvements at Aguada and Mayagüez WWTPs.
Metro	Water Compliance Actions to meet DBPs	<p>Ongoing initiative of reduction of chlorine application (1.8-2 mg/l) at discharge, elimination/reduction of pre-Cl, System's drain program, tank clean-up program (yearly), use divers for tanks that cannot be taken out of service and WSTs oscillation in term of water level with the goal of reducing retention time, in order to avoid water aging. Also, as part of this measure a flushing program was established as well as sampling points (100% accomplished).</p> <p>Aeration project at Carraízo Dam is expected to be completed during FY2020. This could bring benefits for reducing polymers, reducing permanganate and reduction of chlorine application.</p>

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Region	Initiatives/Projects	Description
	Optimization Initiatives	<ul style="list-style-type: none"> • Delimitation of service areas • Continue with pressure reduction measures in the distribution system. • Redundancy and Flexibility of the potable water distribution system has continued to be achieved. • Water meters installation at the regions WWTPs is expected to continue in FY2020.
	SOMP – Sewer Operation Maintenance Program	The program provides for sewer line cleaning, identification of defects, identification of any illegal connections, among others which result in the repair of lines to control and prevent future overflows.
	Energy Consumption Reduction Program	Targeted 1% energy reduction was achieved. This initiative includes performing pumps adjustments, reducing time in operation, using smart system, which reduces consumption. Another ongoing initiative regarding reduction in energy consumption is the elimination of the Pumps Stations in the systems of Caimito and Quebrada Arenas, due to pressure problems at the Hollywood Hills PS and WST and PS Holy Hills. This project is targeted to be completed by FY2020.
	Projects	<ul style="list-style-type: none"> • Puerto Nuevo's 48-inch potable water transmission pipeline- new alignment needed, as current alignment hinders flexibility between Sergio Cuevas and Superaqueduct WTPs Service areas. This project is on the list of Resiliency Projects for FEMA funds (\$13 - \$14 M) • Elimination of Hollywood Hills and Holy Hills pump stations. • Transition from CL gas to liquid: Completed at Guaynabo-Los Filtros and Canóvanas Nueva WTPs & pending at Carolina WWTP. • Carraízo Dam Aeration Project • Pump installation at Cantera
East	Water Compliance Actions to meet DBPs	Implementation of measures continues such as tanks oscillation, chorine injection point, evaluation of new chemicals, and implementation of the flushing program.
	Restructuring of Fleet Department and Acquisition of New Vehicle Fleet	An on-site and off-site repair and maintenance contract still ongoing with Mayaguez Fleet company located on the Humacao operational area. Also, the region acquired new vehicles for their fleet, however these do not satisfy all the needs of the fleet in the Region.
	Energy Consumption Reduction Program	<ul style="list-style-type: none"> • This program continues with a target of 0.5%. Initiatives for FY20: • Installation of Solar Panels – At Culebra WTP, El Yunque WTP and Humacao WTP) • Elimination of pump stations – Arcadia (Vieques) • Installation of timers for pump stations
	Projects	<ul style="list-style-type: none"> • Aibonito WWTP (Sand filters and Biofilters) • Caguas WWTP – Blowers BNR, Primary clarifiers, odor control domes, dewatering (screw conveyor), BFP or centrifuge, corrosion protection on walkways of 2ry Clarifiers. • Aguas Buenas WWTP – Module B done; Rehabilitate Module

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Region	Initiatives/Projects	Description
North		<ul style="list-style-type: none"> Comerio WWTP – Clarifiers 1 & 2 improvements Culebras WTP (Cayey) – Replace package unit Farallón WTP – STS Project El Yunque WTP – Hurricane damage repairs Central Lab – Demolition ongoing Buena Vista WPS – VFDs
	Water Compliance Actions to meet DBPs	This initiative includes the following measures: WSTs level oscillation, frequent WST wash program, increase in the drainage frequency at, Jayuya, Manatí, and Corozal distribution tanks, level control at WSTs, water quality testing, elimination of several WSTs, restructuring of service areas based on pressure and capacity, and elimination/reduction of pre-chlorine injection. Continue sectorization plan for optimization and compliance improvements.
	Pipe Rupture and Water Loss Mitigation	Aggressive plan to replace pipelines. There are several measures to reduce pressure in the system. One is to reduce the use of wells by switching several wells to standby mode and installation of pressure regulators, especially in the Manatí Operational Area. This is an ongoing plan and has decreased potable water loss, but it's limited to the available budget.
	Sanitary Overflow Prevention Initiative	Identification of illegal interconnections in the Arecibo Operational Area, infiltration of saline water into Islote Trunk Sewer, CSWOs, and collapsed pipe segments in Manatí Trunk Sewer, piping replacement plan, sectorization, and detailed investigation for the occurrence of overflows.
	Optimization/Energy Consumption Reduction Initiative	Same concept as other regions. Key initiatives include: <ul style="list-style-type: none"> Elimination of Corozal WTP by installing a pump station to pump from the 1MGD tank to Costanera and then to Substation Padilla. This project will reduce energy, costs, and improve water quality. Installation of telemetry systems to integrate more facilities into visualization system.
	Projects	<ul style="list-style-type: none"> Relocation of the Dorado WWTP Rehabilitation of the Quebrada weir is in process (75% completion) Elimination of Matadero and Ojo de Agua Wells is in process Elimination of Indiera Alta WTP Elimination or rehabilitation of Corozal WTP Renovation of Toa Alta WTP Elimination of UV system at Morovis Sur Elimination of membrane system at Sanamuertos
South	Water Compliance Actions to meet DBPs	<ul style="list-style-type: none"> This initiative includes the elimination of the pre-chlorine and post chlorine injection points; enhanced coagulation with the implementation of Gulbrandsen GPAC 200, GC850, MAC 4000, MAC 2000; increased frequency of sedimentation tanks cleaning from a semi-annual basis to three times per year.); sampling of drainage points at water distribution system with higher

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Region	Initiatives/Projects	Description
		concentrations of non-compliance; and weekly staff training and refreshers regarding compliance equipment, operations, continuous monitoring among others.
	Acquisition of Vehicle Fleet	New vehicles are in process to be acquired for the region's fleet. However, budget is limited, and it only represents approximately 20% of the fleet.
	Pipeline Ruptures and SSOs Control	This initiative includes the validation of leak/overflow claims; relocation of the Guayama WTP raw water pipeline and raw water transfer of 600gpm to Carite, which will decrease the water pressure in the raw water pipeline and at the same time decreases energy consumption due to raw water pumping, since the Carite system is a gravity system.
	Energy Consumption Reduction Initiatives	Same concept as other regions. This initiative includes: <ul style="list-style-type: none"> • Guayama penstock • Facilities lighting replacement to LED • Elimination of pump stations such as: Monte Pelao I, Guánica, among others.
	Optimization of Operations	<ul style="list-style-type: none"> • Regarding the Salinas Aquifer Restoration, PRASA continues to decrease water extraction from the aquifer even though PRASA is not the entity that causes major impact per the results of Level and total dissolved solids (TDS) analyses. This initiative is pending on other agencies to take the necessary steps toward the solutions of this issue. • H-H modelling – El Tuque (Brisas) – eliminate 3 WPS or reduce their capacity. These are: Obras Públicas Municipal, Brisas I and Brisas II. • Jaguas-Pastos System: Consejo 1 & 2 wells were affected by drought, the Region added redundancy to the system to supply water from Jaguas-Pastos WTP to the area supplied by the wells. • Moving from gas chlorine to liquid in several systems such as Río Pietro WTP, Quebradas well, among others.
	Non-Revenue Water Recovery	Measurement of system's drain flow and installation of water meters at PRASA's facilities. Drainage flow metering has been implemented in Yauco only for fire hydrants. Increased visualization of PRASA's South Region System water tanks. In addition, will perform operational adjustments and installation of pressure regulator valves on strategic locations throughout the distribution system.
	Projects	<ul style="list-style-type: none"> • Rehabilitation of the sanitary trunk sewer from Salinas to Guayama, which collapsed after the September 2017 hurricanes. • Elimination of Ponce Vieja WTP • Ponce Nueva WTP Improvements

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Region	Initiatives/Projects	Description
		<ul style="list-style-type: none">• Toa Vaca WTP – evaluating eliminating NPDES permit, raw water pumps• Patillas floating intake rehabilitation project• Guayama WWTP Improvement: Rotary Screens, Secondary Clarifiers, Biofilters and Digesters• Yauco WWTP – evaluating replacement WWPS to chopper pumps• Ponce WWTP: installation of new mechanical screen and evaluation to eliminate digestors• Vertedero well improvement (currently is out of service)

5.4 Strategic Plan

PRASA's Executive Management Team continues to work on its revised Strategic Plan which will highlight its Goals and Vision and will also be aligned with the objectives included in the FY2019 PRASA Fiscal Plan, Build Back Better Plan, and in the Government of Puerto Rico's "Plan para Puerto Rico".

5.4.1 Key Performance Indicators

Table 5-4 presents a summary of PRASA's KPI goals and results for FY2019 as of June 2019. In FY2019, PRASA's KPI results improved substantially from FY2018 but remain low as a result of the delays in the recovery efforts and the fiscal situation hindering the implementation of certain initiatives.

PRASA had a challenging FY2019. Considering that most of PRASA facilities were affected by the 2017 Hurricanes and are still in the recovery process. Operations has also been impacted by attending critical issues for providing service, several KPI's were a challenge to implement or improve. This effect is reflected on the results for the Overtime KPI on Fiscal Health, and several KPIs on Operational Efficiency and Organizational Transformation.

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Table 5-4. FY2019 PRASA Operations Key Performance Indicators

Strategic Plan Initiative	Key Performance Indicator	FY2019 Goals	Results as of June 2019
Fiscal Health	Employees per Connection	3.34 or less Employees per 1,000 connections	2.97
	Overtime	Reduce to 7% or Below	8% ²
	Budget Compliance (Excludes Electricity Costs)	Below 100%	97%
	Collection vs. Billings	Increase to 96% or Above	102%
Operational Efficiency	Compliance - Water System	Increase to 99% or Above	99.7%
	Compliance - Wastewater System	Increase to 97% or Above	95.1% ²
	Billing Adjustments	Reduce to 2% or Below	1.5%
	Complaints in Customer Service (per 1000 Actives Accounts)	Reduce to 16.7 or Below	11.81
	Monthly Average of Customers with Service Interruptions (as a Percentage of Total Customers)	Reduce to 5% or Below	17.8% ²
	Customer Service Attention Time (Commercial Office)	Maintain below 30 min.	26:12 min
	Vehicle Availability	Increase to 92% or Above	65% ²
	Average Processing Time of Purchase Orders ¹	Less than 40 days	-
	Preventive vs. Corrective Maintenance Ratio	Increase to 80%	76% ²
	Average Time for Equipment Repairs	Less than 25 days	51.70 days ²
	Reported Leaks	Reduce to 4,598 monthly	4,562
	Reported Overflows	Reduce to 2,298 monthly	2,198
	Repair Time for Leaks	Reduce to 53.0 hrs	120.87 hrs ²
	Repair Time for Overflows	Reduce to 32.0 hrs	53.81 hrs ²
Average Water Production (MGD) ³	Reduce to 505 MGD	542 MGD	

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Strategic Plan Initiative	Key Performance Indicator	FY2019 Goals	Results as of June 2019
	Percent of NRW	Reduce to 53.2%	64.4% (Estimated)
Infrastructure and Sustainability	Energy Consumption (Annual)	Reduce to 660.34 M kWh	630.91 M kWh
	Project Progress (CIP) ³	Greater or equal to 0.9	-
	Cost Performance (CIP) ³	Greater or equal to 0.9	-
Organizational Transformation	Training (Cumulative Hours per Employee)	More than 26 hrs per year	14.1 hrs ²
	Unplanned Work Effectiveness (Absenteeism)	Reduce to 2.0 days	2.13 days ²
	Planned Work Effectiveness	Reduce to 10%	4%

¹ This KPI was not measured or available due to the impact of the 2017 Hurricanes and delays of reimplementation.

² These KPIs results were still adversely impacted by the 2017 Hurricanes.

³ Due to the suspension of the CIP, the Project and Cost Performance KPIs for FY2019 are not being measured.

5.5 On-Going Programs and Initiatives

The following are programs and initiatives being pursued by PRASA. A brief description and status of each of these initiatives is provided below.

5.5.1 Integrated Maintenance Program (IMP)

The previous 2006 and 2010 Consent Decrees with USEPA and the 2006 PRDOH Agreement required that PRASA implement and continue to develop a comprehensive Integrated Preventive Maintenance Program, which evolved to the IMP during FY2013 to include both corrective and planned (i.e. preventive, predictive and proactive) maintenance activities, to ensure the proper O&M of its treatment plants and other critical facilities, including WWPSs. Through this program, PRASA established a plan to enable programmed and continuous maintenance to treatment plants, pump stations, vehicles, and equipment to provide for more reliable service, improve client satisfaction, and achieve long-term operational cost savings through preservation of assets.

The 2015 USEPA Consent Decree included the requirement for PRASA to continue with the approved IMP, which includes the following key components:

- Recordkeeping
- Maintenance planning and scheduling
- Storeroom and inventory system
- Maintenance personnel training and organization
- Cost and budget for maintenance operations

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In accordance with the requirements established on the 2015 USEPA Consent Decree, PRASA has indicated that 100 percent of the required facilities (WWTPs, WTPs STS & Pump Stations) have been incorporated into the IMP. SAP PM tool is being utilized to manage job itineraries that eventually are discussed during the Master Planning Schedule (MPS) meetings. PRASA is currently working on the process optimization of the IMP in order to be more efficient and it is expected to be completed by December 2019.

In addition to the minimum requirements established in previous Consent Decrees, the 2015 Consent Decree required PRASA to develop and submit to USEPA no later than March 1, 2017 a Corrosion Control Program as part of the implementation of the IMP. Nevertheless, the emergency caused by the passage of Hurricanes Irma and María over the island compelled PRASA to put the program temporarily on hold. The Corrosion Control Program was resumed on September 2019. Currently, PRASA is in the process of evaluation of the most critical facilities to develop an action plan on a case by case basis. The facilities evaluation phase was divided into 4 phases from which phase 1 has been already completed and phase 2 is at 30% of completion. Some of the facilities that have been evaluated include: PAS Carolina, PAS Bayamón, PAS Puerto Nuevo, among others. PRASA is utilizing external resources to continue moving forward with this program and it is expected to complete its implementation by December 2020. As reported by the IMP Department, another roadblock PRASA is still facing is the difficulty to enforce the program due to limitations on technical staff. In order to continue with the program implementation more efficiently, PRASA needs to recruit additional staff to support the program.

During FY2019, another relevant change for the IMP Department was the appointment of a new Executive Director. Also, PRASA continues contracting external resources to provide repairs and maintenance services to critical equipment to ensure continuity of operations. It is important to mention that the IMP Department has an inventory of critical equipment available to avoid or limit service interruptions. Also, they were able to acquire EGUs for systems redundancy, although there still a need for additional units to cover all the facilities. PRASA expects to put out another bid for additional EGUs in November 2019.

PRASA is currently working with the development and implementation of new metrics for the IMP Department in four main areas such as: service, efficiency, costs, and compliance. During the month of October 2019, IMP Department reported a 83% of compliance with the preventive maintenance plan. Critical factors that continue to affect PRASA's ability to efficiently implement the IMP are the fiscal situation and the limitations to hire new staff. Additionally, the lack of technical personnel adversely affects the KPI's follow up, preventive maintenance and the Corrosion Control Program.

On-going IMP initiatives and projects executed during FY2019 include the following:

- New IMP metrics were established and are ongoing.
- IMP Department began the installation of technologies for the visualization of water tanks. It is expected to complete 65% of the visualization by FY2020.
- Ongoing improvements to SAP PM for IMP processes optimization.
- Integration of IMP routes in SAP for optimization.
- Acquisition, installation, and maintenance of EUGs to ensure systems redundancy.

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- Revision of IMP procedures to ensure necessary updates are performed.
- Predictive Maintenance is currently being implemented through private contracts in all Regions except the South Region. The South Region bided the work but it was not awarded, however it is expected to be rebid early on 2020. In the meantime, they are using some internal personnel but are very limited. Some of the predictive maintenance techniques include ultrasound technology, vibration, among others, to make sure that the preventive maintenance is working properly and to be able to predict future failures. The end goal of this initiative is to train PRASA personnel to internally continue the implementation of predictive maintenance, however, since there is still a lack of equipment, and additional training is needed for the time being it will continue to be subcontracted.
- IMP is actively working on improving their visualization and automation capabilities.

PRASA's IMP Department future initiatives include the following:

- Installation of flow meters at all water treatment facilities to measure production to be able to account for NRW.
- Implementation of the new handheld (HH) technology that allows for more accurate work documentation and system updates in real time.
- Finalize the optimization of the Integrated Maintenance Program.
- Implementation of the initial phase of the Corrosion Control Plan.

5.5.2 Non-Revenue Water Reduction Program

In May of 2008, PRASA began to implement its comprehensive NRW Reduction Program to reduce water losses (apparent and real), increase revenue, reduce operational costs, and minimize water infrastructure capital investments.

Reducing NRW is a high priority goal for PRASA, as it will have both a revenue enhancing and an expense reduction impact to PRASA's finances. In late 2011, PRASA retained the services of Miya, an NRW consultant, who completed a Report (May 2012) that identifies a series of short, mid, and long-term activities. Furthermore, as part of the NRW Management and Reduction Plan, PRASA established the Water Recovery Office and is now conducting periodic water audits (refer to Section 4), which are used to implement controls and develop action items to address NRW and meet the established goals.

As challenging as it has been, reducing NRW continues to be a top priority objective for PRASA. Hence, in pursuing PRASA's vision to achieve long-term sustainability, PRASA has included the reduction of NRW as one of the three key focus areas of the 2019 PRASA Fiscal Plan. To do so, PRASA has established three main initiatives, as listed below:

- Reducing the system water production by 10% by FY2024 (from 507 MGD).
- Privatizing PRASA's customer services via a P3 to reduce commercial losses and identify unauthorized consumption.
 - Replacement of meters
 - Installation of advanced metering technology

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- Enhance customer services activities
- Reducing physical losses through a series of initiatives:
 - Water Leak Detection Program
 - Tank Telemetry and level monitoring – 65% of tanks by FY2020
 - Water pressure management and optimization
 - Data Quality Improvement – Goal of measuring 80% WTP production

Some of the issues the WRO has encountered, which have hindered the implementations of the programs or affected precision are:

- Installation – Locations – there is an opportunity to make adjustments and improvements in data collection to help reduce physical losses.
- Non-operational equipment
- Inaccuracy of Equipment or fail to properly calibrate

To address some of these issues, the Team is inspecting meters and installing new insertion meters, which can be “hot tap”, have expedite calibration, high accuracy (M36 standard) and easy to replace.

The WRO further established an NRW team to include not only the Water Recovery Office staff, but also integrate operations personnel to address the 2019 PRASA Fiscal Plan NRW initiatives efficiently and effectively per Region. PRASA's Water Recovery Office also oversees the GIS Office.

5.5.2.1 Revenue Optimization Program

As part of the NRW Reduction Program, PRASA's strategy has focused mostly on revenue optimization (enhancing) initiatives, which target apparent losses related to its commercial operation. Since 2009, PRASA has implemented a public-private effort that is charged with identifying new opportunities for revenue sources and optimizing collections. These activities, which include small and large meter changes, identifying theft and inactive accounts, disconnections and collections efforts, among others, have resulted in significant additional revenue for PRASA over the past fiscal years. Approximately \$100M per year of PRASA's revenues (or about 10% of total Operating Revenues) are generated from these initiatives. In the future, most of these initiatives will be transferred to and address by the P3 Project Contractor.

5.5.2.2 Accounts and Structures Validation Initiative

PRASA's Water Recovery Office established the Accounts and Structures Validation Initiative (INVEC, by its Spanish acronym) in FY2015. This initiative has identified connections that are not already identified in PRASA's SAP customer database or georeferenced in PRASA's Geodatabase, thereby helping to identify and address illegal connections. Through INVEC, PRASA identified what is internally known as “red structures”. Red structures are occupied housings located at a distance of 100 meters or less from PRASA infrastructure, as reported by GIS, that are not connected to PRASA system. Hence, these structures may be either non-PRASA communities (communities that have their own private water source) or illegal connections (theft, derivations).

An initial number of 300,000 accounts were identified. In its Geodatabase efforts in previous fiscal years, PRASA was able to narrow down this number to 265,505 by eliminating structures that are 600 square-

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feet or more and at a distance of 6 meters from a water meter to reduce the potential of keeping gazebos. Then, PRASA searched for structures such as hotels and industries to also disregard those and were able to further narrow the number down to 205,000 accounts. Thirteen percent (13%) of these accounts (26,000 accounts) were identified as communities with low economic resources that are illegally connected to PRASA (with service but without meters), known as the "yellow structures". These yellow structures are to be georeferenced in PRASA's Geodatabase. PRASA intends to continue the search for schools and hospitals to keep reducing this number prior to going to the field for verification. However, this initiative was impacted by the effects of the September 2017 Hurricanes and was put on hold during FY2018 and FY2019. The initiative is expected to be transferred to the P3 Project Contractor.

5.5.2.3 Water Leak Detection

To better understand the magnitude of hidden water leaks (physical losses) in PRASA's water system, in FY2013 PRASA carried out a project to detect leaks in the Arecibo and Caguas water distribution systems. In total, between the two systems a total of 600 miles of pipeline was surveyed. About 288 leaks were detected with an estimated flow of about 4.7 MGD. Through this project, PRASA confirmed that there are a significant number of undetected water leaks in PRASA's water system. Based on these results, PRASA projects that there could be as much as 100 MGD being lost through undetected water leaks throughout the island. Hence, PRASA's Executive Management Team believes that detection and repair of these leaks could significantly reduce the volume of PRASA's NRW. Furthermore, in January 2014, PRASA expanded the leak detection project throughout the island. PRASA established a goal of surveying about 7,000 miles of water pipelines, island-wide, over an 18-month period as part of the project. The water pipeline inspections goal was completed by June 2015 and a total of 3,800 leaks were detected. Moreover, as of December 2015, PRASA established a new goal of surveying about 3,500 miles of small meter water pipelines throughout the island and a total of about 25.5 miles of large meter water pipelines in selected areas. The bid process for this project was performed and a contractor was selected. However, due to the September 2017 Hurricanes impact this initiative was placed on hold. As of the date of this Report, PRASA's management is evaluating the next steps for this project.

For continuing implementation of the Water Leak Detection Program, which is to be performed in parallel with the Pressure Management Program, PRASA hired a Consultant and started with a pilot program in Old San Juan (OSJ). After completing OSJ, the initiative moved its focus to several Metro areas and an ongoing effort of expanding through PRASA's Regions. The program tasks include, but are not limited to:

- "Sondeo Sonido" (Values) & Water Meters
- Data gathering (pre-location)
- Search for leaks (sounding, quantity of loss)
- Pinpointing leaks (OP-14, OP-15)
- Awareness, response, repairs

The team also, monetized the leaks by calculating the loss in gallons per minute (gpm), and assigning the cost of producing per gpm, in terms of volume lost. This way PRASA is able to interpret, prioritize and present urgent issues to the Executive Management Team.

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Simultaneously, the Pressure Management Program was implemented, by starting in the Metro Region and then expanding through all the Regions. The WRO runs two consecutive cycles and then it's passed to Operations to continue the implementation. Goals of this program are to reduce pressure, which consequently helps with overflows and NRW reduction. Tasks include:

- Tanks pressure gage validation
 - Replacement & Decommission
- Tanks valves validation with adjustments
 - Replacement & Decommission
- Validation of valves in distribution
 - Replacement & Decommission
- Pumps valves validation
 - Replacement & Decommission

Figure 5-1 shows PRASA's workflow for pressure management and visualization on distribution tanks. "ORA" stands for Water Recovery Office in Spanish.

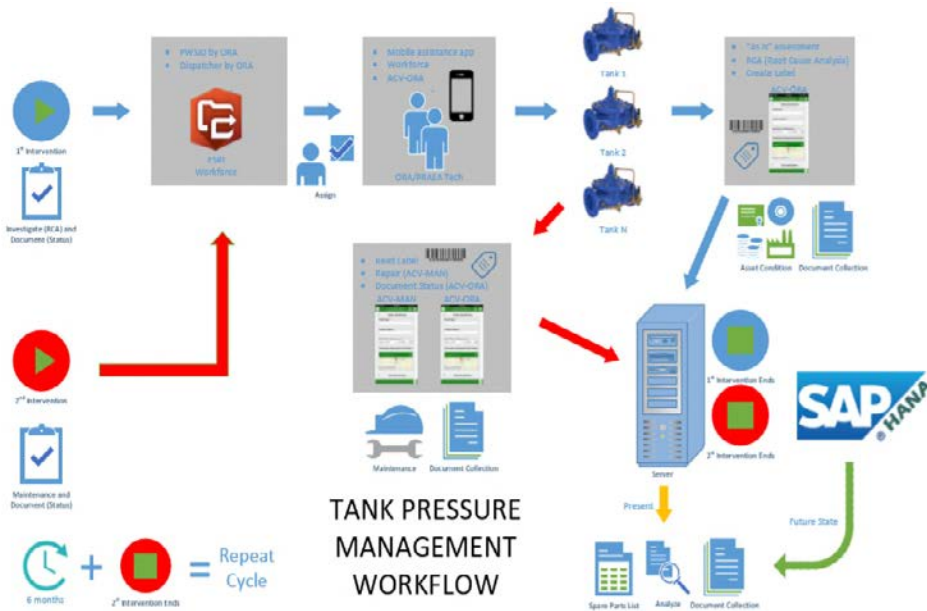


Figure 5-1. Tank Pressure Management / Visualization Workflow

Lastly, PRASA's Regions prioritize leak repairs in accordance to their severity, giving a higher priority of repair to major leaks which represent a higher monetary loss and higher reduction in NRW.

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5.5.3 Comprehensive Energy Management Program

PRASA's energy cost is the second largest cost behind Payroll and Benefits. PRASA's energy cost has been mostly driven by energy consumption and the electric power costs (which in turn are mostly driven by fuel oil costs). During the past five fiscal years, PRASA's energy use has reduced from 744 million kWh during FY2013 to 643 million kWh during FY2017 and 472 million kWh during FY2018 (including impact of 2017 Hurricanes). Currently, energy costs are around 617 million kWh during FY2019 (updated to Sep-2019).

PRASA continues its Comprehensive Energy Management Program to manage and reduce its energy consumption and costs. PRASA is only continuing one of the two programs previously engaged. As mentioned, the EPCs were cancelled and only the Solar PPA continues. Additionally, PRASA continues its internal initiatives and activities being implemented by the operational Regions and PRASA's Infrastructure Department. A description of the different initiatives is provided in the following sub-sections.

5.5.3.1 Demand Side Projects through Energy Performance Contracts

The objective of this initiative, which began during FY2009, was to have Energy Service Companies (also referred to as ESCOs) perform assessments and guarantee savings obtained by installing equipment and implementing activities designed to reduce energy consumption. The most important benefit for PRASA in employing this type of performance contract is the operational benefit from improvements guaranteed by the ESCOs, i.e. if the energy savings are not achieved, the ESCO will pay PRASA for the non-achieved savings. However, the ESCOs savings guarantee extends until the investment is recovered and they have earned their agreed payments. In contrast, during the implementation of this initiative, PRASA encountered several issues with the contractor and achieving the Project's objective. This resulted in the cancellation of all EPCs. This initiative has been suspended until further notice.

5.5.3.2 Supply Side Projects through Power Purchase Agreements

In 2009, PRASA also undertook a parallel process for procuring companies who were interested in providing independent energy supply services through PPAs. The objective is to secure one or more PPAs for lower energy unit costs per kWh than what PRASA currently pays to PREPA. From this process, PRASA concluded successful agreements with three companies, of which one has been completed and is currently in operation. The gasification projects were cancelled. **Table 5-5** below provides a status summary of the PPAs in place. In addition, during FY2017, PRASA identified 14 sites for additional solar projects with a potential capacity of approximately 16 MW. As of FY2019, PRASA has saved approximately \$1.9M (production of 10 million kWh per year) from the solar PPAs currently in operation.

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Table 5-5. PRASA PPAs

Proponent	Technology	Status
Windmar Renewable Energy (PV Properties)	Solar	Contract signed; 7 MW; 10 facilities (projects) have been completed and are currently in operation.

5.5.3.3 Regional Operational Initiatives

PRASA's Executive Management Team had set a goal to achieve additional energy consumption reductions, as per final budget, of at least five percent kWh per year island-wide, which has been already achieved . In FY2019 a new goal of one-half percent (1.5%) of energy consumption reduction was established across the regions. This is currently a challenge due to, in most cases, in order to be able to achieve this energy consumption reduction, a capital investment is necessary, and it cannot currently be funded. Since FY2014, PRASA's Operational Regions have been implementing energy conservation measures in its WTPs and WWTPs, and they are also leveraging hydraulic modeling analyses and optimization efforts to reduce energy consumption in the water distribution and wastewater collection systems (i.e., pump stations facilities). Some of the measures include, for example, simplifying and providing more flexibility to the system, reducing and optimizing the hours of operation at the facilities, elimination of WPS or WTPs, identifying energy conservation measures in the operation of the equipment, among others. Regions have identified energy conservation measures that reduce equipment operation time at the WWTPs with process control measures and at the WPSs by identifying and controlling system pressures and distribution tank overflows.

5.6 Treatment Plant Automation Program

In prior years, PRASA embarked on a Treatment Plant Automation Program, which consisted in the installation of the necessary equipment and the development of the system protocols to automatically operate and remotely monitor its WTPs. However, PRDOH requested that a WTP should not be maintained without operators for more than 4 hours, implementing partially automated shifts following the 8-4-8-4 Automation plan¹³. PRDOH and PRASA agreed on an endorsement procedure prior to the implementation of 8-4-8-4 and remote operation. This meant that while plants can have automatic shutdown or full automation capabilities, the WTPs must follow the endorsement procedure prior to implementation of reduced shifts or staff. During FY2019 there was no activity under this Program.

An effective automation program should be designed to be properly operated from the Remote Operating Center (ROC) at each of the five Operational Regions. Under PRASA's resiliency projects list, PRASA projects to invest at least \$150M for remote operational capabilities at its facilities.

¹³ The term 8-4-8-4 operations refers to having an operator at the facility for a period of eight hours followed by a remote monitoring and un-manned operation for the next four-hour period. This 12-hr cycle is repeated, reducing the number of operators needed and reducing overtime.

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5.7 Conclusions

PRASA's O&M budgets are within the industry standards, mostly around the median benchmark results published by AWWA in 2018. Despite certain O&M related observations made during facility inspections, PRASA's O&M practices are adequate. A common challenge identified through Operational Regions and departments was the lack of personnel for O&M functions. Considering the existing condition of PRASA's System, maintenance and staffing needs, and upcoming compliance requirements, PRASA may require an increase or further optimization of their budget. Although the FY2019 PRASA's KPI results improved substantially from FY2018, they remain low as a result of the delays in the recovery efforts and the fiscal situation hindering the implementation of certain initiatives.

PRASA's main O&M efforts during FY2019 were focused on the reestablishment of the System in the aftermath of Hurricanes Irma and María and securing funding/reimbursements from FEMA and from insurance coverages. Although some of the FY2019 planned O&M investments and key PRASA initiatives were restarted, several continue delayed or suspended due to the slow recovery efforts or have been modified to meet commitments included in the 2019 PRASA Fiscal Plan. Initiatives like the NRW Reduction Program which started implementation of the Leak Detection and the Pressure Management Programs will be expanded with PRASA's P3 Project. PRASA expects benefits will surpass those already achieved under the Revenue Optimization Program. Other internal programs are expected to be reactivated during FY2020 or beyond once funding has been identified.

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6 CAPITAL IMPROVEMENT PROGRAM AND REGULATORY COMPLIANCE STATUS

6.1 Introduction

PRASA has developed a multi-year CIP to improve and maintain their System. The CIP's main objectives are to maintain, modernize and simplify the System to achieve operational efficiency, protect public health and safeguard environmental quality, while enabling continued economic development and meeting all regulatory requirements. In addition, PRASA has included as part of the CIP objectives the restoration of damaged infrastructure to its condition prior to the 2017 Hurricanes and the implementation of sustainable measures in the longer-term to harden its System against the impacts of climate change and sea-level rise.

The CIP is a dynamic program that evolves and undergoes revisions as needs and sources of funds are identified, and as projects transition from pre-construction to construction phases to finally reach start-up and commissioning. Historically, the program has been funded with external financing from bond issuances and federal assistance in accordance with standard utility financing practices. From 2006 to 2016, PRASA invested approximately \$3.7B in its CIP, with the intention of bringing the System into compliance and supplement pre-existing capital needs from prior year funding shortfalls. The 2019 PRASA Fiscal Plan and public policies endorsed by PRASA's Governing Board includes a tapered transition in which financing of the CIP gradually shifts from bonds to self-financing via PRASA's Operating Revenues.

The number and budget of projects are updated regularly, as the CIP is continuously evolving considering needs and as projects are completed. The CIP is subject to review and approval by PRASA's Governing Board.

The CIP presented in this Report refers to the six-year CIP as included in the 2019 PRASA Fiscal Plan. The approval and execution of this six-year CIP is contingent upon funding availability and allocation, and approval by PRASA's Governing Board.

6.1.1 PRASA's CIP Status

The Government's fiscal situation and resulting rating agency classification downgrades had a major impact on PRASA, as each downgrade also resulted in a consequential downgrade for PRASA. This limited PRASA's ability to access the capital markets to obtain financing to cover immediate CIP related expenses. As a result, PRASA began cost-cutting efforts on its CIP in 2014. As previously mentioned, it was customary for PRASA to use a portion of its operating funds to cover expenses for its CIP projects. However, in FY2016, after spending all of its surplus operating income and reserves to repay bond anticipation notes and cover a portion of its unfunded CIP, PRASA was forced to postpone or cancel the execution of all CIP projects. This included the suspension of 55 projects under construction totaling \$352M and cancellation of an additional 86 projects totaling an additional \$247M in investment.

Currently, execution of almost all capital projects including the regulatory-driven projects is on hold indefinitely, except for some R&R and emergency recovery projects. There is a strong concern that the

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lack of capital investment will accelerate infrastructure degradation and lead to a critical situation. As of FY2019, PRASA paid off all outstanding payments due to contractors and CIP consultants.

The suspension of CIP projects has resulted in both short and long-term effects on PRASA's operations and infrastructure, and on Puerto Rico's economy. In the short-term, PRASA is facing continuing deterioration of their infrastructure, and potential non-compliance with regulatory mandates or administrative orders. In the long-term, PRASA may see an increase in cost of capital projects as vendors price-in the risks associated with delays in payment or non-payments to contracted projects as well as increasing risks related to asset failures or operational challenges that could affect the quality and continuity of service, ultimately leading to reduced Operating Revenues and increased Operating Expenses.

6.2 CIP Implementation Management

In FY2019, PRASA initiated a procurement process to qualify and select program management consultants (PMCs) to support their Infrastructure Department in the planning, design, and management of CIP projects in each of the five Regions. Similar to the engagement of PMCs between 2005 and 2016, PRASA seeks to partner with qualified and experienced program managers that will oversee implementation and management of CIP projects throughout pre-construction, construction, and post-construction. As part of the pre-construction activities, the PMCs will manage key tasks that drive CIP project budgets, such as defining project scopes, negotiating consultant contracts for studies and design services, reviewing project constructability, preparing project construction cost estimates, preparing bid packages, and managing bid processes (in close coordination with PRASA's Bids Board). As part of the construction management services, the PMCs will serve as PRASA's representative on CIP projects and include such tasks as managing project schedules, negotiating project change orders, and administering construction contracts. Finally, as part of the post-construction services, the PMCs will support project start-up, training, and close-out activities. Contracts are expected to be executed with selected PMCs in late FY2020 or early FY2021 in preparation of the reactivation of PRASA's CIP.

6.3 CIP: Project Distribution and Costs

CIP projects are divided into categories, groups and types. Additionally, PRASA has implemented a prioritization system to better manage the large and complex CIP. Projects included in the CIP cover major capital improvements identified throughout all five Regions, as well as island-wide system improvement initiatives such as integration of technological advancements, telemetry implementation, and general R&R. The CIP was developed by PRASA with the following key points in mind: a) recovery of the system after hurricanes impacts and focus on improving resiliency, b) ensuring water quality, c) regulatory commitments as stipulated in consent decrees, administrative orders, and other agreements with Regulatory Agencies and d) current and future infrastructure and operational needs identified from system planning studies.

Once the need for a capital improvement project is identified, a project creation form is prepared. The form includes the project scope, preliminary schedule, and cost estimates. The project is then assigned a CIP project number and added to the CIP inventory, where it is categorized according to PRASA's

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classification and prioritization system. Updates to the CIP are presented to PRASA's Governing Board at least once a year for revision and approval.

Total CIP investments per project are calculated taking into consideration the following estimated costs:

- Planning, studies, and land acquisition costs
- Design costs
- Construction costs
- Project management and inspection costs
- Contingencies
- Miscellaneous cost (includes financing costs, insurance, O&M documents and administrative costs)

Design costs typically use the College of Engineers and Land Surveyors of Puerto Rico (CIAPR, by its Spanish acronym) professional services compensation guidelines (vary by project type and complexity) and modified by the current market and availability of local designers. Previously, the construction management and inspection costs were estimated to be 5% of the net construction cost; general, administrative and insurance costs were estimated at approximately 15% of net construction cost, while contingencies were estimated to be about 10% of net construction cost. PRASA eliminated the annual inflation rate of 3.8% formerly used, considering the downturn in construction activity and lower project cost estimate results received during project bids. However, considering the construction materials cost increase after the 2017 Hurricanes and the recent boom in construction, when the CIP is activated the previously described cost percentages used to determine the various stages cost of project lifecycle should be reassessed.

Throughout the development of the planning and design phases of a project, the contingencies are modified as the construction cost estimates are updated. Once the project goes out to bid and is awarded, the amount calculated for contingencies is no longer updated and it remains as part of the assigned funds of the project until close-out. During the construction phase of projects, contingencies are used to cover change order costs and miscellaneous expenses that may arise, such as additional land acquisition, permitting, or design activities. Before the CIP suspension, PRASA reported that existing contract change order percent in construction projects was approximately 3%, which is much lower than typical industry average of 15-20%.

6.3.1 Project Classification and Prioritization

CIP projects, as recently redefined in the 2019 PRASA Fiscal Plan, are classified into the following mandatory and non-mandatory categories:

- Emergency/Permanent Works
- Renewal and Replacement (R&R)
- Compliance (Mandatory/Non-mandatory)
- Optimization and Emergencies
- Fleet and IT

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- Quality
- Meter Replacement and Safety
- Resiliency and Others

Emergency/Permanent Works are projects to repair the infrastructure impacted by the Hurricanes Irma and María. R&R are aimed at renewing or replacing system assets (pipelines, pumps, motors, etc). The Compliance category covers projects required by agreements with USEPA & PRDOH (2015 USEPA Consent Decree projects, 2006 PRDOH Drinking Settlement Agreement projects, Civil Actions, Administrative Orders, and other mandatory projects), or that would be included in the future if not performed. The goal of Optimization and Emergencies projects is to increase efficiency, mainly pertaining to electrical consumption, and address emergencies and contingencies. Fleet and IT replace vehicles in PRASA's fleet and improve IT infrastructure. Quality projects increase the quality of the water and wastewater service provided to customers. Replacement of meters outside of the P3 project and safety, mainly around dams, are covered under Meter Replacement and Safety. The final category, Resiliency and Others, covers projects considered as necessary to make the system resilient to potential future events.

Projects are further classified as either water or wastewater system projects. Water system projects include projects for improvements or construction of new facilities for water supply, water distribution, WTPs, WPSs, and tanks, amongst others. Wastewater system projects include projects for improvements or construction of new facilities for wastewater collection, WWTP, and WWPSs, amongst others.

In addition to project classification, CIP projects are ranked according to a prioritization score. This score is the result of the weighted sum of the evaluation criteria adopted in PRASA's Master Plan and negotiated with Regulatory Agencies. Four main criteria were selected to prioritize CIP projects: Regulatory Compliance (40%), Quality of Service and Reliability (30%), Operational Efficiency and Improvements (20%), and Population Impacted by Project (10%). The implementation schedule of future long-term projects, currently not included in PRASA's CIP, will be subject to the prioritization system and PRASA's financial capacity. Additionally, at the reactivation of the new CIP, PRASA will pursue immediate restoration of all infrastructure damaged by the hurricanes and continued compliance with Regulatory Agencies. As such PRASA has identified the following priorities upon CIP reactivation:

1. Projects needed to restore the infrastructure damaged by Hurricanes Irma and María.
2. Compliance projects included in the 2015 USEPA Consent Decree and the 2006 PRDOH Settlement Agreement.
3. Construction projects that were stopped and postponed with the suspension of the CIP in 2016.

6.3.2 CIP Metrics and KPIs

As included in the 2019 PRASA Fiscal Plan, PRASA intends to review and update the CIP tracking tool used prior to the suspension of the CIP to ensure compliance with the forecasted execution schedules. The tracking tool was used to perform project time management, develop a detailed project baseline and track the actual progress of all projects on a monthly basis, to keep track of projects on target and off target, and to identify gaps root causes for delayed projects.

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In addition, PRASA will implement the CIP KPIs historically used to allow for detailed tracking of CIP compliance and success. These include: Cost Performance Index (CPI) and Schedule Performance Index (SPI). The CPI measures the cost efficiency of resources as compared to the budget and the SPI measures the relationship between the executed work against planned work.

6.4 Six-Year CIP (FY2019-FY2024)

PRASA's six-year CIP for FY2019 through FY2024, as included in the 2019 PRASA Fiscal Plan, amounts to \$2,410.5M. Annual capital expenditures by project category are presented in **Figure 6-1** and **Table 6-2**. As shown, the six-year CIP is mainly composed of Emergency/Permanent Work, R&R and Compliance projects, which account for 61% of the total forecasted expenditures. Key recommendations from PRASA's existing Master Plan are also included in the six-year CIP.

Emergency/Permanent Works category, which accounts for 31% of the projected CIP expenditures, was slightly less as a percentage of the total CIP budget, with an annual average expenditure \$125M and total of \$750.2M over six years. Renewal & Replacement totaling 15% of total CIP decreased by 34% but is still the second largest category in terms of dollars over the duration of this CIP period. Historically, the majority of PRASA's CIP investment (about 60%) was for mandatory and compliance driven projects. This shift in priorities is mainly due to repair needs for infrastructure impacted by the Hurricanes Irma and María and higher prioritization of hardening efforts to transition to a more resilient System. PRASA has allocated \$644.4M for Resiliency projects over the next six years in its CIP.

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Table 6-1. Capital Improvement Program FY2019-FY2024 by Category (\$, Million)¹

Project Category	Fiscal Year Ending June 30						2019-2024 Total
	2019	2020	2021	2022	2023	2024	
Emergency/Permanent Works	\$10.1	\$220.5	\$175.9	\$192.4	\$118.0	\$33.4	\$750.2
Renewal & Replacement	\$51.8	\$70.2	\$50.0	\$61.0	\$71.5	\$63.0	\$367.5
Compliance (Mandatory/Non-mandatory)	\$1.4	\$25.8	\$83.8	\$110.7	\$81.4	\$55.4	\$358.5
Optimization & Emergencies	\$1.2	\$15.0	\$10.0	\$10.0	\$10.0	\$10.0	\$56.2
Fleet & IT	\$4.4	\$21.8	\$10.0	\$10.0	\$10.0	\$10.0	\$66.2
Quality (and Growth)	\$3.6	\$12.9	\$21.8	\$30.2	\$39.9	\$34.8	\$143.1
Meter Replacement and Safety	\$1.0	\$2.0	\$2.8	\$5.2	\$4.1	\$8.0	\$23.0
Resiliency and Others	\$0.04	\$-	\$34.9	\$180.8	\$185.6	\$244.4	\$645.7
Subtotal	\$73.5	\$368.3	\$389.2	\$600.2	\$520.3	\$458.9	\$2,410.5

¹Numbers may not add due to rounding.

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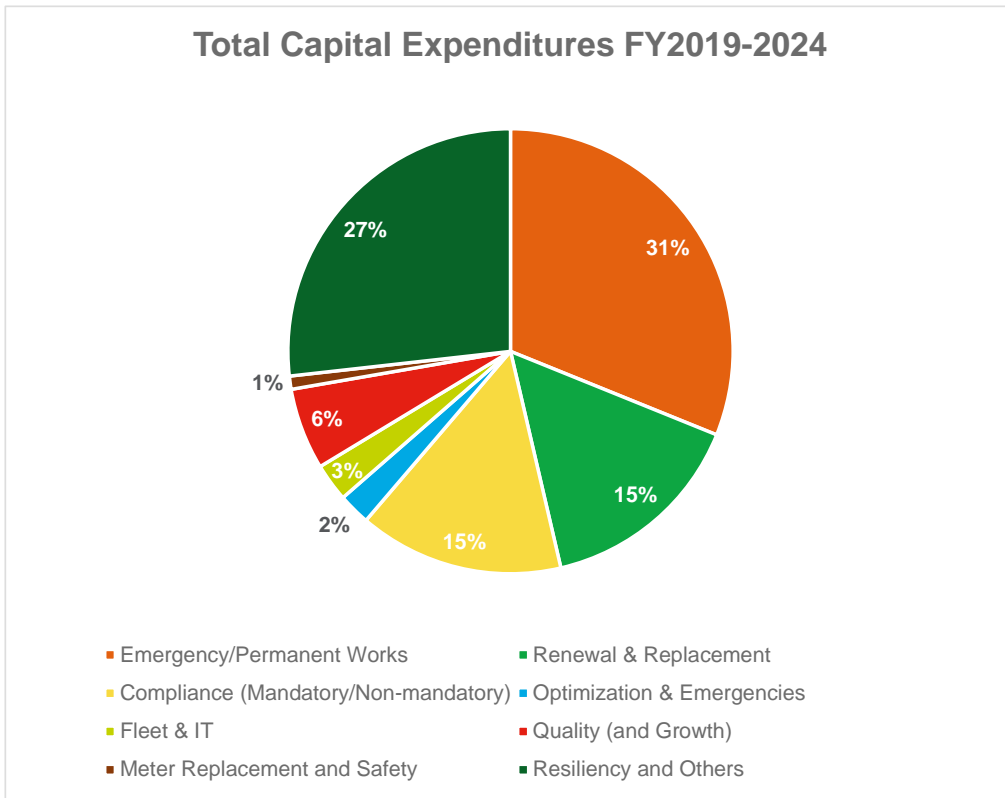


Figure 6-1. Six-Year CIP Capital Expenditures by Category

PRASA's six-year CIP consists of a total of 584 projects. As of July 1, 2019, 39.2% of the projects have not started, 53.6% are in the pre-construction stage (planning, design and bid), and 2.6% are in the construction and/or closeout stages. The remaining 4.6% are projects already in operation.

PRASA has identified a total of 183 projects under the Emergency/Permanent Works category that have priority. Fifty-seven (57) projects were identified for Renewal & Replacement, 68 projects to address Mandatory Compliance and 65 for Non-mandatory Compliance. In addition, PRASA has set aside \$644.4M for Resiliency projects.

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6.4.1 Water System Projects

The water system projects include projects to improve compliance (mandated and not mandated), upgrades to WTPs, STSs and water distribution systems as well as construction of new water infrastructure. Total capital expenditures in water system projects for FY2019–FY2024 are estimated at approximately \$288.57M, of which approximately \$71.52M is allocated for projects classified as Mandatory Compliance and approximately \$78.07M is allocated for projects classified as Emergency/Permanent Works as a consequence of the hurricanes impact.

6.4.2 Wastewater System Projects

The wastewater system projects include projects to improve compliance, new WWTPs, and upgrades to wastewater collection systems. Total capital expenditures in wastewater system projects for FY2019–FY2024 are estimated at \$498.75M, of which approximately \$129.35M is allocated for projects classified as Mandatory Compliance and approximately \$67.38M is allocated for projects classified as Emergency/Permanent Works.

6.4.3 Adaptation for Climate Change and Resilience

PRASA completed a Vulnerability Study and Adaption Plan for its entire infrastructure in compliance with the February 2013 Executive Order signed by the Governor of Puerto Rico at the time. The Climate Change Vulnerability Study findings and the strategies selected in the Adaptation Plan will be further assessed and CIP projects shall then be developed. These projects will follow the same guidelines set in the prioritization system. These based projects will serve as a roadmap for PRASA in the planning process and in its preparation towards the expected impacts of climate change. Additionally, as part of the recovery efforts post 2017 Hurricanes, PRASA has identified needs and infrastructure improvements to increase the System resilience. PRASA has allocated approximately \$644.37M for these efforts.

6.4.4 Other Projects: Hurricane Repairs, R&R, Buildings, Energy Optimization, and Others

Total capital expenditures for all other capital projects are estimated at approximately \$978.80M for FY2019 – FY2024, of which approximately \$482.24M is allocated for repairs to infrastructure impacted island-wide by Hurricanes Irma and María not under water or wastewater systems. Renovation & Replacement projects are budgeted at \$247.47M. Buildings and Energy & Optimization projects have \$73.99M and \$70.95M allocated, respectively. The remaining \$104.15M is interspersed between Emergency/Contingency, Fleet, Technology, and Metering system upgrades.

Table 6-2 shows the project distribution and capital expenditures by Category and Project Type for FY2019 through FY2024.

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Table 6-2. PRASA's Base CIP Projections FY 2019 - FY 2024 (\$, in Millions)¹

Category Type	Project type	Fiscal Year Ending on June 30						2019-2024
		2019	2020	2021	2022	2023	2024	
Wastewater System	Wastewater Pump Stations	\$0.00	\$0.65	\$3.29	\$6.57	\$8.52	\$3.07	\$22.10
	WWTP	\$20.35	\$70.97	\$69.14	\$63.70	\$54.53	\$43.84	\$322.52
	Wastewater Collection	\$2.44	\$17.01	\$36.46	\$36.21	\$33.45	\$28.55	\$154.12
	Subtotal	\$22.79	\$88.62	\$108.89	\$106.48	\$96.50	\$75.46	\$498.75
Water System	Water Supply	\$0.23	\$4.10	\$7.77	\$14.84	\$9.59	\$11.78	\$48.31
	Water Pump Stations	\$0.38	\$0.30	\$0.23	\$0.59	\$0.32	\$0.40	\$2.22
	WTP	\$0.45	\$56.80	\$48.37	\$42.52	\$31.83	\$16.98	\$196.96
	Water Distribution	\$1.61	\$13.22	\$10.43	\$2.98	\$4.44	\$8.39	\$41.09
	Subtotal	\$2.68	\$74.41	\$66.80	\$60.94	\$46.19	\$37.55	\$288.57
Resiliency	-	\$-	\$-	\$ 34.92	\$180.82	\$185.55	\$243.08	\$ 644.37
September 2017 Hurricanes Island-wide Project	-	\$-	\$40.76	\$102.39	\$188.76	\$116.94	\$33.39	\$482.24
Renovation & Replacement	-	\$31.80	\$ 50.17	\$30.00	\$ 41.00	\$ 51.50	\$ 43.00	\$247.47
Buildings	-	\$0.03	\$50.92	\$22.79	0.25	\$ -	\$ -	\$73.99
Energy & Optimization	-	\$10.84	\$37.59	\$8.90	\$ 2.50	\$4.17	\$6.96	\$70.95
Emergency/Contingency	-	\$-	\$10.00	\$7.50	\$7.50	\$ 7.50	\$7.50	\$40.00
Fleet	-	\$3.38	\$13.78	\$5.00	5.00	\$5.00	\$ 5.00	\$7.15
Technology	-	\$1.00	\$-	\$-	\$ 5.00	\$ 5.00	\$5.00	\$16.00
Meters	-	\$1.00	\$2.00	\$2.00	\$2.00	\$ 2.00	\$2.00	\$11.00
	Subtotal	\$8.04	\$205.22	\$178.57	\$252.01	\$192.11	\$102.85	\$978.80
Total		\$73.51	\$368.26	\$389.19	\$600.24	\$520.35	\$458.95	\$2,410.49

¹Numbers may not add due to rounding

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6.5 CIP and Current Regulatory Compliance

The six-year CIP adequately addresses the requirements of existing consent decrees and agreements and considers proposed modifications to said consent decrees and agreements, as recently negotiated or in negotiations by and between PRASA and Regulatory Agencies. Nonetheless, it shall be noted that the actual cost of compliance with the consent decrees and agreements and PRASA's total capital expenditures may vary substantially depending on, among other things:

- Inflationary environment with respect to the costs of labor and supplies needed to implement the compliance program.
- Weather conditions that could adversely affect construction schedules and consumption patterns.
- Population trends and political and economic developments in Puerto Rico that could adversely impact the collection of operating revenues.
- Possibility of new environmental legislation or regulations affecting the System.
- Unanticipated costs or potential modifications to projects resulting from requirements and limitations imposed by environmental laws and regulations.
- Inherent uncertainty involved in CIP projects of the magnitude undertaken by PRASA.

Up until 2015, PRASA was subject to three consent decrees with USEPA and one settlement agreement with PRDOH to eliminate treatment plant non-compliance and unpermitted discharges of untreated sewage, and to improve the quality of potable water and STSs. These agreements included the following:

- 2003 Consent Decree (PRASA IV), U.S. v. PRASA, Commonwealth of Puerto Rico, and "Compañía de Aguas de Puerto Rico", Inc., Civil Action No. 01-1709 (JAF) – Addresses violations to the Section 301 and 402 of the Clean Water Act (CWA) and regulations and PRASA's NPDES permits with regards to certain PRASA's WWPSs.
- 2006 Wastewater Consent Decree, U.S. v. PRASA and Commonwealth of Puerto Rico, Civil Action No. 06-1624 (SEC) – Addresses violations to the Section 301 and 402 of the CWA and regulations promulgated there under, and PRASA's NPDES permits with regards to PRASA's WWTPs.
- 2006 PRDOH Drinking Water Settlement Agreement (ATE for its Spanish Acronym), Civil Action KPE 2006-0858¹⁴ as amended – Addresses non-compliance and alleged violations with the Puerto Rico Potable Water Purity Protection Law, as amended ("*Ley para Proteger la Pureza de las Aguas Potables de Puerto Rico, Ley Núm. 5 de 21 de Julio de 1977, según enmendada*"), the Safe Drinking Water Act (SDWA) and applicable regulations, and the General Environmental Health Regulation ("*Reglamento General de Salud Ambiental, Reglamento Núm. 6090 de 4 de febrero de 2000*").
- 2010 USEPA STS Consent Decree, U.S. v. PRASA and Commonwealth of Puerto Rico – Addresses alleged violations to the SDWA and the CWA specifically to the National Primary Drinking Water Regulations.

¹⁴ The Settlement Agreement was signed: March 15, 2007 and subsequently amended on June 16, 2008.

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In light of the challenges faced by PRASA, resulting from the continued uncertainty and strain on the Government's economy and despite the fact that PRASA substantially complies with the requirements of the consent decrees and agreements, PRASA requested and negotiated amendments. In 2012, PRASA and the Regulatory Agencies began discussions to modify certain requirements of the consent decrees and agreements to re-align compliance priorities and, in turn, help alleviate PRASA's financial burden. After an extensive negotiation process and under the terms agreed upon by PRASA and USEPA, on September 15, 2015, the U.S. Department of Justice (USDOJ) filed the 2015 USEPA Consent Decree executed among USEPA, PRASA and the Commonwealth of Puerto Rico in settlement of the matters addressed in a complaint brought against PRASA by USDOJ on behalf of USEPA also filed on such date. On May 23, 2016, the 2015 Consent Decree between USEPA and PRASA was officially logged and accepted by the Court, placing an end to the extensive renegotiation process. The 2015 USEPA Consent Decree consolidates and supersedes the three previous USEPA's Consent Decrees with PRASA (i.e. PRASA IV: 2003 Consent Decree, 2006 Wastewater Consent Decree and 2010 USEPA STS Consent Decree).

As for the 2006 PRDOH Settlement Agreement, as amended, PRASA restarted negotiation talks with PRDOH in January 2017. To date, PRASA have presented joint motions to PRDOH and renegotiation of certain terms and conditions on the Term 2 and Term 3 mandatory projects have been accomplished such as the renegotiation of Juncos Urbano System. Refer to Section 6.5.2 for more details.

The consent decree and settlement agreement currently in effect with the Regulatory Agencies are:

- 2015 USEPA Consent Decree: U.S. v. PRASA and Commonwealth of Puerto Rico, Civil Action No. 15-2283 (JAG) – Addresses violations to the Section 301 and 402 of the CWA and regulations promulgated there under, and PRASA's NPDES permits with regards to PRASA's WWTPs, WWPSs and WTP's STSs.
- 2006 PRDOH Drinking Water Settlement Agreement, Civil Action KPE 2006-0858, as amended – Addresses non-compliance and alleged violations with the Puerto Rico Potable Water Purity Protection Law, as amended, the SDWA and applicable regulations, and the General Environmental Health Regulation. Amendments to this Settlement Agreement are being addressed by the PRDOH and PRASA through independent motions.

Up to the two atmospheric events in September 2017, Hurricanes Irma and María, PRASA had been in continuous compliance with the 2015 USEPA Consent Decree and the 2006 Settlement Agreement as amended. On September 2017, upon declarations of "States of Emergency" for Hurricanes Irma and María, PRASA submitted a notification to both USEPA and PRDOH invoking Force Majeure and indicating the possibility of some delays in projects and programs due dates. In June 2018, another letter was sent to the Regulatory Agencies requesting time extensions with their corresponding justifications due to the lack of funding to reactivate the CIP, the ongoing debt renegotiation process, and the impact of the hurricanes. Essentially, PRASA requested a hold for a period to be determined for certain obligations and stipulated penalties be excused for such period. PRASA is currently going through a re-negotiation process with USEPA and USDOJ regarding deadlines to comply with certain programs contemplated under the 2015 USEPA Consent Decree. To support PRASA's Force Majeure claim, they met on several occasions, as recent as August 15, 2019 via conference call to discuss technical matters and facility inspections. PRASA provided and obtained additional information from these meetings with USEPA. There are ongoing discussions between PRASA, USEPA, and USDOJ in relation to the Force Majeure

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protection that have resulted in the submission of Amendments. However, Force Majeure, will remain in effect until the new Amendments are approved. PRASA expects approvals to occur during the 3rd or 4th trimester of FY2020. On the other hand, there are no ongoing negotiations with respect to the 2006 PRDOH Settlement Agreement. At this time, no assurances can be given that the USEPA or the PRDOH will grant such project deadline extensions, although PRASA remains positive and maintains open communication channels with the Regulatory Agencies.

PRASA developed a Compliance Monitoring Tool to facilitate the review, monitoring, and tracking of the requirements of each program stipulated on the 2015 USEPA Consent Decree and the 2006 Settlement Agreement as amended. PRASA will address any discrepancies reported between the information included on the progress report and the Compliance Monitoring Tool.

6.5.1 2015 USEPA Consent Decree Modifications

The 2015 USEPA Consent Decree includes the following modifications:

- Postponement or advancement in deadlines and completion dates of certain projects currently included in the CIP. Compliance deadlines were extended through approximately 2034.
- Scope of work revisions negotiated for certain projects to better address certain facilities' current needs.
- Elimination of certain projects from the consent decrees and agreements given that the facility is: 1) in compliance, 2) due to the declining population trends the project no longer needs to be performed, or 3) because the project has already been completed and certified.
- Addition of new compliance projects (categorized as Other Regulatory Projects and New Mandatory Projects). Several projects that were not originally included in the consent decrees were negotiated to be included. Additional projects added include: capacity evaluation projects for compliance of STSs, I/I studies for the seven sanitary sewer systems covered by the first Sanitary Sewer System Evaluation Plan (SSSEP), and Caño Martin Peña/ENLACE projects. Also, PRASA shall develop and implement a second SSSEP for all other sanitary sewer systems by December 2016 (completed).
- Inclusion of the operation, maintenance and capital improvement program requirements related to the Puerto Nuevo wastewater collection system, including alleged CSWOs. PRASA shall comply with all the requirements of its NPDES Permit and with the Permit concerning CSWOs. The most recent NPDES permit for the Puerto Nuevo WWTP requires that PRASA implement the Nine Minimum Control (NMC) measures, to be revised annually, and a Long-Term Control Plan (LTCP) for the Puerto Nuevo WWTP service area to address wastewater collection system and CSWOs occurrences. As such, PRASA is currently undertaking the development and design of a Sewer SSOMP or S2OMP for the Puerto Nuevo WWTP service area. The SSOMP will manage both the combined sewer systems and the sanitary sewer system requirements as stipulated in the NPDES permit (NMC and LTCP) in addition to a comprehensive capacity, management, operations, and maintenance (CMOM) program for all the Puerto Nuevo sanitary sewer system. As required by the 2015 Consent Decree, PRASA submitted the SSOMP for USEPA's review and approval on June 30, 2016. By January 2017 USEPA commented PRASA's SSOMP and approved it. In addition, PRASA was required to submit annual reports on the status of the implementation of the SSOMP. The first annual report was submitted to USEPA in May 2017. For the subsequent SSOMP Annual Reports, as

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discussed and agreed with USEPA, on May 31st, 2019 PRASA submitted the first consolidated SSOMP Annual Report 2018.

- o The following tasks, at a minimum, shall be performed by either PRASA personnel or a private contractor as part of the SSOMP: sewer system reconnaissance to enable complete inspections, observation and cleaning of the sewers; fats, oil and grease control; sewer cleaning; sanitary sewer overflows, dry-weather overflows and unauthorized release prevention and control; and mapping. Through these efforts, PRASA expects to identify System needs related to overflows (including CSWOs) and to be able to better estimate the effort and expected costs of a future repair plan. After the inspections are completed, if deemed necessary, within 60 days of completing the sewer system reconnaissance of the Puerto Nuevo WWTP service area, PRASA shall submit to USEPA for review and approval its proposed plan to undertake the Condition Assessment of the Puerto Nuevo WWTP sewer system, which shall include a series of remedial measures.
- Amendments to the interim limits. PRASA requested interim limits for its WTPs and WWTPs to comply with NPDES compliance parameters and newly implemented regulations regarding numeric nutrient criteria for nitrogen and phosphorus. It is anticipated that to comply with the lower discharge limits imposed and/or to be imposed by USEPA for these parameters and others, operational modifications and even additional capital improvements to treatment facilities may be required, which would be subject to the CIP Prioritization System.
- Development of a Prioritization System. The Prioritization System is a project scheduling methodology developed to provide an objective and systematic guideline to prioritize the implementation of infrastructure projects and required regulatory projects. Specific criteria were defined for each project category (water, wastewater or STS) and a scoring methodology was developed to objectively prioritize, as much as possible, the list of projects. The criteria consider regulatory and environmental compliance, operational requirements and needs, as well as population served, among other characteristics. The prioritization system establishes the relative priority of all planned upcoming projects with the objectives of allocating PRASA's limited financial resources according to such priority. Hence, for example, any projects to address future regulations would only be funded if they are included within PRASA's approved annual spending level and based on its priority score.
- Completion of scheduled mandatory projects under the Base List of projects, including high priority mandatory compliance projects that have already started the process of planning, design or construction and will not be subjected to the prioritization process. Specific deadlines for these high priority projects were individually discussed and negotiated between PRASA and USEPA.

6.5.2 2006 PRDOH Drinking Water Settlement Agreement Renegotiation between PRASA and PRDOH

The 2006 PRDOH Drinking Water Settlement Agreement with PRDOH renegotiation status is as follows:

- PRASA and PRDOH requested a deadline extension for the Long Term 2 (LTP2) Juncos Urbano System projects (which included the elimination projects in Ceiba Sur WTP and the Quebrada Grande WTP) for a Long Term 3 (LTP3) deadline. In October 2018, PRASA presented Joint Motion

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KPE2006-0858 (904), in which, LTP3 deadline extension of December 2021 was granted. Additionally, to prevent future compliance exceedances in the Juncos Urbano System, several additional measures were included in the joint motion, which included, but is not limited to the following: more stringent drainage control measures, improvements to be performed at the Ceiba Sur WTP by December 2017, and measures to reduce water production to a maximum of 1 MGD at the Quebrada Grande WTP by February 2019. On May 2019, PRASA and PRDOH presented an Amendment to the joint motion for the Quebrada Grande WTP measure previously stated, in which, instead of limiting the water production to a 1MGD, PRASA would implement a series of procedures at operational level. These procedures include, but not limited to, adjustment and control of chlorine application in the treatment process to ensure that the required chlorine residual is maintained throughout the distribution system.

- In May 4, 2018, PRASA and PRDOH had a meeting to discuss several motions to LTP3 projects. A motion was revised and agreed upon on May 11, 2018. No discussions with PRDOH transpired during FY2019, but additional discussions regarding LTP3 projects and other Agreement requirements are expected to be discussed in the near future.
- In addition to the 2006 PRDOH Drinking Water Settlement Agreement, PRASA has agreed with the PRDOH to give priority to the compliance projects required by the LTP2 Enhanced Surface Water Treatment Rule (ESWTR). This rule requires further treatment of cryptosporidium and other pathogenic microorganisms with the purpose of reducing the illness associated with them.
- Moreover, Joint Motion KPE2006-0858 (904) addresses Continuous Monitoring violations of the requirements stipulated on the Appendix C-4 of the 2006 PRDOH Drinking Water Settlement Agreement for PF Aguadilla Urbano. The joint motion specifically includes additional remedial measures determined to address DBP violations. To address DBPs exceedances and meet compliance with these requirements, several additional measures were included, such as: monthly monitoring, tank repairs and cleaning, rehabilitation of filter units, implement and maintain pipelines and tanks flushing program, and operational adjustments.
- Progress Report #45, period April 2019 to June 2019, includes several LTP3 Projects that were completed prior to the December 31st, 2019 deadline. These projects correspond to the following systems: Guzmán Arriba, Metropolitano (La Plata), Esperanza, Tatúm, Guajataca, La Máquina, and Rocha.
- Although, completion deadline for the LTP3 is December 31st, 2021, Ceiba Sur WTP is included on the CIP list and Culebra WTP and La Pica WTP are included in the Prioritization List of the 2015 USEPA Consent Decree Appendix H and I. CIP projects are currently on hold due to funding limitations. For this reason, delays on the completion of this projects may occur and renegotiation of deadlines for LTP3 projects might be expected in the near future.

6.5.3 Consent Decrees and Agreements Progress Reports

The consent decree with USEPA and the settlement agreement with PRDOH require PRASA to implement remedial plans, develop and implement CIP projects to bring the System into compliance with regulatory requirements, and conduct evaluations concerning specific System's infrastructure and

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operational issues. In the preparation of this CER, Arcadis reviewed the following progress reports, submitted to Regulatory Agencies:

- 2015 USEPA Consent Decree Biannual Progress Report (BPR) No. 6 covering the period from March 1st, 2018 to August 31, 2018; No. 7 covering the period from September 1st, 2018 to February 28th, 2019; and No. 8 covering the period from March 1st, 2019 to August 31st, 2019.
- 2006 PRDOH Agreement Quarterly Progress Reports: No. 42, covering the period from July 1 to September 30, 2018; No. 43, covering the period from October 1 to December 31, 2018; No. 44, covering the period from January 1, 2019 to March 31, 2019; and No. 45, covering the period from April 1 to June 30, 2019.

A summary of the assessed progress reports is presented in the following subsections.

6.5.3.1 2015 USEPA Consent Decree, Civil Action No. 15-2283 (JAG)

As previously discussed, the USEPA consent decrees from 2003, 2006, and 2010, respectively, were consolidated into the 2015 USEPA Consent Decree. The 2015 USEPA Consent Decree requires PRASA to submit BPRs. BPRs No. 6, No. 7, and No. 8 covering from March 1st, 2018 to August 31st, 2019 were considered for this section.

- Up to August 2019, PRASA had been in significant compliance with the consent decree. Yet pressed by the aftermath of the 2017 hurricanes, the efforts needed to restore the System and sustain operations made continued work pursuant to the consent decree extremely difficult and in some cases impossible. In addition, PRASA still facing significant challenges in the recovery process after the 2017 Hurricanes due to funding and staffing limitations.
- To such effect, PRASA requested Force Majeure protection for ongoing and upcoming work and deadlines and stipulated penalties under the 2015 USEPA Consent Decree.
- PRASA, EPA, and USDOJ are currently working towards presenting in court a partial modification of the 2015 USEPA Consent Decree to address the effects of Force Majeure Event.
- On July 26, 2019, PRASA was able to reach a debt restructuring agreement with the funding programs of the Clean Water and Drinking Water State Revolving Funds (CWSRF and DWSRF, respectively). This initiative will allow PRASA access to the funds needed for the execution of CIPs included on the Appendices H and J of the 2015 USEPA Consent Decree. PRASA, CWSRF and DWSRF are currently in the process of completing the new financial agreements and new proposed dates for the Base List that were presented to USEPA on October 2019.
- As reported by PRASA in the BPR No. 6, the reasons that impaired compliance efforts after the 2017 Hurricanes were, or a combination thereof, due to but not limited to:
 - Lack of electricity and/or water
 - Fuel shortage
 - No or poor communication
 - Providing and sustaining operation of installations and equipment with alternate power
 - Destruction or damages to PRASA installations and equipment, including Caguas Central Laboratory's destruction

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- o Lack of access to equipment within installations
- o Logistics
- o Emergency and recovery phase priorities
- o Inability of personnel to report to work
- o Deployment of personnel available to attend emergencies and alternate supply of water and sewer services
- o Reestablishment of water and sewer services
- o Reinitiating and reopening of offices and installations

The 2015 USEPA Consent Decree specifies that PRASA shall continue to implement systemwide remedial measures at all WTPs STS and at all WWTPs and their corresponding Sewer Systems owned/operated by PRASA.

- Remedial Measures: Remedial measures include the 2006 USEPA Consent Decree and 2010 USEPA STS Consent Decree renegotiated projects as previously discussed and as included in the 2015 USEPA Consent Decree Appendix H (Base List for Remedial Measures to address wash water discharges at WTPs), Appendix I (Capital Projects subject to Prioritization) and Appendix J (Base List of Remedial Measures for WWTPs). Compliance dates were renegotiated with USEPA and vary among projects.
 - o All remedial measures regarding wash water discharges as included in the Base List were addressed by February 29, 2016, except for the Ceiba Sur WTP Elimination, which is scheduled for December 2020. However, the construction contract for this project was terminated by convenience due to PRASA's fiscal situation. A new proposed completion date of April 2025 was presented to USEPA as part of the ongoing STS modification discussions between PRASA and USEPA. Proposed completion date is subject on the completion of a financial agreement based on debt restructuring reached for funding under CWA and SDWA revolving funds. PRASA's requested extension is under review and discussions with USEPA.
 - o Also, as stipulated by paragraphs 9, 10 and 11 of the 2015 USEPA Consent Decree, flow meter devices with flow totalizers and level indicators were installed at the point of discharge for most WTPs, however there are a number of flow meters and totalizers, and high level alarm that were reported out of service on Table 1 and 2 of the Bi-Annual Report No. 8. These are expected to be repaired between November 2019 to June 2021.
 - o As for the WWTPs remedial measures, despite the best efforts taken to implement an infrastructure program to fulfill the commitments established with the Regulatory Agencies, the status regarding PRASA's fiscal situation remained unchanged and PRASA had to request another extension which also included the Force Majeure component. PRASA presented to the USEPA nine outstanding projects as part of the ongoing modification discussion of the 2015 USEPA Consent Decree. The requested extension, currently under review, includes the new completion dates, which are subject to the financial agreement terms to be established based on the CWSRF and DWSRF debt restructuring.
 - o PRASA previously completed the process of analyzing the rain and wastewater flow relationships, infiltration/inflow (I/I) studies, for 45 WWTPs. Repair projects for the Sewer Systems with completed I/I studies are included in the Prioritization List with expected completion by 2034.

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However, as per the 2015 USEPA Consent Decree, the repair projects have to be completed by 2021, otherwise the I/I study will have to be updated to address any new conditions or changes on the particular sewer system. In addition, as a result of the Force Majeure events impact on projects schedule in Appendices H, I, and J included on the 2015 USEPA Consent Decree need review and may require changes to meet this requirement. For those reasons, PRASA is currently under renegotiation regarding this matter.

- Modification/Prioritization of Remedial Measures:
 - In a letter dated December 15, 2016 to the USEPA and the USDOJ, PRASA requested a modification of the expected compliance dates established in the Consent Decree Appendices H and J (Base List Projects). The request is premised on the recognized fiscal crisis that the Government of Puerto Rico confronts and its cumbersome path towards to recovery that has impacted PRASA's financial conditions and continuity of its CIP. The proposed revised compliance dates requested were based on the assumption that the CIP would be reactivated by January 2018, which has not happened to date.
 - In addition, as previously stated, as a result of PRASA's Force Majeure notification the extension of the expected compliance dates of the projects established in Appendices H, I and J (Base List and Prioritization List Projects) of the 2015 USEPA Consent Decree may require changes to address the need to develop new and /or modified projects .
 - As previously stated, on July 2019, PRASA was able to reach a debt restructuring agreement with the funding programs of the CWSRF and DWSRF.

The following presents a status summary of the applicable programs, standards and special conditions of probation:

- Sludge Treatment Systems at WTP: Paragraphs 13 and 14 in section VI of the 2015 USEPA Consent Decree stipulates that any new PRASA WTP that begins operation after the day of lodging shall include an alternative power unit (APU) and an STS with sufficient hydraulic capacity to manage wash water discharges. For the period covered in the BPRs No. 6, 7, and 8 there were no new STS constructed.
- SSOMP Program and Condition Assessment Program with respect to the Puerto Nuevo WWTP sewer system: PRASA submitted the SSOMP on June 30, 2016 for comments and approval by USEPA. On May 1, 2017, the Puerto Nuevo 2016 SSOMP Annual Report was submitted to the USEPA. As stated on the Bi-Annual Reports No. 6 and 7, PRASA and USEPA discussed the submission of a consolidated SSOMP Annual Report by May 2019. PRASA submitted a written request to consolidate the report on September 26, 2018. As discussed, and agreed by USEPA, PRASA submitted the first consolidated SSOMP Annual Report 2018 on May 31st, 2019.
 - As of August 31st, 2019 PRASA, has recognized approximate 900,000 linear feet of pipeline that are connected to the Puerto Nuevo WWTP system. As part of PRASA, USEPA, and USDOJ discussions regarding delays caused by the Force Majeure event, an extension of the Sewer System Reconnaissance High Priority Area deadline is being sought up for June 2020 for all sewer lines with a diameter less than 30-inch. For the sewer lines with diameters of 30-inch or greater located within the High Priority Areas, PRASA will complete reconnaissance of the mentioned sewer line by June 30, 2026. Three illegal interconnections to the Puerto Nuevo

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- WWTP sewer system were found during the period of March 1st, 2018 to February 28th, 2019, however one was eliminated on October 2018 and two were eliminated on September 2019.
- o By August 31st, 2019, the following has been found and/or achieved regarding the Puerto Nuevo WWTP sewer system:
 - Cleaning of 705,000 linear feet of sanitary sewer pipeline.
 - PRASA contracted four separate sewer cleaning projects that included 320,000 linear feet of sanitary sewer pipeline. In 2019, PRASA started a bidding process to include a project for 193,000 linear feet of sewer cleaning. PRASA will initiate a bidding process for additional sewer cleaning projects in fiscal year 2020.
 - From March 1, 2018, to August 31, 2019, 33 PRASA sewer lines were identified with sewer defects within the Puerto Nuevo WWTP sewer system. Since SSOMP implementation, 164 sanitary sewer defects have been identified and 76 sanitary sewer defects have been corrected. Additional seven sewer defects will be corrected under the CIP Project, when activated.
 - o PRASA seeks modification of the one-year period to correct defects that hinder the operation of the Puerto Nuevo RWWTP sewer system. PRASA proposes the period of correction for the sanitary defects to be determined based on a case by case evaluation. PRASA and USEPA met in multiple occasions to discuss the criteria to correct defects based on sewer repair and re-inspection criteria; a prioritization process will be established. As a result of Force Majeure Event schedule delay encountered, PRASA has had to reinstate the process for evaluation of alternatives, PRASA continues to investigate options to monitor the occurrence of discharges from CSWO outfalls and means to estimate the discharge flow. PRASA has acquired level monitors with cellular connectivity for long deployment at the CSWO outfalls. PRASA continues to perform site inspections of the CSWO outfalls and will continue to inform USEPA of Dry Weather overflow events. As part of the discussion between PRASA, USEPA, and USDOJ an extension for January 2020 to estimate the flow of CSWO outfall discharges was presented and sought.
 - o Puerto Nuevo WWTP sewer system initiatives, PRASA's SSOMP Program and status of FOG Program:
 - On June 2017, PRASA conducted a training program to inspectors and supervisors of the FOG Control Program. During FY2018, prior to the 2017 Hurricanes, a total of 3,509 establishments were inspected island wide.
 - FOG Control Program inspections were suspended between September 2017 and February 2018 as PRASA resources were reassigned to recovery efforts.
 - On March 2018, PRASA resumed the public education program. Orientations and meetings were held with food associations, non-profit organizations, government agencies and municipalities to introduce the new requirements and guidelines of the program. The inspections schedule was established according to the Prioritization System.
 - From March 2018 to August 2019, PRASA conducted refresh training to approximate 72 inspectors and supervisor, which included the following topics: overview of the FOG and POGS Control Program, grease control equipment requirements, inspection process, best management practices and education program. Furthermore, on June 2019, PRASA

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launched a public educational campaign entitled: "*Tuberías Limpias*". The goal of the campaign is to educate citizens, establishments, and industries about the proper management of fats, oils, and grease. Summary of inspections conducted from March 2018 to August 2019 are included on **Table 6-3** below:

Table 6-3. Summary of FOG Program Inspections March 2018 to August 2018

Region	Number of Inspections
East	3,284
Metro	5,672
North	3,186
South	2,682
West	2,328

- o PRASA corrected all 12 Dry Weather Overflows that were notified to USEPA for the period encompassed by BPRs No. 6, 7, and 8.
- o PRASA performed a pilot study to evaluate flow/level monitoring technologies, but after assessing the results it was determined that they were not feasible due to the physical configuration of the outfalls and the hydraulic conditions. PRASA continues to investigate alternatives to monitor occurrence of CSWO and conducting site inspections. As of BPR No. 8, PRASA presented to USEPA an extension request for January 2020 to estimate the flow of CSWO discharges. As part of the USEPA/USDOJ/PRASA discussions regarding the Notifications of Force Majeure events, said extensions are being presented and discussed.
 - Three sanitary sewer overflow events have not been corrected within a six-month period of the BPRs No. 6, 7, and 8 are:
 - BPR No. 6: Villa Margarita Ward. St. 175, Km. 2.12 E-29 - Trujillo Alto due to complexities encountered and additional costs required, an amendment to the contract is needed to complete the project.
 - BPR No. 7: 406 St. Alcaniz San José San Juan- expected completion November 2019.
 - BPR No. 8: Calle Loíza Esq. San Jorge, San Juan- expected completion December 2019.
- Caño Martin Peña Projects: None of these projects were performed during the period of March 2018 to August 2019. These projects are contingent upon the completion of related prerequisite projects to be developed by parties not affiliated with PRASA.
- Puerto Nuevo WWTP Sewer System Evaluation and Repairs:
 - o Paragraph 34 of the consent decree establishes that a study and mapping of the Barriada Figueroa Sanitary Sewer System shall be completed and submitted by December 1, 2016. However, PRASA submitted a status report of the sewer inventory and mapping project on March 17, 2017. The final report was submitted to EPA on March 29, 2019.
 - o Sewer Systems and Mapping Projects:

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- PRASA submitted to USEPA electronic maps of its Puerto Nuevo WWTP Sewer System in GIS format on December 28, 2016.
- PRASA included the Puerto Nuevo WWTP Sewer System revised maps into the consolidated SSOMP Annual Report 2018 submitted on May 2019.
- As of February 28th, 2019, PRASA GIS has identified approximately 116,000 linear feet of gravity sewer mains, a 52% increase of the amount previously mapped.
- At least 700 sewer manholes were identified with additional information included in the PRASA GIS.
- A total of 96% of PRASA linear assets within the Barriada Figueroa sewer system were successfully recognized.
- Linear feet of sanitary sewer system that was cleaned: During the Barriada Figueroa project, approximately 79,000 linear feet of gravity sewer main were cleaned at least once.
- o Several areas of concern (18) within the Puerto Nuevo WWTP system were identified on Paragraph 36 of the 2015 USEPA Consent Decree. Remedial measures were stipulated for each one of these areas and PRASA addressed the corresponding actions for each of the measures. As a result of the Force Majeure Events raised, certain actions for the areas of concern identified were not fully undertaken. Food establishment related activities under the Areas of Concern Program halted and resumed March 18, 2018. Additionally, on February 21, 2018, PRASA requested USEPA to remove two particular areas of concern (Highland Park Residential Development and Montecarlo Residential Development) from the listed areas on Paragraph 36 of the Consent Decree and such request was granted. In addition, on May 2019, PRASA submitted a request to USEPA to include a new location to the Area of Concern List as established on the 2015 USEPA Consent Decree for a total of 17 active Areas of Concern.
- Interim Effluent Limits for WTPs and WWTPs: PRASA has continued to monitor compliance with the interim limits as established in Appendices S and T (Interim Effluent Limits for WWTP's and WTPs) and final NPDES limits. Notwithstanding, the Force Majeure events impact to treatment facilities and water sampling equipment have affected PRASA's effluent monitoring data activities. Therefore, despite preparatory measures and best efforts taken, PRASA has been unable to meet the full breath of its water quality sampling and analysis, and reporting obligations under the CWA and 2015 USEPA Consent Decree for all its facilities. The reasons attributable to PRASA's inability to do so were and are:
 - o Water Quality Sampling: PRASA operated with a Central Laboratory located in the Municipality of Caguas and satellite laboratories in the Municipalities of Arecibo, Mayaguez and Ponce. The Caguas Laboratory, PRASA's full scale laboratory, was severely damaged by Hurricane María. As stated on BPR No. 6, PRASA resumed discharge sampling and analysis of the 51 WWTPs and 113 WTPs for the STS. PRASA has established a temporary lab at Caguas, while the new Central Lab is finalized. Currently, the demolition project was awarded and is ongoing. However, this temporary lab is only partially certified, approximately for 60-70% of analysis requirements. Therefore, private laboratories are still under contract for the bulk of the water sampling and analysis.

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- NPDES Permit Compliance, Interim and Financial Limits: PRASA's compliance with NPDES permit limitations at its WWTP's, WTP's, and STS's were too jeopardized by the passing of the hurricanes. Until facilities and sewer lines repairs are completed PRASA compliance with permit and 2015 USEPA Consent Decree limitations is compromised. For NPDES obligations not being complied, including new restrictive limits of some parameters, PRASA continues to seek interim limits protection.
- For the period covered by the BPRs No. 6 and 7, there were requests and renegotiations of Interim Limits. Appendix 13 and 14 of the respective BPR includes a letter of the Interim Limits Renegotiation Summary sent on to the USEPA. Parameters renegotiated include: Enterococci, Phosphorus, Total Nitrogen, Copper, Cadmium, Silver, Zinc, Lead, among others.
- PRASA's IMP: FEMA and USACE are collaborating with PRASA in obtaining and providing EUGs for PRASA installations. As of August 31, 2019, a total of 34 EUGs provided by FEMA and other 62 rented EUGs were installed at multiple PRASA locations. The equipment calibrations were performed as usual; however corrective maintenance was executed with limitations. As stated on the Bi-Annual Reports No. 7 and 8 for the period covered, preventive and corrective maintenance continues being implemented with limitations. The program is currently working with Human Resources Department in recruiting towards the restructuring of the IMP.
- Corrosion Control Program (CCP): Consent Decree's section XV, paragraph 54 states that no later than March 1, 2017 PRASA shall develop and submit to USEPA for review and approval a CCP. The CCP was submitted on June 1, 2017 per time extension granted by USEPA. Development of such program has been impaired by the 2017 Hurricanes. PRASA began implementation of the CCP with site visits conducted on September 3rd, 2019 .
- Operator Training Program: Per paragraph 56 of the 2015 USEPA Consent Decree stipulate that all new STS or WWTP operators hired by PRASA must be trained in monitoring, recording, and reporting requirements of the individual NPDES Permits as applicable. During the period of February 28, 2018 to August 1st, 2019, PRASA hired 70 operators. Eight (8) operators that still within the 24 months window from the hiring date are on schedule to take the training. In accordance with recent restructuring the Directorate of Training and Continued Education, improvements to SAP are ongoing to accommodate and adjust the needs as part of the automation process changes regarding PRASA's Training Program.
- Process Control Systems (PCSs): PCSs are being implemented at PRASA's WTP STSs and WWTPs as stipulated by Paragraph 59 of the 2015 USEPA Consent Decree. During the period from March 1st, 2019 and August 31st, 2019 (BPR No.8) the PCS revisions and updates started at Metro and West Regions and it is expected to be completed by June 30th, 2020. For East, North, and South Regions according to the scheduled discussed with USEPA, the PCS revisions and updates are expected to be completed by June 30th, 2021.
- Spill Response and Cleanup Plan (SRCP): PRASA submitted the updated version of the plan on March 25, 2016. The review process of the updated SRCP was interrupted by the 2017 Hurricanes. As part of the pending meetings between PRASA and USEPA, the updated review process is expected to be resumed.

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- Monitoring, Records and Reporting requirements for Unpermitted STS: In accordance with Section XIX, Paragraph 66 of the Consent Decree the STSs identified pending NPDES Permit applications at the time of lodging of the Consent Decree are and their NPDES Permit status is:
 - For the period covered on the BPRs No.6, 7, and 8 all PRASA's STSs have a final NPDES Permit,
 - WWTP Capacity and Flow Management: PRASA reported that Force Majeure events impact to treatment facilities have affected PRASA's flow monitoring equipment and flow monitoring activities.
 - Wastewater Treatment Capacity and Flow Management: In accordance with paragraphs 70 and 71 of the 2015 Consent Decree, flow meter devices with flow totalizers and level indicators were installed at the point of discharge of most WWTPs, however there were a number of equipment (flow meters and totalizers) that were reported out of service on the BPR No. 8 that are expected to be repaired by the end of 2019.

Stipulated Penalties: During the period from March 1st, 2018 to August 31st, 2019, consisting of BPRs No. 6, 7, & 8), penalties were not assessed or adjudicated due to the Force Majeure protection still in force.

6.5.3.2 2006 PRDOH Drinking Water Settlement Agreement

As part of the 2006 Drinking Water Settlement Agreement between PRASA and the PRDOH, PRASA submits a Quarterly Settlement Agreement Reports (QSAR). Arcadis reviewed QSARs number 41 through 45 covering the period from April 1, 2018 through June 30, 2019. Section VII of the 2006 PRDOH Settlement Agreement states that PRASA will implement remedial actions in multiple systems or components. These remedial measures are classified as short, mid, and long-term remedial measures. A summary of the status of the remedial actions as of August 31st, 2019 is described below.

- Long-Term Measures 3: LTP3 projects have completion deadline of December 2021. As of the period evaluated, July 1st, 2019 through June 30th, 2019 none of the eight outstanding projects were completed. The eight projects are: Monte del Estado WTP, La Pica WTP, Frontón WTP, Canalizo WTP, El Duque WTP, Culebras WTP, the elimination of Ceiba Sur WTP and Quebrada Grande WTP. As previously mentioned, the elimination of Ceiba Sur WTP and Quebrada Grande WTP were LTP2 projects renegotiated via a joint motion with PRDOH to be completed under Term 3 projects. Two of the remedial measures are going to be renegotiated with the PRDOH to be eliminated; these are El Duque WTP and Canalizo WTP projects. Two projects (Monte del Estado WTP and Culebras) were included in the Prioritization List of the 2015 USEPA Consent Decree with expected completion date in 2032 and 2033, respectively. PRASA expects to renegotiate with PRDOH some of the completion dates for the outstanding projects.
 - The project for the decommission of the Vega Baja WTP was completed in August 31, 2018, as part of the PRDOH ATE Certification Civil Action No. KPE 2006-0858 (904).
- Continuous Monitoring Program: Section VII of the Settlement Agreement states that PRASA shall implement a Continuous Monitoring Program in all the WTPs. Continuous monitoring is implemented at each individual filter effluent and in the combined filter effluent. Each month PRASA submits to the PRDOH a compliance certification, which are included in each of the corresponding Settlement Agreement Reports.

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- QSAR No. 42 states that PRASA submitted the required compliance certification for the period of July, August and September 2018 to the PRDOH as agreed in the Section VII of the Settlement Agreement.
- QSAR No. 43 states that PRASA submitted the required compliance certification for the period of October, November, and December 2018 to the PRDOH as agreed in the Section VII of the Settlement Agreement.
- QSAR No. 44 states that PRASA submitted the required compliance certification for the period of January, February, and March 2019 to the PRDOH as agreed in the Section VII of the Settlement Agreement.
- QSAR No. 45 states that PRASA submitted the required compliance certification for the period of April, May, and June 2019 to the PRDOH as agreed in the Section VII of the Settlement Agreement.
- **Process Control Program:** Section VII of the Settlement Agreement states that PRASA shall develop a program aimed to optimize treatment processes to be implemented in larger systems. As per Quarterly Progress Report No. 44, PRASA met with the parties involved in this program. On Dec. 14, 2018 PRASA submitted the proposal for the language to be used, as agreed. Also, PRASA must implement preventive measures on those systems with frequent DBPs violations as stipulated in Section IX. PRASA will discuss with the PRDOH the amendment to the agreement.
- **Training Program:** As stipulated in Section XI, PRASA must train all personnel for the adequate operation and management of its facilities. As of March 31st, 2019, 100% of the required employees completed the training. In accordance with recent restructuring, the Directorate of Training and Continued Education, improvements to SAP are ongoing to accommodate and adjust the needs as part of the automation process changes regarding PRASA's Training Program.
- **Stipulated Penalties:** During the period from July 1st, 2018 to June 30th, 2019 PRASA incurred in penalties related to exceedances to the primary standards, required deliverables, remedial measures, and mitigation measures. The amount of the penalties PRASA incurred during this period added up to \$861,200, as summarizes in **Table 6-4**. Furthermore, it is important to note that 90% of the penalties were associated to missing or late deliverables and 9% was related to primary standard DBPs exceedances; while 1% was related to other penalties including primary standards such as Bacteriology, Turbidity, and CT, and Remedial Measures and Mitigation Measures. Penalties associated to these requirements represented only 1% of the total amount. Some of the measures included in the action plans currently being implemented are the following: tank oscillation, lowering tank levels, elimination of tanks, elimination of pre-chlorine injection points, flushing, among other initiatives.

Table 6-4. Stipulated Penalties

Reporting Period	Penalty Amount
July 1, 2018 to September 30, 2018	\$32,825.00
October 1, 2018 to December 31, 2018	\$710,675.00
January 1, 2019 to March 31, 2019	\$12,900.00

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Reporting Period	Penalty Amount
April 1, 2019 to June 30, 2019	\$104,800.00
Total	\$861,200.00

- Supplementary Environmental Project (SEP): The SEP project presented to PRDOH, was divided in three projects and it impacts Non-PRASA Water Systems that due to technical, administrative or financial limitations, find it difficult to operate and maintain a public water system in compliance with state and federal laws and regulations. The project is divided as follows:
 - Sampling and analysis of regulated chemical contaminants in potable water. The task was completed.
 - Installation of disinfection equipment, which was already completed as previously reported.
 - PRASA service connections to schools served by Non-PRASA systems. The task was completed.
- A second SEP project was presented to PRDOH. The project's proposed title is "*Segundo Proyecto Ambiental de Salud Publica en Sistemas de Agua Públicos Comunes no servidos por la AAA, conocidos como sistemas Non PRASA, para el Muestreo de Contaminantes Químicos Regulados en Agua Potable*" or Second Environmental Public Health Project in a Community with a Public Non PRASA Potable Water System for the Sampling of Regulated Chemical Contaminants in Potable Water, in English.
 - An escrow account with an initial deposit of \$563,700.00 was opened by PRASA on June 7, 2017 for the funding of the second SEP project.
 - Through a bidding process, PRASA awarded the second SEP project to Environmental Quality Inc. and the contract was signed on July 18th, 2019.

6.6 Future Regulations and Other Regulatory Requirements

The CIP was reviewed for adequacy to comply with future regulations and other regulatory requirements that could impact compliance limits for PRASA's water and wastewater facilities. With respect to the new discharge limits for residual chlorine, nitrogen, and phosphorus, PRASA is mostly using interim limits due to their inability of meeting the new lower limits for the abovementioned parameters as a result of the fiscal situation which prevents PRASA from optimizing treatment and increasing the removal of these contaminants.

Regarding wastewater systems, PRASA has indicated that once the sewer system improvements in the Puerto Nuevo WWTP service area are completed, it will expand the program to the rest of the Metro Region and, eventually, to the rest of the island (where applicable). At this time, PRASA does not have a specific time frame for when this will occur. However, it is likely that USEPA will include conditions and requirements such as those included in the Puerto Nuevo WWTP NPDES, on the NPDES permits for other facilities.

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Regarding the water system, future regulations for potable water systems (PWSs) include:

- Unregulated Contaminant Monitoring Program – The USEPA uses the Unregulated Contaminant Monitoring Program to collect data for contaminants suspected to be present in drinking water, but do not have health-based standards set under the SDWA. Every six years, the USEPA reviews the list of contaminants, largely based on the Contaminant Candidate List (CCL). Unregulated contaminant data gathered will help USEPA shape the future regulatory environment.
- Candidate Contaminant List – The CCL is a list of contaminants which are currently not subject to any proposed or promulgated national primary drinking water regulations but are known or anticipated to occur in public water systems, and that may require regulation under the SDWA. The list includes pesticides, DBPs, chemicals used in commerce, waterborne pathogens, pharmaceuticals, biological toxins, among others.
- Also, as previously noted, PRASA will be likely required to implement remediation measures in water wells that, under the GWUDI regulation, are found to be influenced by surface water sources. Currently, the evaluation program is still underway. PRASA continues the evaluation process at these facilities to determine the improvement needs and to develop the well remediation program and action plan.
- On October 10, 2019, USEPA announced the proposal for the revision of the Lead and Copper Rule. Under the proposal new actions include but not limited to identifying the most impacted areas, strengthening drinking water treatment, replacing lead lines, increase drinking water sampling reliability, improving risk communication to customers, and better protecting children in schools and child facility cares. PRASA must be wary of these new Rules, if approved.

Finally, PRASA may identify additional CIP needs to bring the water system into compliance with the Stage 2 D/DBPR. PRASA is currently implementing changes in its O&M practices to bring and/or maintain the PWSs in compliance. However, any additional projects identified and included in PRASA's CIP will be subject to prioritization system.

6.7 Conclusions

PRASA's six-year CIP generally addresses the needs of the System and complies with PRASA's existing commitments with Regulatory Agencies. It includes projects that cover a broad array of current and future needs, as identified by PRASA, and as required by consent decrees and agreements. The six-year CIP also includes funding for minor repair projects and PRASA's R&R program, as well as funding for recovery efforts and for System resilience/strengthening. Most of the projected six-year CIP investment is related to Emergency/Permanent Work projects. However, as noted in previous reports, given PRASA's high rate of leaks and overflows and continuing aging infrastructure, additional funds and a reactivation and acceleration of the R&R program are required to reduce and minimize these incidences. Hence, PRASA may need to further re-prioritize its funding and capital projects to address these critical system issues. Finally, PRASA's six-year CIP includes funding for maintenance improvements, as well as for other necessary infrastructure projects (i.e., fleet and building renovation, and technological improvements) essential to maintaining and preserving the utility assets.

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After continuous efforts of PRASA to explore and find opportunities for funding of compliance projects, on July 26, 2019, PRASA was able to reach a debt restructuring agreement with the funding programs of USDA RD, and USEPA CWSRF and DWSRF. This will allow PRASA to access new funding sources through these programs to execute compliance-driven projects.

PRASA will need to perform additional assessments and implement operational changes or additional capital improvements to bring non-compliant facilities into compliance. Also, as the impact of future regulations becomes more defined, CIP modifications will be required to adequately accommodate resulting needs. One of these future regulations is the Lead and Copper Rule, which is currently under revision to become more stringent.

PRASA continues to evaluate the potential impact of new regulations; however, the full impact of future regulations and other regulatory requirements on PRASA's System are not known at this time. In some cases, future regulations and additional regulatory requirements are expected to require minor process changes and in other cases major capital improvements, such as construction of new treatment processes and intensive repair programs. As the impact of future regulations becomes more defined, CIP modifications may be required to adequately accommodate resulting needs. These CIP needs, as negotiated or as currently being negotiated with Regulatory Agencies, will be prioritized and implementation schedules will depend on PRASA's financial capacity.

Lastly, additional CIP needs will need to be prioritized and implementation schedules will depend on PRASA's funding sources. To the extent that PRASA's fiscal situation does not improve and that the identification of CIP financing continues unresolved, PRASA's CIP will continue on hold. The delay in CIP reactivation and implementation could further affect the condition of the System and PRASA's ability to meet regulatory obligations, including environmental compliance regulations under the SDWA and the CWA.

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7 INSURANCE PROGRAM

7.1 Introduction

Section 7.08 of the MAT establishes that “[PRASA] shall employ an Insurance Consultant to review the insurance program of the Authority from time to time (but not less frequently than biennially). If the insurance Consultant makes recommendations for the increase of any coverage PRASA shall increase or cause to be increased such coverage in accordance with such recommendations, subject to a good faith determination of PRASA that such recommendations in whole or in part are in its best interest.”

Arcadis has reviewed PRASA's current insurance coverage and determined its adequacy considering the type and value of PRASA's fixed assets. Also, addressed in the following sections, are some outstanding recommendations to PRASA's insurance coverage from a previous evaluation originally made by MARSH and validated or commented by AON, PRASA's Broker of Record (BOR) in FY2016. The BOR for FY2017 and FY2018, Lone Star Insurance Producers, LLC (Lone Star), was consulted to verify if the recommendations were addressed in the policy renewals or if they were not adopted. For FY2019 PRASA changed its BOR from Lone Star to Goas & Associates, Inc (GOAS). Furthermore, the policies for FY2019 suffered changes, in some cases significant changes in coverage and primarily in premiums, as an effect of the upshot of the hurricanes that struck Puerto Rico on September 2017. In addition to the 2017 Hurricanes, insurance companies may have dealt with other catastrophic events impacting the Caribbean and the United States. The vast damages and losses suffered by the insured directly impacted the insurance market and resulted in premiums increases, stricter subscription guidelines and risk assessments. The data, opinions, and comments included in this section have been based on PRASA's copies of policies and other documents provided by PRASA for this purpose.

PRASA maintained GOAS as its BOR for the 1st quarter of FY2020 but decided to change to *Fedelta Insurance* as its BOR for the rest of FY2020.

7.2 Risk Management

Risk is exposure to loss. It is the chance of something happening that will lead to a loss or an undesirable outcome and it is measured in terms of consequences and likelihood. Risk management is an effective process that is directed towards management of risks and hazards to produce a desired set of results.

The treatment of risk takes the following forms:

- Loss Control:
 - Elimination or reduction of risk by physical, technical or mechanical means, loss prevention techniques, loss prevention engineering.
- Contractual transfer:
 - Hold harmless agreements, indemnity agreements in contracts with suppliers, contractors, service providers, customer agreements.
- Transfer of risk through insurance:

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- Self-insurance.
- Insurance policies and coverage available from insurance companies.
- Insurance products/programs available from government's Federal Emergency Management Agency (FEMA) and state (Commonwealth of Puerto Rico) including workers' compensation, and health/medical, among others.

7.2.1 PRASA Insurance Department

The risk management function is an integral part of the management function. Within PRASA, risk identification and treatment are performed by all departments at all levels in conformity with local and federal regulations, including the Occupational Safety and Health Administration (OSHA) regulations. Risk management is applied through the employment of independent engineering and consulting firms in planning, design, and construction and in the implementation of excellence in practices and processes. Furthermore, new construction is carried out in accordance with applicable building codes and regulations.

7.2.2 Identification of Risk

The risks affecting PRASA can be broadly categorized as follows:

1. Risks to property, facilities, and physical assets from natural and human causes.
2. Financial risks arising from damage to, or loss of, physical assets, such as loss of income, interruption of operations and an increase in operating expenses to continue operations.
3. Financial risks resulting in management liability related to economic downturns.
4. Regulatory issues that might result in liability or service interruption.
5. Theft of owned and non-owned property.
6. Theft of water production.
7. Liability risks, including suits from third parties for injury or loss of property, fines/penalties, injuries caused by vehicles or properties, advertising injury, products, libel, slander, false arrest/detainment and injuries occurring on or off premises.
8. Pollution liability claims and fines.
9. Public authority/errors and omissions liability, which is liability arising from financial loss incurred by other that does not result in physical injury to persons or property.
10. Reputation risk which includes incidents, events or human actions which seriously damage the image and reputation of the organization.
11. Epidemic or pandemic that causes wide-spread injury or sickness to PRASA employees.
12. Kidnap, ransom, extortion risks.
13. Privacy & Cyber Liability arising from alleged failure to adequately secure customer data.
14. Acts of Terrorism affecting PRASA's facilities or customers.

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15. Strikes and Labor unrest causing loss of income, interruption of operations and an increase in operating expenses to continue operations.

7.3 Assessment of Insurance Program

This section of the report provides MARSH's outstanding recommendations and BOR's responses/confirmation with respect to PRASA's insurance policies currently in force.

7.3.1 Property Insurance

The following are the findings and recommendations under the Commercial Property Program for FY2019 placed through MAPFRE PRAICO Insurance Company (MAPFRE). PRASA's Schedule of Values amounts to \$11,021,002,890.00.

PRASA's property is insured by a policy issued by MAPFRE and includes the London & International Markets. Renewal of the policy occurred in April 2018 and extended until April 2019. PRASA's premium for all coverage under this policy was \$16,112,931; \$13,500,000.00 for Primary coverage and \$2,612,931 for 1st Layer coverage. Other insurance companies are shown on the MAPFRE policy as "subscribers." This means they have each agreed to bear a portion of each loss, as follows:

Primary of \$150M with \$100M SIR:

- MAPFRE – assumed 42% of \$150M primary; PRASA's premium share for this policy amounts to \$5,670,000.00.
- Certain Underwriters at Lloyd's & International Markets – assumed 58% of \$150M primary; This has several subscribers from London and form International markets covering the 58%. Refer to Policy for details. PRASA's premium share for this policy amounts to \$7,830,000.00

1st Layer of \$150M in excess of \$150M with \$100M SIR:

- MAPFRE – assumed 42% of \$150M in excess of \$150M; PRASA's premium share for this policy amounts to \$1,097,431.02.
- International General Insurance (IGI) – assumed 38% of \$150m in excess of \$150M. PRASA's premium share for this policy amounts to \$992,913.78.
- Houston Casualty Company (HCC) – assumed 15% of \$150M in excess of \$150M. PRASA's premium share for this policy amounts to \$391,939.65.
- Ironshore Insurance Ltd. – assumed 5% of \$150M in excess of \$150M. PRASA's premium share for this policy amounts to \$130,646.55.

Coverage is written on an "all risks" basis. The policy insures real and business personal property, impounded water, dams, underground piping and covers business interruption resulting from covered physical damage/loss to property as stated in the policy.

Major policy limits and deductibles are shown in **Table 7-1**.

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Table 7-1. FY2019 Property Coverage, Limits and Deductibles

Coverage	Limit	Deductible
Total Insurable Value	\$300 million	As stated below
Property – All Other Perils (AOP) (including Data Processing, In Transit and equipment breakdown)	\$150 million per occurrence, All Risks of Direct physical Loss or damage Insurance including Business interruption and Extra Expense, excess of applicable deductibles.	\$100 million Each and every occurrence combined for Property Damage and Business Interruption, including Windstorm, Flood, Earthquake and Boiler & Machinery
Windstorm	Included in \$150 million property coverage.	\$100 million Each and every occurrence combined for Property Damage and Business Interruption, including Windstorm, Flood, Earthquake and Boiler & Machinery
Earthquake (EQ)	\$150 million Combined Single Limit for Property Damage and Business Interruption each and every occurrence, excess of applicable deductibles and excluding wind driven water.	\$100 million Each and every occurrence combined for Property Damage and Business Interruption, including Windstorm, Flood, Earthquake and Boiler & Machinery
Flood	\$150 million Combined Single Limit for Property Damage and Business Interruption each and very occurrence, excess of applicable deductibles and excluding wind driven water.	\$100 million Each and every occurrence combined for Property Damage and Business Interruption, including Windstorm, Flood, Earthquake and Boiler & Machinery
Business Interruption	Included in \$150 million property for AOP.	\$100 million Each and every occurrence combined for Property Damage and Business Interruption, including Windstorm, Flood, Earthquake and Boiler & Machinery
Extra Expense	Included in \$150 million property for AOP, subject to a \$35 million Sublimit	\$100 million Each and every occurrence combined for Property Damage and Business Interruption, including Windstorm, Flood, Earthquake and Boiler & Machinery
Contingent Business Interruption	Included in \$150 million property for AOP, subject to a \$35 million Sublimit	\$100 million Each and every occurrence combined for Property Damage and Business Interruption, including Windstorm, Flood, Earthquake and Boiler & Machinery

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Coverage	Limit	Deductible
Professional Services Fees	Included in \$150 million property for AOP, subject to a \$2 million Sublimit	\$100 million Each and every occurrence combined for Property Damage and Business Interruption, including Windstorm, Flood, Earthquake and Boiler & Machinery
Newly Acquired Locations	Included in \$150 million property for AOP.	\$100 million Each and every occurrence combined for Property Damage and Business Interruption, including Windstorm, Flood, Earthquake and Boiler & Machinery
Boiler and Machinery	Included in \$150 million property coverage	\$100 million Each and every occurrence combined for Property Damage and Business Interruption, including Windstorm, Flood, Earthquake and Boiler & Machinery

In addition, property insurance coverage for: Asbestos with \$1M Sublimit, Professional Fees with \$2M Sublimit, and Contingent Business Interruption / Extra Expense with \$35M Sublimit. All Sub-limits are part of and not in addition to the Loss Limits and are per occurrence.

PRASA was able to collect the \$300M coverage in the policy from the Insurance for the Hurricane Maria event. About half went to cover Business Interruption and the remaining will be used for projects. Moreover, PRASA is still in the process of negotiations with the Insurance for the claims regarding Hurricane Irma and post hurricane heavy rains. PRASA can claim up to the limit of \$300M for each event. Furthermore, it is important to note that PRASA will claim FEMA for assistance to pay for the damages not covered by the Insurance.

Renewal of this policy for FY2020 covers from April 2019 and extends until April 2020. The policy coverages for the primary and each excess layer remains the same as presented in **Table 7-1**. As the policy premiums significantly increased from FY2018 to FY2019 already, for FY2020 they remained the same at \$16,112,931.

The new Policy coverage is as follows:

- Total Insurable Limit of \$300M.
- Primary of \$150M with \$100M SIR: MAPFRE assumes 42% of \$150M (\$63M); Certain Underwriters at Lloyd's assumes 29% of \$150M (\$43.5M); Somp International assumes 10% of \$150M (\$15M); Axis assumes 9% of \$150M (\$13.5M); and IGI assumes 10% of \$150M (\$15M). PRASA's premium share for this policy amounts to \$13,500,000.00, distributed between the providers. Refer to item 1 below.
- First Layer of \$150M in excess of \$150M, with \$100M SIR: MAPFRE assumes 42% of \$150M in excess of \$150M (\$63M); IGI assumes 43% of \$150M in excess of \$150M (\$64.5M); and HCC (UK branch) assumes 15% of \$150M in excess of \$150M (\$22.5M). PRASA's premium share for this policy amounts to \$2,612,931.00, distributed between the providers. Refer to item 2 below.

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1. All Risks, including Windstorm, Flood, Earthquake and Boiler and Machinery: \$150 million per occurrence, Combined Single Limit for Property Damage and Business Interruption, excess of applicable deductibles. Deductible of \$100M Property Damage and Business Interruption combined each and every occurrence.
2. Earthquake and Flood (excluding wind driven water): \$150 million per occurrence, Combined Single Limit for Property Damage and Business Interruption, excess of applicable deductibles. Deductible of \$100M Property Damage and Business Interruption combined each and every occurrence.

In addition, property insurance coverage for: Asbestos with \$1M Sublimit, Professional Fees with \$2M Sublimit, and Contingent Business Interruption / Extra Expense with \$35M Sublimit. All Sub-limits are part of and not in addition to the Loss Limits and are per occurrence.

Recommendations

After reflecting on the financial burden and stress caused by the significant damages of Hurricanes Irma and María, the bureaucracy and slow progression of reimbursements, and even with PRASA's Rainy-Day Fund of around \$20 million for eventualities and the Operating Reserve Fund (which had over \$40 million), PRASA should consider establishing a FUND to cover possible financial losses from any future catastrophic or any non-catastrophic, peril that might affect infrastructure and operations and, therefore, impose an unexpected financial burden.

Recommendations & Responses Unrelated to Policy Contract

The following outstanding recommendation was previously made by MARSH including AON comments, regarding PRASA's property insurance policy. Also, included is confirmation of action by Lone Star of said recommendations:

1. The current Property Maximum Loss (PML) Estimates for PRASA for quantifying Catastrophic Risk Exposures were performed in 2010 by MARSH Risk Consulting, through AIR Worldwide Corporation, based on a valorization study from 2006. Since then, modules, maps and projections have changed, and new modules might prove economically beneficial to PRASA; therefore, MARSH strongly recommended that PRASA undertake a new PML Study.

AON agreed with this recommendation. Lone Star indicated that PML analysis was performed for underwriting purposes only, resulting in FY2018 policy limits being accepted by PRASA.

Nevertheless, Arcadis still recommends that PRASA undertake a new PML study particularly after the impacts and lessons learned from the September 2017 major hurricanes.

7.3.2 Crime

PRASA maintains a crime policy issued by Chubb, providing the coverage and limits shown in **Table 7-2** for loss discovered during the policy period. Renewal of policy occurred in July 2018 and extended until July 2019. The premium remains the same at \$28,500. However, the significant change is that the deductibles for each crime coverage increased 650% from \$10,000 to \$75,000. This escalation on crime coverage deductibles resulted from Chubb's Head Office instructions, applicable to all the accounts they manage.

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Table 7-2. FY2019 Crime Coverage, Limits and Deductibles

Coverage	Limit	Deductible
Employee Dishonesty – Insured Indemnity	\$1 million	\$75,000
Employee Dishonesty – Employee benefit Plan (ERISA) Indemnity	\$500,000	\$0
Forgery or Alteration	\$1 million	\$75,000
Loss Inside Premises	\$1 million	\$75,000
Computer Fraud and Fraudulent Transfer Instructions	\$1 million	\$75,000
Audit Expense	\$150,000	\$0
Loss Outside Premises (In Transit)	\$1 million	\$75,000
Securities	\$1 million	\$75,000
Claim Expense	\$150,000	\$0
Voiced Initiated Transfer	\$1 million	\$75,000
Extortion Threats to Persons	\$100,000	\$75,000
Extortion Threats to Property	\$100,000	\$75,000
Counterfeit Currency and Money Orders	\$1 million	\$75,000
Policy Aggregate	\$1 million	Not Applicable

Renewal of this policy for FY2020 covers from Sep 2019 and extends until Sep 2020. Coverage and limits are the same as shown in **Table 7-2**. The premium increase to \$50,000.00. Deductibles were reduced to \$50,000.00.

Recommendations & Responses

The following pending recommendation was previously made by MARSH including AON comments regarding PRASA's Crime Policy. Also, included is confirmation of action by Lone Star of said recommendations:

1. Knowledge or Discovery of Loss clauses should be re-negotiated to specifically identify positions triggering knowledge of incidents to minimize the risk of carrier declines for late reporting.

AON agreed with this recommendation and requested insurer for an endorsement. Lone Star confirmed that this was not included in the FY2018 policy.

It is recommended to include in the next renewal. Arcadis requested confirmation from GOAS via PRASA. At the time of submission of this Report, no response has been provided to confirm whether

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the recommendation was adopted for the FY2019 policy. However, Arcadis was able to verify Endorsement, Amend Section 6, Notice (first paragraph) was included in the 2019-20 renewal.

7.3.3 General Liability

PRASA's FY2019 commercial general liability program is issued by MAPFRE with the limits detailed in **Table 7-3**, below. Renewal of policy occurred in July 2018 and extended until July 2019. Policy aggregate limit of \$20 million. Also, aggregate limits apply per location and per construction project as per ISO forms CG-2504 (03-97), and CG-2503 (05-09), attached to the MAPFRE policy. A \$100,000 Deductible Liability Insurance, as per ISO form CG-0300 (01-96), which contemplates both indemnity and claims adjustment expenses for bodily injury and property damage liability combined under premises/operations coverage; applies to each occurrence. This Deductible Liability Insurance has a \$750,000 Aggregate or Cap as respects to claims adjustment expenses per policy year, so once this amount is paid by PRASA, the Insurance Company will pay these amounts from the first dollar and the Self-Insured Retention (SIR) would apply to indemnity payments only. Additionally, policy includes a SIR of \$5,000.00 for each occurrence or offense not covered by Underlying Insurance.

Table 7-3. General Liability Coverages and Limits

Coverage	Limit
General Liability – Each Occurrence	\$1,000,000
General Liability – General Aggregate	\$2,000,000
Personal and Advertising Injury	\$1,000,000
Products - Completed Operations Aggregate	\$2,000,000
Damage to Premises Rented	\$1,000,000
Medical Expense	\$10,000
Employer's Liability Stop-Gap (Bodily Injury by Accident)	\$1,000,000
Employer's Liability Stop-Gap (Bodily Injury by Disease)	\$1,000,000
Employee Benefits Liability	\$1,000,000

Both the Stop-Gap Liability (Bodily Injury by Disease) and the Employees Benefit Liability have \$1M limit Aggregate. The deductible for Employees Benefits Liability is \$1,000.

Renewal with MAPFRE of this policy for FY2020 covers from July 2019 and extends until July 2020. Coverage and limits remain the same, as shown in **Table 7-3**. The premium remains the same at \$920,550.

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Recommendations & Responses

The following pending recommendations were previously made by MARSH including AON comments regarding PRASA's general liability program. Also, included is confirmation of action by Lone Star of said recommendations:

1. Under the "Special Conditions" endorsement attached to the MAPFRE policy; MARSH recommended the following amendment be performed.

- a. Severity of Interest (item 9) should be revised to read Severability of Interest.

Arcadis agrees with AON previous recommendation and recommends that it should be included in the next policy renewal.

Change was included in the FY2020 renewal.

2. Commercial General Liability program excludes coverage for any Terrorism event. Considering the Insured operations and act of Terrorism is an important and potentially severe exposure with considerable implications. MARSH recommended that Terrorism coverage should be considered under PRASA's Commercial General Liability program.

AON agreed with this recommendation and has urged PRASA to include such coverage on renewals but PRASA has declined the recommendation.

This was not included in the FY2019 policy nor the FY2020 renewal. PRASA continues to decline its inclusion, citing that it will represent an increase on premium.

Nevertheless, Arcadis still recommends that it should be included in the policy.

3. Commercial General Liability program excludes coverage for Fungi or Bacteria (CG 2167 (12-04). Considering the lessons learned after the 2017 Hurricanes and the Insured operations there is potentially some PRASA assets vulnerable to fungi and/or bacteria as such, PRASA's employees/property may be at risk of exposure. Furthermore, Puerto Rico's tropical weather is a factor to potentially exacerbate the risk of exposure. Arcadis recommends that Fungi or Bacteria coverage should be considered under PRASA's Commercial General Liability program.

7.3.4 Automobile Liability

PRASA maintains automobile liability coverage through MAPFRE. Renewal of policy occurred in July 2018 and extended until July 2019 and includes:

- Bodily Injury and /or Property Damage caused by **Any** automobile, including Hired and Non-Owned, with a \$1,000,000 Combined Single Limit per accident and includes a \$5,000 per person Medical Expense limit for owned autos only.
- Physical Damage to owned autos of the Insured is not included in the policy except for Specific Catastrophic events which includes Lightning, Fire, Explosion, Windstorm, Hail, Flood and Earthquake, with a limit of \$2,000,000 per event and subject to a \$50,000 per event deductible for Comprehensive and Collision coverage.
- Drive Other Car Coverage is included for Liability coverage on a blanket basis for up to 50 individuals.

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- Policy provides automatic Physical damage coverage for Hired and Acquired Autos with a value up to \$40,000 with a \$500 Deductible. Any vehicle with a value greater than \$40,000 must be submitted to the Company for approval. This coverage is subject to a deposit premium of \$23,750.00 and an annual revision at a rate of 7.5%.
- Garage liability coverage is under the Compulsory Liability Insurance policy.
- Comprehensive and collision Trailer interchange coverage is provided for non-owned trailers under the care, custody or control of the Insured, with a physical damage limit of \$35,000 each trailer; \$35,000 each tank/refrigerated unit; \$20,000 each non-refrigerated or van unit; and \$15,000 each flatbed, chassis and "gen set". All subject to a \$500 Comprehensive and Collision deductible. Losses to chassis will be paid under replacement cost basis. Coverage excludes the exchange of any container, moving trailer, or related equipment between municipalities or governmental agencies.
- Rental Reimbursement coverage with a maximum payment (each covered auto) of \$50.00 any one day / 30 days or \$1,500.00 any one period.

Also, under MAPFRE the following policy was included:

- Garage Keeper coverage is included on a Direct Primary basis for Comprehensive and Collision with a limit of \$1,000,000 per event for each covered location for "Autos left with you for service, repair, storage or safekeeping; and for Theft or Mischief or Vandalism". Comprehensive coverage is subject to a \$250 per event deductible, subject to a maximum of \$1,000 per event and collision coverage is subject to a \$500 deductible. Premium for this coverage totaled \$18,000.

Renewal with MAPFRE of the commercial auto policy for FY2020 covers from July 2019 and extends until July 2020. Coverage and limits remain the same as presented above. However, there are 2,867 units included, which is 85 more than the previous policy. The premium for this coverage increase 0.8% to \$593,700.

The Garage Keeper's coverage for FY2019 remains the same as well. No increase in premium.

Recommendations & Responses

The following pending recommendations were previously made by MARSH, including AON comments regarding PRASA's Commercial Auto, Garage Liability and Garage Keeper's programs. Also, included is confirmation of action by Lone Star of said recommendations:

1. MARSH recommended that form U-6 (11-93) "Liability Coverage Exclusion Endorsement" be eliminated since the language utilized is too broad and may present coverage interpretations unfavorable to PRASA.

AON agreed with this recommendation and submitted it to the insurer for review and approval.

Lone Star indicated that it submitted recommendation to insurer for the FY2018 policy, but no response was received prior to renewal. Furthermore, Lone Star said that it was included in the specifications for the FY2019 renewal. Arcadis requested confirmation from GOAS via PRASA. At the time of submission of this Report, no response has been provided to confirm whether the recommendation was adopted for the 2018-2019 renewal period.

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Form U-6 (11-93) was eliminated.

2. Drive Other Car coverage is included only for Liability to Named Individuals. MARSH recommended that it be broadened to include both Physical Damage and Medical Payments coverage.

AON agreed with this recommendation and submitted it to the insurer for review and approval.

This was not included in the FY2018 policy nor the FY2019 renewal. However for the FY2020 renewal Medical Payment coverage was included for Named Insured and his/her family member (related by blood who reside in the same household) while "occupying" or while a pedestrian when being struck by any "auto" you don't own, except any "auto" owned by that individual or family member.

Also Physical Damage coverage was included to any passenger type "auto" you don't own, hire or borrow while in the care, custody or control of any Named Individual listed or his/her partner while a resident of the same household. Except any "auto" owned by that individual or any member or his/her household or any "auto" used while working in a business of selling, servicing, repairing or parking "autos".

7.3.5 Umbrella and Excess Liability

PRASA maintains a primary umbrella policy which provides a first layer of \$20M limit excess of the primary general, automobile and employer's liability policies for each occurrence and aggregate. The umbrella is otherwise subject to a \$5,000.00 SIR for each occurrence of bodily injury, property damage and personal and advertising injury losses not covered by the underlying insurance. Renewal of policy occurred in July 2018 and extended until July 2019. Coverage is provided through MAPFRE on a \$591,550 premium.

PRASA also maintains a second layer excess liability policy providing a \$40M limit in excess of the \$20M umbrella limit described in the preceding paragraph for each occurrence and aggregate with a \$5,000 SIR. Coverage is also provided through MAPFRE with a \$163,450 premium for a total Umbrella and Excess premium of \$755,000.

Renewal with MAPFRE of the umbrella and excess liability for FY2020 covers from July 2019 and extends until July 2020 and included in one policy. Coverage is the same but to includes a limit of \$60M per occurrence. Also, the same SIR of \$5,000 applies. Policy premium increased 12.6% to \$850,000.

7.3.6 Directors and Officers Liability

PRASA maintains one primary and two excess layers of directors & officers (D&O) liability insurance. Coverage provided through Chubb. Renewal of policy occurred in July 2018 and extended until July 2019. Coverage is written on a claims-made basis and is subject to a prior litigation date of July 1, 2007 on the primary policy, July 1, 2010 on the first excess issued by Liberty, second excess layers by Berkley and Liberty, and July 1, 2016 for the last second excess layer issued by AIG. The D&O carriers and limits are shown in **Table 7-4**.

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Table 7-4. FY2019 Directors and Officers Liability

Insurer	Limit	Premium
Chubb Insurance Company (Primary)	\$15 million	\$150,000
Liberty International Underwriters (First Excess Layer)	\$10 million excess of \$15 million	\$50,000
Berkley Insurance Company (Second Excess Layer)	\$10 million excess of \$25 million	\$40,000
Liberty International Underwriters (Second Excess Layer)	\$10 million excess of \$35 million	\$35,000
AIG Insurance Company (Second Excess Layer)	\$5 million excess of \$45 million	\$25,000
Total D&O Limit	\$50 million	\$300,000

The primary layer of D&O insurance is subject to a \$500,000 SIR for claims against indemnified persons or a claim against PRASA alleging a breach of duties.

Renewal of this policy for FY2020 covers from July 2019 and extends until July 2020. Details of coverage could not be verified as copy of the FY2020 Policy was not provided at the time of this Report.

The following pending recommendations were previously made by MARSH, including AON comments regarding PRASA's Directors and Officers insurance. Also, included is confirmation of action by Lone Star of said recommendations:

1. **Consider Re-negotiating Definition of Application Endorsement so that it is pertinent.** The Amend Definition of Application Endorsement makes reference to documents filed with the Securities & Exchange Commission. The intent of this endorsement should be to limit information used in underwriting to information received within the last year. This clarification is important because when faced with large claims insurance carriers frequently evaluate the opportunity to rescind the policy. When documentation is limited to that submitted within the past year, it is more difficult for them to rescind the policy.

AON agreed with this recommendation and requested insurer for the correct endorsement.

Lone Star indicated that insurer said that endorsement could be renegotiated upon renewal as it was not included in FY2018 policy. Lone Star said that recommendation was included in specifications for FY2019 renewal.

Arcadis was able to verify that it was included.

2. **Consider Eliminating the Private Company Endorsement.** There appears to be a conflict in wording regarding the Securities Coverage. The policy has a Private Company Endorsement that adds coverage for the corporate entity by changing Insuring Clause C from Company Securities Liability to Company Liability eliminating the securities coverage. The Private Company endorsement has a specific Public Offering of Securities exclusion. MARSH recommended eliminating the Private

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Company endorsement. Chubb can include the employees as Insured's by an additional endorsement.

AON, as PRASA's BOR, will not recommend eliminating the Private Company endorsement but will instead revise its wording to harmonize the securities coverage.

Lone Star said that upon receiving recommendation insurer indicated that endorsement could be renegotiated upon renewal, as such, it was included in specifications for FY2019 renewal.

Arcadis was able to verify that it was included.

7.3.7 Employment Practices Liability

PRASA maintains primary and excess employment practices liability (EPL) policies providing total limits of \$5M in the aggregate annually for employee claims alleging wrongful termination, employment related misrepresentation, sexual harassment, retaliation or other violation of an employee's civil rights. A \$100,000 SIR applies to each claim. Coverage is written on a claims-made basis and is subject to a prior litigation date of November 30, 2007 on the primary policy. Primary coverage is \$5M provided through Chubb. Excess EPL coverage is through Berkley Insurance Company for \$5M each claim in excess of \$5M but in no event exceeding \$5M in the aggregate for all claims. Also, it is subject to a prior litigation date of July 1, 2014. Renewal of this policy occurred in July 2018 and extended until July 2019. PRASA's premium for the primary policy was \$135,375 and \$38,000 for the excess policy.

A benchmarking study, shown in **Figure 7-1** based on limits carried by other public corporations in the industry class with similar level of corporate and economical characteristics showed that on average, limits of \$6.8M were carried. The study also shows a 75th percentile with limits of \$10M and a 25th percentile with limits of \$3M with a median of \$5M. PRASA decided a couple of years ago to reduce the EPL limits from \$10M in FY2015 to the median, based on data from previous years, and has maintain those limits.



Figure 7-1. Employment Practices Liability Benchmarking Analysis

Renewal of the EPL for FY2020 covers from July 2019 and extends until July 2020. Details of coverage could not be verified as copy of the FY2020 Policy was not provided at the time of this Report.

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7.3.8 Premises Pollution Liability

Chubb provides pollution liability coverage on a claims-made basis at \$10M per pollution condition, \$10M annual aggregate limits. Coverage is subject to a \$250,000 per accident SIR. Policy was renewed on July 1, 2018 and extended until July 2019. A retroactive date of July 1, 2002 applies. PRASA's premium for this policy was \$253,740. An added coverage for "Terrorism Risk Insurance Act" was offered but not accepted by PRASA due to higher premiums.

Renewal of this policy for FY2020 covers from July 2019 and extends until July 2020. Coverage, limits and premium remain the same as presented above.

Recommendations

PRASA should consider adding the "Terrorism Risk Insurance Act" policy.

7.3.9 Accident Liabilities for Travel and Divers

PRASA's FY2019 accident coverage program for travel is issued by Chubb with the limits detailed in **Table 7-5**, below. Renewal occurred on July 1, 2018 and extended until July 2019. Policy has a \$2.5M annual aggregate limits. Coverage is available for PRASA employees named as Insured. PRASA's premium for this policy was \$1,000.

Table 7-5. FY2019 Accident (Travel) Liabilities

Coverage	Limit
Accidental Death and Dismemberment	\$500,000
Accidental Medical Expenses Reimbursement*	\$7,000
Medical Sickness Reimbursement	\$3,500
Emergency Medical Transfer	\$50,000
Repatriation of Remains	\$5,000
Cancellation and Interruption of Travel	\$500
Loss of Personal Belonging	\$1,000
Assistance Service Included	-

*If participant is covered under any Medical Health Plan, the Company will cover the excess of the Medical Expenses incurred. If not covered by any Medical Health Plan, the Company will cover charges after applying the \$100.00 deductible.

Renewal of this policy for FY2020 covers from July 2019 and extends until July 2020. Coverage, limits and premium remain the same as presented above.

In addition, PRASA maintains an accident coverage program for divers, as issued by Chubb. Renewal occurred on July 1, 2018 and extended until July 2019. Policy has a \$750,000 annual aggregate limits. Coverage is available for PRASA employees named as Insured. Coverage includes \$250,000 limit for

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Accidental Death as well as for Accidental Dismemberment. PRASA's premium for this policy was \$19,900. Same caveat for Accidental Medical Expense reimbursement as for Accident (travel).

Renewal of this policy for FY2020 covers from July 2019 and extends until July 2020. Coverage, limits and premium remain the same as the previous fiscal year.

7.3.10 Cyber Liability

PRASA does not currently purchase cyber liability insurance. PRASA retains client information as part of the operations that might include data that is considered Personal Identification Information (PII) in Puerto Rico. This information includes social security numbers, driver's license numbers, bank account numbers (with or without access codes), among other things. There have been many well publicized breaches and cybersecurity awareness continues to grow. This new cyber consciousness has had an impact on litigation, cyber claims, and how companies respond to data breach attacks. A privacy breach or cyber-attack can affect any company.

Recommendations & Responses

The following outstanding recommendation was previously made by MARSH including AON comment regarding PRASA's cyber liability policy:

1. **Consider cyber liability coverage.** MARSH recommended that PRASA complete a self-assessment to determine potential areas of weakness as compared to international standards and also to determine the potential frequency and severity of a breach. These two studies will help to gauge limits. With this information in hand, MARSH recommended that PRASA purchase a Privacy & Cyber Liability policy to insure against liability arising from potential allegations such as PRASA failed to adequately secure customer data and the associated identification theft costs needed to repair customer credit.

AON agreed with this recommendation to purchase a Privacy & Cyber Liability Policy and has advocated so at the last two renewals but has not been approved by PRASA.

PRASA requests such professional policy from subconsultants (IBM, Accenture, etc.), however are still exposed to liability for all work not performed by subconsultants. Arcadis agrees with previous recommendations that PRASA should purchase a Privacy & Cyber Liability Policy.

7.4 Owner Controlled Insurance Program

PRASA maintains an OCIP for its multi-year Capital Improvements Program - CIP. In addition to covering PRASA, the OCIP is designed to insure enrolled contractors, subcontractors (and design professionals for General Liability only) of all tiers working on the CIP. The OCIP does not cover vendors, installers, truckers, delivery persons, concrete/asphalt haulers, and/or contractors who do not have on-site dedicated payroll, except as otherwise endorsed into the policy. The OCIP program provides builder's risk, general liability, umbrella, pollution liability insurance and miscellaneous errors & omissions professional liability insurance. Each of these coverages is discussed below.

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7.4.1 Contractors All Risk –Completed value Builder’s Risk

PRASA maintains a builder's risk policy as part of its OCIP program. Chubb Insurance Company is the insurer. Policy period from March 9, 2018 to March 9, 2019. Coverage applies to all risks of direct physical loss, except as excluded by the policy. Estimated value of all projects \$150,000,000.00. The maximum contract value per contract is US\$25,000,000.00 and maximum project period is 18 months. The Limit of Liability in any one occurrence and in the annual aggregate for the policy term is US\$100,000,000.00. Policy period Aggregate Limits of Liability are \$50,000,000.00 for Earthquake and Windstorm, and \$20,000,000.00 for Flood.

Certain sub limits apply to additional exposures, such as off-site storage, inland transit and debris removal, but these sub limits are part of and not in addition to the Limit of Liability and are subject to the per project reported value as maximum limit of liability. PRASA's premium for this policy was \$714,226.15 and includes Sublimits as shown in **Table 7-6**.

Table 7-6. FY2019 OCIP Builder’s Risk Sublimits of Liability

Coverage	Sublimit
Maximum Physical Loss of or damage to insured Property per Insured Project	Contract Value
Professional Fees	\$1,000,000 or 10% of the loss in any one occurrence, whichever is less.
Property in Transit	\$1,000,000 any one conveyance
Principal's Existing Property	\$1,000,000- each and every loss in the annual aggregate
Offsite Storage	\$2,000,000 any one storage location
Expediting Expense	\$1,000,000 or 25% of the physical loss of or damage to insured property in any one occurrence, whichever is less.
Fire Brigade Charges/ Extinguishing Expenses	\$250,000 – any one occurrence
Debris Removal	25% of the amount of loss
Plans, Blueprints, Drawings or Other Documents	\$250,000

The Physical Loss of or damage to property insured deductible is US\$20,000.00 for any one occurrence. Other deductibles are 2% for Flood and Windstorm, and 5% for Earthquake of the total insured values at risk at the time and place of loss any one occurrence, with a minimum of US\$50,000.00 any one occurrence for projects with a contract value of less than or equal to US\$10,000,000.00. Conversely, deductibles of 2% for Flood and Windstorm, and 5% for Earthquake of the total insured values at risk at the time and place of loss any one occurrence, with a minimum of US\$100,000.00 any one occurrence for projects with a contract value of more than US\$10,000,000.00. In addition, a US\$50,000.00 deductible in any one occurrence applies for damage to Principal’s Existing Property; and \$100,000.00 deductible for Property insured while undergoing Testing and Commissioning.

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Renewal of the EPL for FY2020 covers from March 2019 and extends until March 2020. Details of coverage could not be verified as copy of the FY2020 Policy was not provided at the time of this Report.

Recommendations & Responses

The following outstanding recommendations were previously made by MARSH, including AON comments regarding PRASA's OCIP builder's risk policy. Also, included is confirmation of action by Lone Star of said recommendations:

1. Request an endorsement to include a "Partial Occupancy Provision" to grant permission for partial occupancy of project areas. Therefore, coverage will not cease or expire due to the partial occupation of any project area or due to the project's substantial completion.

AON agreed with this recommendation and submitted it to the insurer for review and approval.

Lone Star confirms that this was not included in the FY2018 policy renewal. Arcadis requested confirmation from GOAS via PRASA. No response was provided for the FY2019 policy and no response has been provided to confirm whether the recommendation was adopted for the 2019-2020 renewal period.

2. MARSH recommended negotiating coverage for: Wet Works and any type of roads, ways, expressway works, overpasses and bridges, viaducts and tunneling works. These are usually impacted during water mains and sewer pipes construction and should be covered with at least a reasonable sub limit.

AON stated that this kind of sublimit would require additional premium. To be discussed with PRASA for the next renewal presentation.

Lone Star confirms that this was not included on the FY2018 policy renewal. Due to the ongoing fiscal situation PRASA is hesitant to add additional costs. Arcadis requested confirmation from GOAS via PRASA. No response was provided for the FY2019 policy and no response has been provided to confirm whether the recommendation was adopted for the 2019-2020 renewal period.

3. Requested deleting endorsement MR106- Warranty concerning sections limiting the length of certain ground works, to a maximum length of section of 1,000 feet.

Lone Star agreed with this recommendation and submitted it to the insurer for review and approval for FY2019 renewal. Insurer indicated that endorsement could be negotiated, however, it was not considered in the recent renewal.

Although it was not confirmed by GOAS, Arcadis did not find the MR106- Warranty endorsement in the policy provided by PRASA thus understands it was deleted.

4. Consider including a "Claims Preparation Expense" additional coverage sublimit to provide for the necessary and reasonable fees or expenses incurred by the insured's customary auditors, accountants, architects or engineers that may assist the insured proving a claim.

AON states that this kind of sublimit will require additional premium. To be discussed with PRASA for the next renewal presentation.

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PRASA declined to include in FY2018 policy renewal, as it is cautious to increase premium costs due to its unfavorable fiscal situation. It was also declined by PRASA for the FY2019 policy and PRASA could confirm if it was included in the FY2020 renewal.

7.4.2 Commercial General Liability

The OCIP general liability policy is as “per occurrence” policy provided by Chubb and includes the limits shown in **Table 7-7**. Coverage was reduced from previous policy to reduce costs and considering coverage in other policies. Policy period covers from March 9, 2018 to March 9, 2019.

Table 7-7. FY2019 OCIP General Liability Coverages and Limits

Coverage	Limit
Each Occurrence	\$1 million
General liability – General Aggregate	\$2 million
Personal and Advertising Injury	\$1 million
Products/ Completed Operations - Aggregate	\$2 million
Employer's Liability Stop Gap	\$2 million
Damages to Premises Rented to You (Any One Premises)	\$250,000
Medical Expense (Any One Person)	\$5,000

A US\$5,000 per claim deductible applies for bodily injury and a US\$5,000 per claim deductible applies to property damage for each loss. Policy is silent as to who is responsible for deductibles. The OCIP Manual states the Contractor should assume this deductible.

This policy covers PRASA/AAA and contractors and all tiers of subcontractors and consultants performing operations at or from the project site in connection with the work for PRASA under the contract documents. PRASA's premium for this policy is \$114,000.00.

Renewal of this policy for FY2020 covers from April 23, 2019 and extends until April 23, 2020. Coverage, limits remain the same as presented above. Premium was reduced by 13% to \$99,194.00.

Recommendations & Responses

The Completed Operations coverage extension is for five (5) years from the termination date of the policy or its renewal(s). MARSH recommended changing it to ten (10) years to cover the full statutory limit (Statute of Limitations Law).

AON states that this kind of amendment will require additional premium. AON submitted this recommendation to the carrier to discuss it with PRASA for the next renewal presentation.

PRASA maintained the 5 years in the February 2019 policy renewal, as it is cautious to increase premium costs due to the dire fiscal situation.

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7.4.3 Commercial Umbrella Liability

The OCIP commercial umbrella liability policy is provided by Chubb. The limit of insurance of US\$25,000,000.00. Each incident retained limit is the underlying insurance or US\$10,000.00 SIR. Each Incident and US\$1,000,000,000.00 Policy aggregate, in excess of the primary OCIP commercial general liability limits of insurance. PRASA's premium for this policy is \$60,000.00. Policy period covers from March 9, 2018 to March 9, 2019.

The Completed Operations coverage extension is for five years from the termination date of the policy or its renewal(s). Should consider requesting change to ten years to cover the full statutory limit (Statute of Limitations Law).

7.4.4 Contractor's Pollution Liability

The OCIP contractor's pollution liability insurance is provided by Chubb. Coverage applies on an occurrence basis and covers pollution arising from construction activities involving PRASA's wrap-up program. Coverage from March 9, 2018 to March 9, 2019. The policy provides a \$20M limit each loss and annual aggregate subject to a \$25,000 SIR and covers PRASA and OCIP contractor participants. Premium of \$37,500.

7.4.5 Professional Liability

PRASA maintains a miscellaneous errors and omissions liability policy through Chubb, providing a \$25M per claim limit and a \$50M annual aggregate limit, subject to a \$100,000 per claim deductible. Renewal of policy occurred in June 30, 2018 and extended until June 30, 2019. The policy is written on a claims-made basis and claims and defense costs are included within the limit. The policy has a September 21, 2004 retroactive date. Coverage applies to contract administration, design, engineering, consulting, inspection, and construction management, including planning, permitting, regulatory compliance services, land acquisition, assisting in construction, procurement assistance, start-up services, testing and extended commissioning under the PRASA multi-year CIP as modified by the PRASA Board of Directors from time to time. PRASA's premium for this policy was \$689,989.

7.5 Conclusions

In the opinion of Arcadis, the insurance program covering PRASA's exposures to risks of accidental property and liability losses arising from on-going operations provides reasonable coverage. However, several recommendations to PRASA's insurance program are provided.

Particularly, PRASA should address the following key recommendations:

1. Conduct a PML Study considering new CAT Modellings and parameters. Specially after the lessons learned in the aftermath of the September 2017 Hurricanes.
2. PRASA should consider establishing a fund to cover possible financial losses from any future catastrophic or any non-catastrophic, peril that might affect infrastructure and operations and, therefore, impose an unexpected financial burden.

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3. Consideration to Cyber Security Coverage, which is excluded under all current PRASA's Insurance Programs. Also, complete a self-assessment to determine potential areas of weakness as compared to international standards and to determine the potential frequency and severity of a breach.
4. Consideration to Terrorism Coverage, which is excluded under all current PRASA's Insurance Programs.
5. PRASA should consider including Fungi and/or Bacteria coverage, which is excluded under General liability and umbrella coverage and other programs.
6. PRASA should consider including a "Claims Preparation Expense" additional coverage sublimit in the OCIP Builder's Risk policy to provide for the necessary and reasonable fees or expenses incurred by the insured's customary auditors, accountants, architects, or engineers that may assist the insured proving a claim.
7. PRASA should consider requesting an endorsement to include a "Partial Occupancy Provision" to grant permission for partial occupancy of project areas in the OCIP Builder's Risk Policy. Therefore, coverage will not cease or expire due to the partial occupation of any project area or due to the project's substantial completion.
8. PRASA should consider changing the "Completed Operations" coverage extension to ten years to cover the full statutory limit (Statute of Limitations Law) in the OCIP Commercial General Liability Policy. Currently is for five years from the termination date of the policy or its renewal(s). Should also consider same action for the OCIP Commercial Umbrella Liability Policy.

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8 SYSTEM ASSETS AND FINANCIAL ANALYSIS

8.1 Introduction

In accordance with the MAT (as amended), Arcadis hereby provides a statement of the estimated cost of all additions made to the System and of all the retirements of property made in FY2019. The statement relies on most recent preliminary data available from and provided by PRASA. Also, Arcadis evaluated PRASA's financial forecast as included in the 2019 PRASA Fiscal Plan as certified by the Oversight Board on June 25, 2019 (2019 PRASA Fiscal Plan) and assessed the appropriateness of rates and charges. A summary of the findings is provided in this section.

8.2 System Assets

Table 8-1 summarizes PRASA's book value of fixed (capital) assets as of June 30, 2018, inclusive of registered impairment losses caused by the 2017 Hurricanes. Following the Restoration Cost Approach outlined by GASB 42, the calculated impairment loss (net of insurance recoveries) totaled \$184M. Including land and other non-depreciable assets, and "Construction (Work) in Progress", the ending book value balance of PRASA's capital (fixed) assets amounts to \$6,447M (net of accumulated depreciation).

Table 8-1. Fixed Assets Balance through June 30, 2018 (\$, Millions)

	Book Value	Accumulated Depreciation	Net Book Value
Fixed Assets	\$10,664.3	(\$4,614.3)	\$6,050.0
Construction (Work) in Progress	321.5	-	321.5
Land and other Non-Depreciable Assets	75.0	-	75.0
Total Capital (Fixed) Assets	\$11,060.8	(\$4,614.3)	\$6,446.5

Table 8-2 summarizes PRASA's preliminary book value of capital (fixed) assets as of June 30, 2019. Including land and other non-depreciable assets, and "Construction (Work) in Progress", the preliminary ending book value balance of PRASA's capital (fixed) assets amounts to \$6,237M (net of accumulated depreciation).

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Table 8-2. Preliminary Fixed Assets Balance through June 30, 2019 (\$, Millions)

	Original Cost	Accumulated Depreciation	Book Value ¹
Fixed Assets	\$10,693.7	(\$4,882.0)	\$5,811.7
Construction (Work) in Progress	350.1	-	350.1
Land and other Non-Depreciable Assets	75.0	-	75.0
Total Capital (Fixed) Assets	\$11,118.8	(\$4,882.0)	\$6,236.8

¹ Subject to change.

Table 8-3 provides a summary of the fixed assets changes from FY2017 to FY2018 and from FY2018 to FY2019.

Table 8-3. Fixed Assets Changes (\$, Millions)

	FY2017 to FY2018 ¹	FY2018 to FY2019 ²
Fixed Assets (Net of Accumulated Depreciation)	(\$540.2)	(\$238.3)
Construction (Work) in Progress	(11.9)	28.5
Land and other Non-Depreciable Assets	44.0	-
Total Fixed Asset Changes	(\$552.1)	\$209.8

¹ Considers impairment losses registered in FY2018.

² Based on preliminary results for FY2019; subject to change.

8.3 PRASA's Rate Structure

PRASA's base and volumetric rate structures for Residential customers and Non-Residential customers (commercial, industrial and certain government customer classes) were approved on July 15, 2013. On December 18, 2013, PRASA further amended the rate structure for Non-Residential accounts. Both Residential and Non-Residential account are summarized in **Tables 8-4** through **8-10**. Furthermore, to cover all projected operating expenses, CIP needs, and debt service obligations (assuming debt restructuring, or new external financing is attained), the 2019 PRASA Fiscal Plan includes a series of moderate rate adjustments (as required by the Oversight Board), the first of which was implemented on January 1, 2018 followed by another on July 1, 2018 and again on July 1, 2019.

The 2019 PRASA Fiscal Plan adjustments are calculated separate from the base and volumetric amounts, as compounded percentages of the total customer invoice amount. Additional adjustments are projected to be implemented annually on July 1st of each year through FY2024. **Table 8-11** summarizes the proposed annual adjustment amounts by customer type. Note, the 2019 PRASA Fiscal Plan assumes a 2.0% rate adjustment across all customer types starting in FY2024, a change from the individualized annual rate adjustments by customer type assumed in the projections for fiscal years 2019 through 2023.

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Table 8-4. 2013 Residential Monthly Base Charge per Account (includes first 10 cubic meters of monthly consumption)

Water Service Line	Water	Wastewater	Water & Wastewater
1/2" & 5/8"	\$10.60	\$9.11	\$19.71
3/4"	18.40	15.86	34.26
1"	30.23	20.36	50.59
1-1/2"	57.12	31.32	88.44
2"	97.24	53.56	150.80
3"	149.15	89.23	238.38
4"	335.50	156.69	492.19
6"	894.72	731.19	1,625.91
8"	1,431.55	835.64	2,267.19
10"	2,290.50	1,337.02	3,627.52
12"	3,664.80	2,139.25	5,804.05

Table 8-5. Residential Volumetric Rate per Cubic Meter

Use Block (m ³)	Water	Wastewater	Water & Wastewater
>10 – 15	\$1.25	\$1.02	\$2.27
>15 – 25	1.99	1.59	3.58
> 25-35	2.69	2.14	4.83
>35	2.84	2.27	5.11

Table 8-6. Residential Environmental Compliance and Regulatory Charge (ECRC)

Use Block (m ³)	Water	Wastewater	Water & Wastewater
Base Charge (0 – 10)	\$1.00	\$1.00	\$2.00
>10 - 15	6.50	6.50	13.00
>15 - 25	10.50	10.50	21.00
>25 - 35	17.50	17.50	35.00
> 35	31.50	31.50	63.00

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Table 8-7. Non-Residential Monthly Base Charge per Account

Water Service Line	Water	Wastewater	Water & Wastewater
1/2" & 5/8"	\$24.37	\$20.10	\$44.47
3/4"	36.09	31.85	67.94
1"	61.10	44.85	105.95
1-1/2"	122.43	75.23	197.66
2"	194.62	117.32	311.94
3"	436.87	243.86	680.73
4"	725.75	459.81	1,185.56
6"	1,858.58	1,474.93	3,303.51
8"	2,939.80	2,288.04	5,227.84
10"	4,703.70	3,660.87	8,364.57
12"	7,525.91	5,857.39	13,383.30

Table 8-8. Commercial and Government Volumetric Rate per Cubic Meter

Use Block (m ³)	Water	Wastewater	Water & Wastewater
>0 – 100	\$1.74	\$1.44	\$3.18
>100 – 200	2.16	1.73	3.89
> 200	2.84	2.27	5.11

Table 8-9. Industrial Volumetric Rate per Cubic Meter

Use Block (m ³)	Water	Wastewater	Water & Wastewater
>0	\$2.27	\$1.82	\$4.09

Table 8-10. ECRC for Non-Residential Customers

Commercial and Government ECRC Meter Size Equal to or Less than 2-inches			
Use Block (m ³)	Water	Wastewater	Water & Wastewater
>0-100	\$1.18	\$0.98	\$2.16
>100-200	1.22	1.01	2.23
>200	1.26	1.04	2.30

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Commercial and Government ECRC Meter Size Equal to or Less than 2-inches			
Use Block (m ³)	Water	Wastewater	Water & Wastewater
Industrial ECRC Meter Size Equal to or Less than 2-inches			
>0	\$1.54	\$1.22	\$2.76
Non-Residential ECRC Meter Size Greater than 2-inches			
Meter Size	Water	Wastewater	Water & Wastewater
3"	\$482.00	\$482.00	\$964.00
4"	839.50	839.50	1,679.00
6"	2,340.00	2,340.00	4,680.00
8"	3,703.00	3,703.00	7,406.00
10"	5,924.50	5,924.50	11,849.00
12"	9,479.50	9,479.50	18,959.00

As stated previously, to cover all projected operating expenses, CIP needs, and debt service obligations (assuming debt restructuring, or new external financing is attained), the 2019 PRASA Fiscal Plan included moderate annual rate increases (as required by the Oversight Board). Assuming that all initiatives will be implemented, and that debt relief will be achieved through the current negotiations, the following rate increases shall be effective on July 1st annually through FY2024.

Table 8-11. PRASA's Proposed Fiscal Plan Annual Rate Adjustments by Customer Type

Customer Type	Annual Rate Increase FY2019 – FY2023	Rate Increase FY2024
Residential	2.5%	2.0%
Commercial	2.8%	2.0%
Industrial	3.5%	2.0%
Government	4.5%	2.0%

The rate increases due on July 1st of 2018 and 2019 have already been implemented in compliance with the 2019 PRASA Fiscal Plan. Since the proposed rate increase is less than 4.5% per year, PRASA expects to implement the rate changes through FY2022 automatically as permitted by the provisions, as amended, approved under Resolution No. 2167. However, to implement the rate increases shown in FY2023 and beyond, it is expected that PRASA will need to follow the formal rate increase approval process required under Act 21 of 1985, as the limit on the cumulative increase of 25% (since January 1, 2018) is expected to be reached by FY2022. The impact of these rate increases is further discussed in the next section.

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Additionally, PRASA charges customers for other services summarized in **Table 8-12**. These rates became effective as of July 1, 2016.

Table 8-12. PRASA's Other Customer Service Charges

Activity	Charges
Service Reconnection – Residential	\$40.00
Service Reconnection – Commercial	\$75.00
Service Reconnection – Industrial	\$75.00
Sprinkler System 1"	\$38.17
Sprinkler System 2"	\$57.26
Sprinkler System 3"	\$85.90
Sprinkler System 4"	\$128.86
Sprinkler System 6"	\$193.29
Sprinkler System 8"	\$289.94
Sprinkler System 10"	\$434.91
Sprinkler System 12"	\$652.37
New Service Connection ½"	\$800.00
Meter Testing In-Situ ½" a 1½"	\$30.00
Meter Testing In-Situ >= 2"	\$80.00

8.3.1 Additional Provisions for Rate Increases

As approved by PRASA's Governing Board, future rate increases, shall follow the provisions, as amended, that had been previously approved under Resolution No. 2167 (dated October 6, 2005) as follows:

- a. Adjustments and increases after July 1, 2017 will be calculated according to a specified formula (Coefficient of Annual Adjustment [CAA] described below).
- b. Beginning July 1, 2017, there is a cap or limit on future annual increases of 4.5% and a limit on the cumulative increases of 25% (as approved by PRASA's Governing Board).
- c. If PRASA requires an increase in excess of 4.5% in any single year, or once the 25% cumulative limit is reached, PRASA must follow the formal approval process required under Act 21 of 1985 (Act 21-1985) requesting a rate increase.

Adjustments and increases implemented after July 1, 2017 are limited by the calculation of the CAA described in the Resolution and as presented herein. There are three steps to determining the CAA as follows:

- 1. Calculate the Coefficient of Deficiency (CD) for the applicable year:

$$CD = \text{Operating Expenses and Debt Service} / \text{Operating Revenues}$$

- 2. Calculate the Coefficient of Annual Base (CAB) for the Base Year:

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$$CAB = \text{Operating Expenses and Debt Service (FY2007)} / \text{Operating Revenues (FY2007)}$$

3. Calculate the CAA:

$$CAA = CD/CAB$$

If the CD for any year is greater than the CAB from FY2007, i.e., CD for FY2017 greater than CAB, then the rates can be increased by the lesser of the CAA minus one (CAA-1) or 4.5% until the 25% cumulative maximum is reached. If the cumulative maximum is reached or should PRASA in any given year require a higher rate increase than maximum annual adjustment amount of 4.5%, PRASA shall then follow the rate increase process required by Act 21-1985, as amended.

- The first step under Act 21-1985 requires review, ratification, and approval of the proposed rate structure by PRASA's Governing Board to initiate the rate modification/increase process.
- Next, an independent Official Examiner is appointed to conduct an independent review of the proposed changes and increases in addition to leading public hearings.
- The third step is the development of a report by the Official Examiner that would include his/her findings and recommendations, to be considered by PRASA's management and Governing Board prior to final approval of the proposed rate structure modifications and increases. Following this, the report is published for public commentary.
- The final step is the review and final approval by PRASA's Governing Board, in consideration of the Official Examiner's recommendations.

8.4 FY2019 Preliminary Results and FY2020-FY2024 Forecast

Arcadis reviewed the financial information provided by PRASA, the 2019 PRASA Fiscal Plan and the amendment that incorporates the benefit of the federal debt restructuring as approved by PRASA's Governing Board in October 2019, which is summarized in Exhibit 1. This section summarizes Arcadis's review and provides an assessment of PRASA's financial condition, particularly as it relates to assessing PRASA's financial preliminary results for FY2019 and the reasonableness of PRASA's assumptions in the preparation of the five-year financial projections (the forecast period or the Forecast) from FY2020-FY2024, to assess the sufficiency of the revenues necessary to support the projected operations and capital costs as shown in Exhibit 1; including O&M expenses, debt service payments, and required deposits in compliance with the MAT (as amended). Additionally, the Forecast illustrates the anticipated DSC, for the forecast period.

The following information, provided by PRASA, was reviewed:

- MAT, as amended and restated
- Preliminary revenue and expense projections for FY2019
- Revenue and expense projections for FY2020
- PRASA's June 25, 2019 certified Fiscal Plan (2019 PRASA Fiscal Plan)
- PRASA's FY2020 Annual Budget approved by PRASA's Governing Board under Resolution 3125
- PRASA's amended FY2020 Annual Budget approved by PRASA's Governing Board on October 29, 2019 under Resolution 3144

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- Debt service schedules for all currently outstanding debt service and preliminary projected debt obligations, and DSCs
- The amount, if any, required to be deposited in the Operating Reserve Fund to make the amount on deposit therein equal to the Operating Reserve Requirement
- The amount, if any, required to be deposited in the Capital Improvement Fund
- The amount, if any, required to be deposited in the Rate Stabilization Account of the Surplus Fund
- The amount of Operating and Authority Revenues (as per amended MAT) that will be sufficient to meet the Rate Covenant for FY2020
- The amount received and expected to be received from PRASA's insurance company and FEMA as a result of the impacts from Hurricanes Irma and María on September 2017

8.4.1 Operating Revenues

As defined in the MAT, **Operating Revenues** "shall mean all moneys received by or on behalf of the Authority, including (i) the moneys derived by or on behalf of the Authority from the sale of water produced, treated or distributed by, or the collection, transmission, treatment or disposal of sewage by the Systems, (ii) any proceeds of use and occupancy insurance on the Systems or any part thereof, (iii) except as provided in the following sentence, any income from the investments made under this Agreement, (iv) any special assessments, including assessments in the nature of impact fees, (v) amounts, if any, paid from the Rate Stabilization Account into the Operating Revenue Fund in any Fiscal Year minus the amounts, if any, paid from the Operating Revenue Fund into the Rate Stabilization Account during the same Fiscal Year; and (vi) regularly scheduled payments received under any Qualified Swap or Hedge Agreement during such period. In no event shall Operating Revenues include (i) income from the investment of moneys on deposit to the credit of the Construction Fund, proceeds of insurance (except use and occupancy insurance) or condemnation awards (which are required to be deposited directly to the credit of the Capital Improvement Fund), (ii) proceeds of sales of property constituting a part of the Systems (which are required to be deposited directly to the credit of the Capital Improvement Fund), (iii) the proceeds of Bonds or other Indebtedness, (iv) any governmental grants or appropriations available to pay Current Expenses of the Authority, including grants or appropriations received by the Authority and specifically made for the payments of principal of and interest on obligations of the Authority or for reimbursing the Authority for such payments, (v) any amounts received from the Commonwealth of Puerto Rico on account of Commonwealth Guaranteed Indebtedness (which is required to be deposited directly in the Commonwealth Payments Fund) or Commonwealth Supported Obligations (which is required to be deposited in the Commonwealth Payments Fund), (vi) any amounts transferred from the Budgetary Reserve Fund to the Trustee and (vii) any termination or similar payment under any interest rate swap or similar hedge agreement received by the Authority (which are required to be deposited directly to the credit of the Capital Improvement Fund)."

PRASA's annual operating revenue projections for FY2019 through FY2024 net of 1) the 2019 PRASA Fiscal Plan revenue enhancing initiatives and 2) the expected insurance reimbursement from revenue loss from the September 2017 Hurricanes impact, on an accrual basis, are presented in **Table 8-13**.

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Table 8-13. PRASA Operating Revenues (\$, Millions)

Fiscal Year	Operating Revenues
FY2019 Projection based on Preliminary Results	\$1,050.2
FY2020 Annual Budget ¹	\$1,028.3
FY2021 Projected	\$1,108.3
FY2022 Projected	\$1,139.7
FY2023 Projected	\$1,149.1
FY2024 Projected	\$1,183.0

¹ As amended and approved by PRASA's Governing Board under Resolution 3144 on October 29, 2019.

PRASA's Operating Revenue assumptions are discussed below:

1. Base Fee and Service Charges, Net of Subsidies (Exhibit 1, Line 1) – PRASA's single largest source of revenue is from the monthly base charge and volume rate for services, the ECRC, and the Special Charge of \$2.00. **Table 8-14** provides a breakdown of PRASA's Service Revenues for FY2019 through FY2024, including rate increases that were implemented starting in 2018, as well as future projected rate increases. PRASA's Service Revenues are presented net of subsidies.

Table 8-14. PRASA Service Revenues Net of Subsidies (\$, Millions)

Service Revenue Category	FY2019 Preliminary	FY2020 Annual Budget	FY2021 Projected	FY2022 Projected	FY2023 Projected	FY2024 Projected
Base Fee, Volume Charges, and ECRC and Special Charges ¹	\$954.9	\$960.4	\$958.4	\$957.6	\$949.8	\$942.7
Rate Increases ²	40.5	76.1	104.4	132.6	159.7	177.3
Total (Net of Subsidies)	\$995.4	\$1,036.5	\$1,062.8	\$1,090.2	\$1,109.5	\$1,120.0

¹ Based on existing rates, includes rate adjustments, and projected reductions due to consumption reduction.

² Revenues generated from rate adjustments implemented in each year, net of new electronic bill discount.

Table 8-15 summarizes the number of Residential customers that are provided a subsidy for water and wastewater bills as of June 30, 2019.

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Table 8-15. Water and Wastewater Subsidized Customer Accounts FY2019

Subsidy	Number of Customers	Percent of Total Residential Customers ¹
PAN Subsidy	64,221	5.5%
TANF Subsidy	9,850	0.8%
ASES Subsidy	5,993	0.5%
Fixed Tariff (Public Housing)	51,132	4.4%

¹Based on a total number of Residential customers of 1,172,922 provided by PRASA as of June 30, 2019.

PRASA's Service Revenue projections are based on certain assumptions, including growth and consumption assumptions that could be affected by numerous factors. For example, the continued strain on the economy as well as the continued population outmigration could cause a further decline in the consumption patterns of PRASA customers. Also, the timeliness or results of the revenue initiatives may differ from projections.

Further discussion of PRASA's Service Revenue assumptions is detailed below.

Growth and Consumption Assumptions

PRASA has experienced a compound annual reduction in number of accounts of about 0.1% per year in the last five fiscal years. Furthermore, as shown in **Table 8-16**, from FY2018 to FY2019 the number of customer accounts decreased slightly, with a 0.2% decrease in Residential accounts. The number of accounts of all other customer classes also reduced with the higher percentage observed in the number of government accounts which reduced by approximately 5.2% from FY2018 to FY2019; followed by industrial accounts which reduced by approximately 4.9% over the same period.



Figure 8-1. Customer Accounts and Average Monthly Billed Consumption FY2015-FY2019

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Table 8-16. PRASA Customer Accounts

Fiscal Year	Customer Class				Total
	Residential	Commercial	Industrial	Government	
FY 2018 ¹	1,175,315	49,487	792	9,697	1,235,291
FY 2019 ²	1,172,922	49,154	753	9,190	1,232,019
% Difference	-0.2%	-0.7%	-4.9%	-5.2%	-0.26%

¹ Number of accounts by customer class through June 30, 2018.

² Number of accounts by customer class through June 30, 2019.

In FY2017, PRASA's average monthly billed consumption per account increased by approximately 4.1% compared to FY2016. This increase, however, was expected as customer consumption stabilized after the 2015 drought ended. That said, FY2018 and FY2019 consumption results were lower than those registered prior to the drought period: in FY2014, PRASA's average monthly consumption per account was 20.6 m³ whereas in FY2018 and FY2019 it was 16.0 m³ and 16.9 m³, respectively, suggesting customer consumption had not reached pre-drought conditions.

In FY2019, the total average monthly billed consumption increased by approximately 5.3% compared to FY2018, while the average billed consumption per account increased 5.6% as compared to FY2018, as shown in **Tables 8-17** and **8-18**.

Table 8-17. Average Monthly Billed Consumption by Class (1,000 Cubic Meters)

Fiscal Year	Customer Class				Total
	Residential	Commercial	Industrial	Government	
FY 2018 ¹	13,739	2,460	1,171	2,424	19,795
FY 2019 ²	14,851	2,445	1,177	2,373	20,846
% Difference	8.1%	-0.6%	0.5%	-2.1%	5.3%

¹ Based on billed consumption through June 30, 2018.

² Based on billed consumption through June 30, 2019.

Table 8-18. Average Monthly Consumption per Account (Cubic Meters)

Fiscal Year	Customer Class				Equivalent Average
	Residential	Commercial	Industrial	Government	
FY 2018 ¹	11.7	49.7	1,479.1	250.0	16.0
FY 2019 ²	12.7	49.7	1,563.1	258.2	16.9
% Difference	8.3%	0.1%	5.7%	3.3%	5.6%

¹ Based on information through June 30, 2018.

² Based on information through June 30, 2019.

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According to the U.S. Census Bureau, there was a 2.1% annual decline in Puerto Rico's population between 2012 and 2018.¹⁵ The Oversight Board projects Puerto Rico population dropped by 6.9% since FY2017 as a result of the September 2017 Hurricanes¹⁶. Prior to the hurricanes impact, the Oversight Board was projecting that Puerto Rico's population was going to continue to decline over the next ten years at an estimated annual rate of 0.25%. Post 2017 Hurricanes, the Oversight Board developed updated and more aggressive population projections to account for the population outmigration experienced and to be experienced as a result of the Hurricanes. The updated estimates project an average 1.8% annual population decline through FY2024, that is a 7.5% decline from FY2018 to FY2024. This trend in population decline is one of the reasons for the water consumption reduction pattern experienced in the recent years, which worsened in 2016 due to the drought that affected a large portion of the Island towards the end of FY2015 and the first half of FY2016; and declined further as a result of the 2017 hurricanes. However, this level of population decline is not reflected in PRASA's numbers of active accounts. This may be due to 1) customers not requesting PRASA for a disconnection order, and/or 2) backlog in disconnections.

To account for the possibility of further reductions in customer accounts and consumption during FY2020, PRASA's FY2020 Annual Budget assumes the projected macroeconomics indicators provided by the Central Government: 1.7% population decline compared to FY2019 for Residential, Commercial, and Government accounts and 1.5% GNP increase when compared to FY2019 for industrial accounts. **Table 8-19** contains the projected macroeconomics indicators provided by the Central Government:

Table 8-19: Macroeconomic Indicators Assumption for Service Revenue Projection

FY	Population Change (compared to prior year)	GNP Change (compared to prior year)
2020	-1.66%	1.51%
2021	-1.54%	-0.95%
2022	-1.39%	0.15%
2023	-1.23%	0.07%
2024	-1.08%	0.55%

Considering the projected reduction in population and the average monthly billed consumption per account of the past five fiscal years, Arcadis finds the Forecast amount for Service Revenues reasonable.

¹⁵ The U.S. Census Bureau shows Puerto Rico population estimate as of July 2012 was 3,634,488 and 3,195,153 as of July 2018.
¹⁶ The Central Government's Revised New Fiscal Plan for Puerto Rico (March 10, 2019) estimates the population for FY2019 to be at 3,107,759.

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Rate Increases Assumptions

PRASA has included a rate increase for each customer class in accordance with the 2019 PRASA Fiscal Plan and presented in **Table 8-11**. PRASA expects to obtain a total of approximately \$690.5M additional revenues by FY2024 from the annual rate increases, from which \$76.1M additional revenues are projected and included in the FY2020 Annual Budget, as presented in **Table 8-14**. This amount is net of the electronic bill discount initiative which would give a monthly \$1.00 credit to those customers who subscribe to electronic billing and forego paper billing.

Arcadis believes that PRASA's assumptions for Service Revenues are reasonable based on historical results and the assumptions listed above. Nevertheless, the following should be noted:

- Despite the consumption adjustment from FY2016 to FY2017 after the drought, historical results show that average consumption per account has continued a downward trend in recent years.
- Continued strain on the economy, the high unemployment rate in Puerto Rico¹⁷, and the reduction in new construction permits and economic activity index¹⁸, among other economic factors, could continue to materially affect consumption profiles, resulting in further declines in the consumption patterns and/or number of PRASA customers.
- Proposed rate increases could vary depending on PRASA's revenue and expense results, and ability to achieve the expected results from the initiatives included in the 2019 PRASA Fiscal Plan.

Adjustment for Billings Not Collected

Adjustments for billings not collected are netted from PRASA's FY2019 preliminary results and Forecast Service Revenues presented in Exhibit 1, Line 1.

Since FY2012, PRASA's rate of adjustment for billings not collected (including collections from prior years) has stabilized below 6% of Service Revenues. In FY2019, the percentage of billings not collected increased to 8% given a reduction in collections due to the on-going fiscal crisis affecting Puerto Rico, exacerbated by the September 2017 Hurricanes.

In the FY2020 Annual Budget, PRASA has assumed an adjustment of billings not collected of 6%. This assumes billings not collected as follows: Residential, Commercial and Industrial account collections of 96%, and government account collections of 80%. For FY2021 through FY2024, PRASA has assumed that adjustments of billings not collected reduce from 6% in FY2020 to 4% in FY2024.

Arcadis finds this amount reasonable; however, PRASA should closely monitor changes in economic indices for the island and continuously monitor collection results given the uncertain economic and fiscal situation for Puerto Rico as a whole. Also, the assumed rate of uncollectibles could be materially affected: 1) if the proposed rate increases cause customer consumption adjustments or further reductions in number of accounts, 2) if collections from Government accounts do not improve

¹⁷ Based on the U.S. Bureau of Labor Statistics, as of June of 2016 the unemployment rate in Puerto Rico was 11.2%; Source: www.bls.gov/lau/

¹⁸ Source: Puerto Rico Economic Indicators; Puerto Rico Planning Board

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as a result of cost controls or budgetary restraints, or 3) worsening conditions or further delays in economic recovery in Puerto Rico.

2. Transfers to/from the Rate Stabilization Account (Exhibit 1, Line 2) – In accordance with the MAT, a Rate Stabilization Account, the balance of which is determined in the annual budget, shall be established. This account is established within the Surplus Fund, which contains any remaining money after all required deposits are made. Equivalent monthly deposits during the fiscal year must be made into the account equal to the balance set forth in the annual budget. In compliance with the MAT, Operating Revenues shall include all transfers from the Rate Stabilization Account minus any deposits made to the Rate Stabilization Account during the same fiscal year. In FY2019, PRASA did not make any transfers (deposits) into the Rate Stabilization Account. PRASA has included a \$20.8M deposit into the Rate Stabilization Account in the FY2020 Annual budget, following the successful restructuring of PRASA's SRF and RD debt with USEPA and USDA, respectively, completed in July 2019. The Rate Stabilization Account is discussed in further detail in section 8.6.6.
3. Other Income (Exhibit 1, Line 3) – PRASA's Other Income includes: Miscellaneous Income, Special Assessments (fees paid by developers), and income from other sources. Miscellaneous Income mainly includes interest income and other miscellaneous revenues. Special Assessments are fees paid by developers for construction projects or new development connections. These fees apply to new water and sewer connections to the System. The FY2020 fees were about \$500 each for water and sewer connections (\$1,000 total per unit for both). Special Assessments depend on the fees paid by developers of new projects and it is expected that the current economic situation will continue to impact the local new housing market during the foreseeable future.

PRASA's Other Income revenues for FY2019 preliminary projections totaled \$2.0M, of which approximately \$0.5M are from Miscellaneous Income and \$1.5M from Special Assessments. PRASA is projecting \$0.5M from Miscellaneous Income annually during the forecast period. Special Assessment revenues are projected to fall to \$0 in FY 2020, increase to \$0.3M in FY2021 and FY2022, then increase once again to \$0.6M in FY2023 and FY2024. Thus, PRASA projects an average of approximately \$0.9M additional revenues annually from Other during the forecast period.

Arcadis believes that PRASA's assumptions for Service Revenues are reasonable based on historical results and the assumptions listed above. PRASA has taken a more conservative approach for this revenue line due to the continued strain on the economy, Puerto Rico's population outmigration, and the reduction in new construction permits and economic activity index.

4. 2019 PRASA Fiscal Plan Revenue Enhancing Initiatives (Exhibit 1, Line 4) – In addition to the annual rate increases and electronic bill discount previously discussed, which totaled \$40.5M in FY2019 and is estimated at about \$76.1M in FY2020, PRASA has also included the benefits of the following revenue enhancing initiatives as presented in the 2019 PRASA Fiscal Plan: P3 Project, adjustment policy revision, new disconnection fee, and government accounts collections. Additional revenues from these initiatives are expected to be obtained every year of the Forecast thereafter as summarized in **Table 8-20**.

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Table 8-20. 2019 PRASA Fiscal Plan Revenue Enhancing Initiatives (\$, Millions)

2019 PRASA Fiscal Plan	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024
Initiatives	Preliminary Projections	Annual Budget	Projected	Projected	Projected	Projected
P3 Project	\$0.0	\$4.4	\$16.6	\$41.2	\$45.7	\$49.8
Adjustment Policy Revision	1.9	2.0	2.0	2.0	2.0	2.0
Disconnection Fee	0.9	1.5	1.2	1.2	0.9	0.9
Government Accounts Collections	0.0	4.1	4.2	4.3	4.4	4.5
Total Additional Revenues	\$2.8	\$12.0	\$24.0	\$48.7	\$53.0	\$57.2

¹ 2019 PRASA Fiscal Plan Revenue Enhancing Initiatives also include: Annual Rate Increase and Electronic Bill Discount (See Table 8-11), included under Base Fee and Service Charges for effect of this report.

² Numbers may not add up due to rounding.

Private-Public Partnership (P3) Project

PRASA is in the process of developing and entering into a public-private partnership (P3) agreement with one or more firms for the design, build, finance, maintenance, and operation of a series of improvements and technologies to enhance PRASA's customer service activities and to reduce the current high volume of NRW. The P3 Project originates from PRASA's need and goals to change the way it currently operates its customer services and metering and billing practices, to address its NRW issue, and to increase operational efficiency and operating revenues through the incorporation of advanced technologies and processes. Because of PRASA's current financial situation, its executive management team has determined that it requires private enterprise expertise and capital funds to cover the estimated technological investments.

The Puerto Rico Public-Private Partnerships Authority (P3 Authority), together with PRASA commenced the procurement process for the P3 Project in FY2018. A Desirability and Convenience (D&C) Study was published on March 27, 2018, which concluded that a P3 procurement method was desirable for the project. The issuance of the request for qualifications (RFQ) was completed on June 18, 2018. Four proponents were qualified and on September 26, 2018 the request for proposals (RFP) was issued. PRASA is currently in negotiations with the selected proponent. The net estimated cash flow benefit to PRASA for FY2020 through FY2024 is \$157.6M.

A significant component of the P3 Project net benefits for PRASA is conditioned on PRASA's ability to reduce its customer service headcount. While it is expected that a number of current PRASA employees will be hired by the private partner, to the extent that PRASA is not able to make the necessary staff adjustments, the expected P3 Project benefits could be materially affected.

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Adjustment Policy Revision and Disconnection Fee

In February 2017, PRASA's Governing Board Approved Regulation 8901, which among other customer service updated requirements and measures, states that adjustments made for bills where a hidden leak is detected will only apply to the sewer bill portion (not both water and sewer) as the water has already been consumed or lost in the system and PRASA has already incurred in its production cost. Starting in FY2018, PRASA projected to reduce current adjustments by 60% or \$2M per year. In FY2019, PRASA is projecting \$1.9M, just \$0.1M short of the \$2M budgeted; and has included \$2M in savings in its FY2020 Annual Budget and for each year thereafter included in the Forecast.

Also, Regulation 8901, creates a new \$15 charge for the cost of disconnecting service (in addition to the reconnection fee already in place). Based on the annual number of disconnections performed (approximately 200,000 per year), PRASA estimates that the maximum revenue amount to be achieved from this initiative would be about \$3M per year. PRASA expects that the new disconnection fee will deter clients from having their services suspended, thereby reducing the projected amount of annual disconnections performed. PRASA imposed the disconnection fee in the second half of FY2019 and preliminary results total \$0.9M. Over the forecast period, PRASA is assuming that the additional revenues from this initiative will average approximately \$1.1M annually.

Government Accounts Collections

Historically, collections of government accounts have been a challenging process for PRASA. In its 2019 PRASA Fiscal Plan, PRASA included the implementation of an aggressive program to enforce collections from government accounts, which consists of increasing collection rate performance by an additional 2% above the existing government collections baseline. In the amended FY2020 Annual Budget, PRASA included \$4.1M from government accounts collections by increasing the collection rate from 80% to 82% to be achieved by implementing a more proactive and progressive collection effort with the Government. Over the remainder of the forecast period, PRASA is assuming that the additional revenues from this initiative will average approximately \$4.4M annually.

Support from the Central Government and AAFAF is crucial for the successful implementation of this initiative.

5. **Insurance Reimbursement from Revenue Loss (Exhibit 1, Line 5)** – PRASA has made claims under its insurance policies for business interruption and property damage and has requested FEMA disaster grants for property repair, replacement and restoration in excess of insurance proceeds and for certain emergency expenses. Arcadis reviewed the MAT, as amended, to determine the adequacy of the allocation of both insurance proceeds and FEMA reimbursements/grants to be obtained as a result of the impact of the September 2017 Hurricanes; whether these proceeds can be applied as Operating Revenues or Authority Revenues. Arcadis requested PRASA to obtain legal opinion on the appropriateness of these assumptions.

As per the definition established in the MAT for Operating Revenues (as defined in Section 8.4.1 of this report), *“insurance proceeds (except use and occupancy insurance) or condemnation awards, are in no event to be included as Operating Revenues...”*. Additionally, the MAT includes the following in the definition of Operating Revenues; *“Operating Revenues shall mean all moneys received by or on behalf of the Authority, including...(ii) any proceeds of use and occupancy insurance on the Systems or any*

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part thereof...". Use and occupancy insurance refers to business interruption insurance coverage. Hence, proceeds for business interruption insurance have been included as part of the Operating Revenues for the FY2020 Annual Budget.

FEMA grants, on the other hand, do not cover loss of income. FEMA grants and insurance proceeds to the extent that they are to reimburse PRASA for Current Expenses have been treated as a deposit to the Current Expense Fund. Insurance proceeds and FEMA grants received for the repair, replacement or reconstruction of the damaged or destroyed property have been applied to the CIP.

PRASA has received funding from both its insurance carriers and FEMA in order to recover from damages sustained from Hurricanes Irma and María. These amounts have been included in PRASA's FY2019 preliminary projections and FY2020 Annual Budget. PRASA's insurance policy provides for \$300M in coverage per event for property damages and business interruption losses.

8.4.2 Authority Revenues (Other Sources of Revenues)

Based on the MAT, **Authority Revenues** *"shall mean Operating Revenues plus (i) any governmental grants or appropriations available to pay Current Expenses of the Authority, including grants or appropriations received by the Authority and specifically made for the payments of principal of and interest on obligations of the Authority or for reimbursing the Authority for such payments, (ii) any amounts received from the Commonwealth of Puerto Rico on account of Commonwealth Guaranteed Indebtedness (which is required to be deposited directly in the Commonwealth Payments Fund) or Commonwealth Supported Obligations (which is required to be deposited in the Commonwealth Payments Fund), (iii) any amounts transferred from the Budgetary Reserve Fund to the Trustee and (iv) any amounts received by the Authority from any source of funding that does not otherwise constitute Authority Revenues as reimbursement for Costs of Improvements paid by the Authority in the current or the immediately preceding three fiscal years from Operating Revenues.*

PRASA is not projecting any additional sources of revenues. Therefore, PRASA's Authority Revenues shall equal Operating Revenues for the forecast period from FY2019 through FY2024.

8.4.3 Operational (Current) Expenses

As defined in the MAT:

"Current Expenses *"shall mean the reasonable and necessary current expenses, incurred by the Authority in the ordinary course of business, calculated on an accrual basis, of maintaining, repairing and operating the properties constituting the Systems or causing said maintenance, repair and operation, which expenses shall exclude depreciation, reserves for allowances for doubtful accounts and other non-cash reserves or expenses. For purposes of the Rate Covenant and the Annual Budget required by Section 7.02 of the MAT, Current Expenses will be calculated on an accrual basis. For all other purposes of the MAT, Current Expenses will be calculated on a cash basis. Notwithstanding any accounting treatment to the contrary, the amount of any termination or similar payment under any interest rate swap or similar hedge agreement shall, if payable by the Authority, not be taken into account in computing Current Expenses to the extent the same is paid by or on behalf of the Authority from the proceeds of any Indebtedness."*

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PRASA's Operating (Current) Expenses are presented on an accrual basis as required by the MAT. PRASA's preliminary Operational Expenses for FY2019 and operating expense projections for FY2020 to FY2024 net of (i) capitalized expenses, (ii) the 2019 PRASA Fiscal Plan expense reduction initiatives, and (iii) the September 2017 Hurricanes impact, are presented in **Table 8-21**.

Table 8-21. PRASA Operating Expenses (\$, Millions)

Fiscal Year	Operating Expenses w/o FEMA Reimbursements	Operating Expenses net of FEMA Reimbursements
FY2019 Preliminary	\$781.7	\$718.2
FY2020 Annual Budget ¹	\$710.9	\$639.8
FY2021 Projected	\$708.5	\$708.5
FY2022 Projected	\$718.0	\$718.0
FY2023 Projected	\$720.0	\$720.0
FY2024 Projected	\$726.7	\$726.7

¹ As approved by the PRASA Board on November 4, 2019.

PRASA's projections for Operating (Current) Expenses, on an accrual basis, and associated assumptions are discussed below. Note that for certain expense categories, PRASA has assumed that expenses will increase year-over-year at an assumed rate of inflation. Following AAFAP's and the Oversight Board guidelines, PRASA has assumed that the inflation rate will be on average about 1.47% for the forecast period (FY2020 through FY2024), that is from 1.15% in FY2020 to 1.62% in FY2024, as applied for the Government's Fiscal Plan and adopted by other agencies and public corporations. However, Puerto Rico's inflation rate during the last quarter of FY2019 was recorded at about 0.2% (November 2019) and projections show a projected increase to slightly over 1% by end of FY2020¹⁹.

1. Payroll and Benefits (Exhibit 1, line 12) – Payroll and Benefits continue to be PRASA's largest expense category. Since FY2009, PRASA has implemented cost control methods to reduce its staff levels and, in turn, Payroll and Benefits costs.

Prior to 1) expense reductions due to the 2019 PRASA Fiscal Plan expense savings initiatives, 2) the September 2017 Hurricanes impact on operating expenses, and 3) capitalization:

- PRASA's FY2019 Payroll and Benefits preliminary results amounts to \$321.0M, or about \$14.2M less than the FY2019 budget
- For FY2020, PRASA is projecting Payroll and Benefits in the amount of \$326.6M. For the remainder of the forecast period, PRASA is projecting the Payroll and Benefits expense to average approximately \$335.1M annually.

Up until FY2017, assumptions regarding Payroll and Benefits costs per employee and overtime costs (as a percentage of total payroll and benefits costs) were increased mainly to cover the required contribution increases to the Employees Retirement System (ERS). However, starting on FY2018, the Payroll and Benefits costs assumptions have been increased primarily to cover for the self-funding of PRASA's pension costs in lieu of the contributions to the ERS, net of expected savings with the

¹⁹ Source: Trading Economics (<https://tradingeconomics.com/puerto-rico/inflation-cpi/forecast>)

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implementation of Act 26-2017. Also, PRASA is projecting to a headcount of 4,700 employees in FY2020, increasing to 4,800 by FY2021, and maintaining it at that level for the remainder of the forecast period.

Based on the historical results and the assumptions made by PRASA in its projections (discussed below), Arcadis believes that the Payroll and Benefits projections are reasonable.

Headcount and Overtime Assumptions

PRASA has gradually reduced its headcount by over 1,000 employees, or around 20%, during the last 10 years to become more operationally efficient. As of June 30, 2019, PRASA had a total headcount of 4,593 employees (including 327 employees qualified under the Voluntary Pre-Retirement Program to be discussed in more detail below).

As of June 30, 2019, PRASA had over 1,326 vacant positions and was looking to supplement certain key areas. As of June 25, 2019, PRASA's hiring plan focused mainly in employing personnel for the Maintenance and Operations Departments. Staffing needs identified involve water and wastewater brigades, electromechanics, plant operators, heavy equipment operators, and supervising and managerial positions in both departments. The FY2020 Annual Budget assumes a total of 4,700 employees, or a net increase of 107 employees from the FY2019 headcount. The 2019 PRASA Fiscal Plan assumes a total of 4,800 employees by FY2021 and holds headcount steady at that level for the remainder of the forecast period.

Based on FY2019 preliminary results through June 30, 2019, the current overtime level is at approximately 8% of total payroll costs, slightly higher than the 7% PRASA had estimated in its FY2019 Annual Budget. PRASA has assumed a rate of overtime of 8% (as percentage of payroll) along with other adjustments that result in an increase of the average annual cost per employee for the FY2020 Annual Budget. For the remainder of the forecast period, PRASA assumes a rate of overtime of approximately 7% of total payroll costs.

Legislated Acts Assumptions

Act 26-2017, as amended – Act No. 26 was enacted on April 29, 2017 (Act 26-2017) to ensure compliance with the Government's Fiscal Plan approved and certified by the PROMESA Oversight Board on May 13, 2017 and re-certified post Hurricanes Irma and María on June 29, 2018. Act 26-2017 supersedes any previous act. Among other measures, Act 26-2017 requires all marginal benefits to be the same for all employees of the Government of Puerto Rico including all public agencies, instrumentalities and corporations, such as PRASA. The act froze and reduced some payroll benefits or compensation including vacation and sickness licenses, payout terms of licenses, and bonuses. Subsequently, under Act 176-2019, certain amendments were reverted. Currently, PRASA employees' benefits include:

- Vacation licenses accumulate at a rate of 2.5 days per month of service and may be accumulated to up to a maximum of 60 days by the end of each natural year.
- Sickness licenses accumulate at a rate of 1.5 days per month of service and may be accumulated to up to a maximum of 90 days by the end of each natural year.
- Licenses in excess will not be paid out, except for vacation days accrued up to 60 days.

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- Elimination of all bonuses, except for Christmas bonuses, which shall have a maximum of \$600
- Extra hours will be compensated at a maximum rate of 1.5x regular hourly rate

The impact of Act 26-2017, as amended, was incorporated in PRASA's Payroll and Benefits costs for the Forecast, except for the elimination of the Christmas Bonus required by the Oversight Board. However, following the Central Government's public policy, PRASA and PRFAFAA consider local laws, such as Act 26-2017, to have supremacy over any other stipulation. As such, PRASA will pay the Christmas bonus to its qualifying employees up to \$600 per year. Nonetheless, PRASA has indicated that efforts will be made to identify savings from other Operating Expense categories to achieve the bottom line total Operating Expenses as budgeted and required by the Oversight Board for the forecast period.

Voluntary Pre-Retirement Program (Act 211-2015) – As a result of the fiscal crisis, the Puerto Rico Government enacted Act No. 211 on December 8, 2015 (Act 211-2015), which created a “Voluntary Pre-Retirement Program”. Act 211-2015 intends to create a program, “whereby eligible employees of the Government of the Commonwealth of Puerto Rico may voluntarily separate from service by receiving incentives until they meet the requirements for retirement; provide for the requirement of credited years of service needed to qualify for this Program; establish the timeframe for employees to exercise their option to avail themselves of the Voluntary Pre-Retirement Program; provide the special incentives that shall be granted to employees who avail themselves of the Program; provide the requirements needed to implement the Program; and for other related purposes”.

The program seeks to offer incentives to certain eligible employees to voluntarily retire early and still receive compensation equal to 60% of their average salary, payout of unused vacation and sick leaves (as per Act 66-2014) and keep their health insurance coverage for a term of two years. These incentives are applicable until they meet the requirements for full retirement. Consequently, the program attempts to reduce the workforce progressively and voluntarily, thus allowing for the economy to undergo a transition process. This may reduce expenses such as payroll and “fringe benefits” costs on PRASA but requires that OMB evaluate and certify that employees eligible for the program and under consideration represent savings for PRASA. Besides the reduction of expenses, Act 211-2015 stipulates that the resulting vacant positions from the retirement program be eliminated, and that agencies take administrative or operational measures to restructure in the absence of these positions. However, OMB might authorize to maintain positions, if certified to be essential, and in accordance with the plan submitted by PRASA. PRASA has included the projected benefits from this program as part of the 2019 PRASA Fiscal Plan cost savings initiatives discussed in line 18 of Exhibit 1.

As stated, this pre-retirement program will impact headcount and consequently overtime. As of June 30, 2019, over 350 had retired under the Voluntary Pre-Retirement Program.

ERS Voluntary Transition Program Assumptions

As a result of the fiscal crisis and the hurricanes impact which exacerbated such crisis, AAFAP on behalf of the Puerto Rico Government circulated an Administrative Order (OA-2017-5) on November 7, 2017, which created an “ERS Voluntary Transition Program” intended to create an alternate program for eligible employees under the ERS. On April 18, 2018 a second Administrative Order (OA-2018-5; amended on June 29, 2018 as OA-2018-9) was circulated extending the program to a

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second phase, and on October 23, 2018, a new Administrative Order (OA-2018-13; amended on November 15, 2018 as OA-2018-14) further extended the program to a third phase. Employees will have until November 30 and December 15, respectively to enroll the programs.

Eligible employees who avail from the program and voluntarily resign to their position shall receive economic incentives consisting of 6-month salary as well as a medical plan incentive and payout of unused vacation leaves up to 60 days, according to Act 26-2017.

As previously mentioned in Section 3, during the first phase of the program, a total of approximately 107 employees applied of which 58 were approved and voluntarily resigned by June 30, 2018. No employees retired on the second phase. For the third phase of the ERS Voluntary Transition Program, 92 employees were eligible and approved of which 41 employees resigned effectively by November 30, 2018 and 51 resigned effectively by December 31, 2018. No additional participants are projected to be processed under this program in FY2020.

Collective Bargaining Agreements Assumptions

In FY2012, PRASA and its larger employee union, the UIA-AAA by its Spanish acronym, signed a new Collective Bargaining Agreement (CBA), effective from January 2012 through December 2015. It included certain retroactive and future economic agreements that have an impact on PRASA's payroll and benefits expense projections, which started in FY2013. Also, PRASA and its second employee union, the HIEPAAA by its Spanish acronym, signed a new CBA effective from May 2012 through June 2016. It also contains certain economic agreements (i.e., salary increases) that also have an impact on PRASA's Payroll and Benefits expenses. Under Act 66-2014, PRASA was able to negotiate some terms included under the CBAs with both UIA-AAA and HIEPAAA. Both UIA-AAA and HIEPAAA unionized personnel agreed with PRASA that the CBAs will continue as stipulated except for certain terms which include: the saving plans, salary increases, holiday and sick day benefits, among others. Act 3-2017 extends the negotiation term until June 30, 2021 for the non-economic clauses included in the CBAs. However, Act 26-2017 supersedes all previous agreements or laws and requires that the new stipulated measures regarding human resources, payroll, benefits and compensation to be implemented even for union employees. PRASA has included in its Payroll and Benefits forecast period the costs and savings associated with Act 26-2017 implementation.

Pension Costs Assumptions

The Central Government's ERS has been facing a significant number of financial difficulties, as reflected in its net pension liability and historical funding shortfalls which are expected to continue. Because PRASA's employees and retired employees participate in the ERS, PRASA is responsible for the portion of the net pension liability attributable to its employees.

As provided in a circular letter from the Department of Treasury on June 27, 2017 (Number 1300-46-17), beginning in FY2018, employers that participate in the ERS have to pay the pension benefit of its retired employees on a Pay-Go basis due to the lack of sufficient liquid assets in the ERS. Therefore, PRASA's FY2019 preliminary projections and FY2020 Annual Budget consider the impact of fully funding the retirement (pension) benefit payments for PRASA's retired employees on a Pay-Go basis, based on actuarial reports provided by the ERS. Also, PRASA eliminated from its projections all the employer contributions to the retirement system including the Cost of Living Allowance (COLA)

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contribution and the Annual Additional Contribution to the ERS. The amount projected does not include any additional future contributions to the ERS, which PRASA is not expected to comply with.

The Oversight Board, however, has requested PRASA to include in its forecast period a reduction in the pension payments made on a Pay-Go basis as is presented in **Table 8-22**. Nonetheless, PRASA has indicated that in line with the Central Government's public policy, pension costs will not be reduced to the extent it is possible.

2. Electric Power (Exhibit 1, line 13) – PRASA's FY2019 preliminary projections for Electric Power total \$136.0M, prior to 1) reductions due to the 2019 PRASA Fiscal Plan expense savings initiatives, and 2) the impact of the 2017 Hurricanes. This amount is approximately \$4.2M less than the budgeted amount. PRASA has projected an electric power expense of \$152.5M for FY2020, assuming a standard PREPA rate of \$0.229 per kWh (\$0.009 per kWh increase over the FY2019 rate) and a more consistent projected electric power consumption as PREPA's service interruptions reduce. Per the 2019 PRASA Fiscal Plan, electricity consumption is expected to decrease over time, but with rates increases projected during the Forecast, costs are expected to increase. PRASA's electricity cost is highly sensitive to PREPA rates, with an approximate \$7M per year impact on PRASA's expense per \$0.01 variation in the PREPA rate. By FY2024, the PREPA rate is projected to escalate to \$0.264 per kWh resulting in an electric power expense of \$169.4M (a total cost increase of \$33.4M from the FY2019 preliminary projections).

PRASA's projected cost of electric power considers the projected and expected reductions in consumption from Energy Performance Contracts (EPCs) and reductions in cost from Power Purchase Agreements (PPAs, i.e. renewable energy) that have been completed YTD as part of PRASA's Comprehensive Energy Management Program.

Arcadis finds PRASA's forecast period projection for Electric Power reasonable. However, PRASA is susceptible to varying prices. Close monitoring of electric energy usage must continue and PRASA shall adjust its projections, as necessary. Additional discussion on PRASA's Electric Power assumptions is provided below.

Electric Energy Tariff Assumptions

The average PREPA (blended) rate cost applicable to PRASA has been constantly fluctuating between \$0.21-\$0.23 per kWh from FY2017 through FY2019. Thereby, the assumption used in the forecast period averaging around \$0.25 per kWh is slightly conservative yet appropriate considering the great variability and fluctuations oil barrel costs and considering PREPA's underdevelopment restructuring plan.

Comprehensive Energy Management Program and Regional Initiatives Assumptions

PRASA has included projected savings in consumption and costs as a result of its Comprehensive Energy Management Program, which PRASA has undertaken to help manage and reduce its electricity expense. Since 2014, PRASA has implemented separate processes to engage the private sector in investing in energy related projects with Demand Side Projects through EPCs and Supply Side Projects through PPAs, and other internal measures such as Regional Initiatives. However, due to PRASA's fiscal situation, the status of such projects has been impacted since FY2016. A description of the different initiatives and their current status is provided below:

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- **EPCs:** EPCs were placed on hold since FY2016. Three out of the six EPCs under the contract were completed (Caguas, Barceloneta and Bayamón WWTPs). However, the third-party contract for the execution of the measurement and verification phase and the operation and maintenance of these three completed EPCs were placed on hold because of the September 2017 hurricanes and subsequently cancelled. PRASA projects that the other three EPCs (Sergio Cuevas, Superaqueduct and Puerto Nuevo) will remain on hold during FY2020; PRASA has not budgeted any additional savings from EPCs in FY2020.
- **Regional Initiatives:** PRASA has implemented a Regional level commitment to execute energy conservation measures in its WTPs and WWTPs and find savings at the operational level (with minimum or no investment). PRASA is also leveraging hydraulic modeling analyses and optimization efforts to reduce energy consumption in the water distribution and wastewater collection systems (i.e., pump stations facilities). Some of the measures include, for example, simplifying and providing more flexibility to the system, reducing and optimizing the hours of operation at the facilities, identifying energy conservation measures in the operation of the equipment, among others. These initiatives are still ongoing for FY2019, although these have also been impacted by PRASA's fiscal situation.
- **PPAs:** For FY2020, PRASA projects that the PPA initiative will generate 11.5 million kWh at \$0.15 per kWh blended rate

Consumption Growth Rate Assumptions

PRASA has reduced the electric power consumption from PREPA from 743 million kWh (FY2013) down to 617 million kWh in FY2019. For FY2020, PRASA is projecting that its total consumption will be 678 million kWh, of which 666 million kWh will be power consumption bought from PREPA, net of the physical losses' initiative (refer to the 2019 PRASA Fiscal Plan cost savings initiative in Line 18 of Exhibit 1). This PREPA consumption projection also considers the Regional Initiatives expected to be achieved in FY2020 and does not consider any additional contribution from EPCs. For the Forecast period, PRASA is projecting that its total consumption will be at an average of 665 million kWh, of which an average of 656 million kWh will be power consumption bought from PREPA, net of the physical losses' initiative (refer to the 2019 PRASA Fiscal Plan cost savings initiative in line 18 of Exhibit 1).

3. Maintenance and Repair (Exhibit 1, Line 14) – The FY2020 Annual Budget for Maintenance and Repair is \$57.4M, which is about \$7M more than the FY2019 preliminary projections based on the assumption that a portion of the maintenance works delayed or postponed as a result of the 2017 hurricanes, will be performed during FY2020. PRASA projects Maintenance and Repair expenses to increase from \$55.6M in FY2021 to \$58.1M in FY2024.

Arcadis believes PRASA's forecast period projections for Maintenance & Repair expenses are reasonable.

4. Chemicals (Exhibit 1, Line 15) – PRASA's FY2019 preliminary projections for Chemical costs amount to \$33.9M (\$0.7M more than the budgeted amount), prior to the 2019 PRASA Fiscal Plan expense

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savings initiatives. Although Chemical costs are usually affected by inflation and worldwide demand as they are mostly commodities, over the past few years PRASA has been able to control these costs with consumption optimization savings, and by negotiating costs given the high volumes of chemicals purchased. In FY2020, PRASA is projecting approximately \$33.3M in Chemical costs, prior to the 2019 PRASA Fiscal Plan expense savings initiatives and the September 2017 Hurricanes impact. For FY2021 through FY2024, PRASA has applied an annual increase based on the assumed inflation rate (1.46% average over forecast period) on Chemical expenses, increasing from \$34.9M in FY2021 to \$36.4M in FY2024, prior to the 2019 PRASA Fiscal Plan expense savings initiatives.

Arcadis believes PRASA's Forecast period projections for Chemical expenses is reasonable, so long as inflation rates are not above those assumed by the Government and PRASA.

5. Insurance (Exhibit 1, Line 16) – Preliminary projections for Insurance expenses in FY2019 total \$19.1M, which is in line with the budget. PRASA has budgeted \$19.3M for Insurance expenses in FY2020, which is \$0.2M higher than the FY2019 preliminary projections. This amount includes adjustments to PRASA's insurance premiums due to the FY2017 Hurricanes emergency claims. PRASA has applied an annual increase based on the assumed adjusted inflation rate (1.46% average over forecast period) on Insurance expenses throughout the forecast period, increasing from \$19.6M in FY2021 to \$20.4M in FY2024.

Arcadis believes the projections for Insurance expenses is reasonable and its coverages are adequate. However, several recommendations were made to PRASA to modify or add insurance coverages including cyber security and terrorism coverage. If PRASA adopts these recommendations, if the inflation rate is higher, and/or if insurance premiums increase, PRASA's Insurance expense could be higher than projected.

6. Other Expenses (Exhibit 1, line 17) – Other Expenses includes, for example: the Superaqueduct O&M contract, professional services (i.e. the NRW recovery office and call centers), materials and supplies, security, sludge treatment and disposition, rentals, and water transport.

FY2019 preliminary projections for Other Expenses total \$150.7M (\$2.5M less than what was budgeted) prior to the 2019 PRASA Fiscal Plan expense savings initiatives and the September 2017 Hurricanes impact. PRASA has included \$156.9M for Other Expenses in its FY2020 Annual Budget, prior to the 2019 PRASA Fiscal Plan expense savings initiatives and the September 2017 Hurricanes impact, which represents an increase of approximately 4.1% over FY2019 preliminary projections and assumes return to normal level of operations and requirements after the September 2017 Hurricanes impact. PRASA is projecting that Other Expenses will increase year-over-year based on the adjusted assumed inflation rate (1.46% average over forecast period), increasing from \$159.2M in FY2021 up to \$166.3M in FY2024.

Arcadis has reviewed PRASA's projections for this expense category and finds the budget amount reasonable. However, PRASA should monitor actual costs, particularly for fuels and oils, given the projected increases that could materialize throughout the fiscal year.

7. The 2019 PRASA Fiscal Plan Expense Savings Initiatives (Exhibit 1, Line 18) – The Expense Savings initiatives as included in the 2019 PRASA Fiscal Plan comprise: reduction of physical water losses, other expense reductions, elimination of the Christmas bonus, uniform healthcare, and pension reductions. However, as previously discussed, the elimination of the Christmas bonus and the

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reduction in pension payments were included by the Oversight Board and not agreed to by PRASA. As will be discussed further below, in lieu of carrying out these initiatives PRASA intends to identify savings from other Operating Expense categories upholding the Central Government's and PRASA's public policy of not reducing benefits to its employees. **Table 8-22** presents the financial projection of these initiatives for the forecast period.

Table 8-22. 2019 PRASA Fiscal Plan Expense Savings Initiatives (\$, Millions)

	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024
2019 PRASA Fiscal Plan Initiatives	Preliminary	Annual Budget	Projected	Projected	Projected	Projected
Physical Water Losses	\$(2.0)	\$0.1	\$3.7	\$8.1	\$12.0	\$15.4
Other Expenses Reduction	6.2	6.2	7.0	6.2	5.3	4.3
Christmas Bonus Elimination ²	3.1	3.1	3.2	3.2	3.2	3.2
Uniform Healthcare	4.0	3.4	2.9	2.3	1.5	0.7
Pension Reduction ²	0.0	0.0	9.8	9.7	9.5	9.3
Total Expense Savings¹	\$11.3	\$12.9	\$26.6	\$29.4	\$31.5	\$32.9

¹ Numbers may not add up due to rounding.

² Following the Central Government's and PRASA's public policy, in lieu of implementing these initiatives, PRASA intends to identify savings from other Operating Expense categories.

While PRASA is committed to these initiatives, excluding the elimination of Christmas bonus and the reduction of the pension benefits, given the status of their development, and considering the coordination, planning and implementation efforts still required to be completed; it is likely that the timing for achieving the projected benefits will not be as expected by PRASA. Arcadis, therefore, finds these projections optimistic and recommends that PRASA re-evaluate the status and schedule of these initiatives. If the benefits are not realized as projected, to meet its Forecast, PRASA would likely have to reduce the amount of CIP investments planned and/or modify the projected rate increases.

Physical Losses Reduction Initiative

As previously discussed, physical losses are the largest component of NRW in PRASA's water balance. This initiative includes a series of efforts to reduce physical losses and thus NRW. PRASA expects to obtain cost savings in the amount of \$37.2M from FY2019 to FY2024.

PRASA expects to obtain these savings through the continuation of:

- the water leak detection program
- water pressure management and optimization

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- tank overflow avoidance
- data quality improvement
- efficiently addressing reported leaks reducing the number of days required to repair leaks

These cost savings consider that PRASA will save chemical and electricity costs from a reduction in water losses and hence, in production. Given the challenge to measure water losses across the infrastructure, potential saving estimates will be further refined and confirmed by FY2020. Underground asset condition needs further investigation to determine the extent of potential impacts from this initiative, but PRASA's long term goals include reducing water production in the System approximately 10% by 2024, annual cost savings in electricity and chemical costs in the range of \$5M to \$15M and reducing or eliminating the need for water rationing.

The scope of this initiative will be redefined after more visibility is gained on the system condition and after reducing the estimation (for production and consumption). To do so, PRASA is focusing on:

- Increasing measurement of water production
- Stabilizing water pressures by pressure zones and improve tank level monitoring
- Metro region leaks pre-location exercises and DMA's for night flow analysis
- Defining the correlation between water production and variable costs

Other Expenses Reduction

PRASA expects to obtain cost savings in the amount of \$35.2M from FY2019 to FY2024 by the implementation of the Voluntary Pre-Retirement Program, as created by Act 211-15.

Pension / Labor Reform and Christmas Bonus

The Oversight Board has included in the 2019 PRASA Fiscal Plan the elimination of the Christmas bonus benefit starting in FY2019 to achieve cost savings estimated of \$19.0M through FY2024 (\$3.2M per year). However, following the Central Government's public policy, PRASA will consider local laws, such as Act 26-2017, to have supremacy over any other stipulation. As such, PRASA expects to pay the Christmas bonus to its employees throughout the forecast period.

Similarly, the Oversight Board has requested to include in the 2019 PRASA Fiscal Plan a reduction in the pension payments made on a Pay-Go basis. The requirement is to reduce pension contributions by 10% from FY2021 onwards in line with the Central Government's revised new Fiscal Plan for Puerto Rico to achieve a \$38.3M cost savings through FY2024. However, PRASA has indicated that in line with the Central Government's and PRASA's public policy, to the extent possible pension payments will not be reduced. Nonetheless, PRASA has indicated that efforts will be made to identify savings from other Operating Expense categories to account for the rejected initiatives and achieve the bottom line total Operating Expenses as budgeted and required by the Oversight Board.

Uniform Healthcare

The Oversight Board has requested PRASA to include in its Fiscal Plan standardizing healthcare provided to the employees, consistent with the Central Government Fiscal Plan. The initiative consists in providing government employees \$125 worth of benefits per month, or \$1,500 per year for all employees without catastrophic or chronic conditions. Cost savings for the uniform healthcare initiative is projected in the amount of \$4.0M in FY2019 and \$3.4M in the amended FY2020 Annual Budget. For

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the remainder of the forecast period, cost savings are projected in the amount of \$7.4M. However, following the Central Government's public policy, PRASA is evaluating options to reduce the healthcare cost minimizing the impact on the benefits and costs to its employees.

8. Capitalized Expenses (Exhibit 1, Line 19) – PRASA's external consultant, PJ Sun LLC, completed the most recent review of PRASA's capitalization rate in April 2017. The recommendations included in the updated report, as provided by PRASA, reduce PRASA's capitalization rate from 4.7% to 3.7%. FY2019 preliminary results for Capitalized Expenses amount to \$7.1M. PRASA has included in its FY2020 Annual Budget \$27.6M for Capitalized Expenses. For FY2021 to FY2024, PRASA is projecting an increase from \$28.2M to \$29.2M.

Arcadis assumes that the estimation for expense capitalization used by PRASA is reasonable given that, in previous years, it has been accepted by PRASA's outside, independent auditors in the preparation of its financial statements. Arcadis has not reviewed this estimation in detail and, as such, is not providing an opinion on the reasonableness of the recommended capitalization percentage. However, it should be considered that to the extent that PRASA's financial situation places additional burden and budget constraints at the operational level, the actual amount of R&R and maintenance and repair expenditures that can be capitalized could be reduced (as in recent years), thereby reducing the amount of capitalized expenses. Finally, PRASA should consider re-validating its capitalization rate in FY2020.

9. Hurricanes' Impact on Operational Expenses (Exhibit 1, line 21) – In the 2019 PRASA Fiscal Plan, PRASA estimated a total hurricane impact to operational expenses in the amount of \$228M. The projection of the total incremental expenses due to the hurricanes impact reflects the best estimate of PRASA based on information submitted to FEMA. The major components included as part of this immediate incremental expenses estimate include overtime payroll for employees working during the emergency; maintenance, diesel refueling and logistics for emergency power generators; the insurance deductible; investment on auxiliary backup generators (not included in CIP); water distribution services (i.e. oasis); security measures; among others. This amount is subject to the final estimated extent of the hurricanes' damages, which PRASA is still refining. The total estimated incremental expenses for FY2018 through FY2020 amount to \$228M (\$205M reimbursement). For FY2019 and FY2020, PRASA is forecasting to receive FEMA funding reimbursement at a 90% recovery rate of the total estimated incremental expenses. After deducting the \$70.7M funds already received during FY2018, this equates to approximately \$134.6M.

Arcadis reviewed the MAT, as amended, to determine the adequacy of the allocation of both insurance proceeds and FEMA reimbursements/grants to be obtained as a result of the impact of the September 2017 Hurricanes, and Arcadis requested PRASA legal opinion on this matter. As provided by PRASA, FEMA funds shall not be treated as Operating or Authority Revenues. FEMA does not provide grants to substitute Operating Revenues. Rather, FEMA funds are directed to disaster-related expenses to be used exclusively to cover costs of the eligible emergency and permanent work approved by FEMA. To the extent FEMA funds are received by PRASA as mentioned, such funds shall not be subject to the gross pledge set forth under the MAT as these funds cannot be used to pay bondholders. FEMA funds shall therefore be deposited to the credit of the Current Expense Fund after they are used to reimburse PRASA for Current Expenses. FEMA grants received for the repair,

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replacement, or reconstruction of the damaged or destroyed property have been applied to the Capital Improvement Fund as discussed in more detail below.

In FY2019, PRASA is projecting a net impact on operational expenses due to the hurricanes and net of FEMA reimbursements of \$25.4M. In its FY2020 Annual Budget, PRASA is projecting a net deposit of \$65.7M to the credit of the Current Expense Fund. However, Arcadis finds that the total \$205M FEMA reimbursement budgeted to be received in FY2018 through FY2020 may be optimistic. In FY2018 and FY2019, PRASA received a combined \$132.6M from FEMA for emergency related work. However, so far in FY2020 PRASA has only received \$4.9M year-to-date (as of March 5, 2020), well short of the FY2020 Annual Budget amount of approximately \$71.1M.

8.5 Debt Service

8.5.1 Master Agreement of Trust

The MAT contains specific DSC requirements that must be met by PRASA including, but not limited to, a Rate Covenant. As stated in the Rate Covenant defined in the 2012 MAT (as amended), PRASA has covenanted to establish and collect rates, fees and charges so that it meets the following four independent requirements²⁰ (which will be calculated annually no later than six months after the end of each fiscal year based on Operating Revenues and Authority Revenues set forth in PRASA's most recent audited financial statements):

- Operating Revenues shall be sufficient to be at least equal to 250% of annual debt service with respect to Senior Indebtedness for the current fiscal year;
- Operating Revenues shall be sufficient to be at least equal to 200% of annual debt service with respect to Senior Indebtedness and Senior Subordinate Indebtedness for the current fiscal year;
- Operating Revenues shall be sufficient to be at least equal to 150% of annual debt service with respect to all Bonds and Other System Indebtedness for the current fiscal year; and
- Authority Revenues, shall be sufficient to be at least equal to:
 - Annual debt service on Indebtedness
 - Current expenses
 - the amounts, if any, necessary to be deposited in any Senior Debt Service Reserve Account, Senior Subordinate Debt Service Reserve Account or Subordinate Debt Service Reserve Account to restore the amount on deposit therein to the amount of the applicable Debt Service Reserve Requirement (provided that each such Accounts will be deemed to be funded at the applicable Debt Service Reserve Requirement for so long as the deposits required by the MAT are being made);
 - the amount, if any, necessary to be deposited in the Operating Reserve Fund to maintain the balance therein at the Operating Reserve Fund Requirement; and

²⁰ Capitalized terms as defined in the MAT, as amended.

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- o the amount, if any, necessary to be deposited in the Capital Improvement Fund and the Rate Stabilization Account of the Surplus Fund in accordance with the Annual Budget for the current fiscal year.

Should PRASA decide to issue additional debt while any of the debt issued under the MAT (as amended) is outstanding, the additional bonds test (ABT) requirements of the MAT would also have to be met. The ABT is a measure of whether DSC will still be met after the proposed, additional bonds are issued. The ABT requirements which PRASA must meet include the following:

- Senior Bonds ABT
 - o Operating Revenues are at least equal to 2.5x Senior Bonds maximum annual debt service
 - o Operating Revenues are at least equal to 1.5x maximum annual debt service on all System Indebtedness.
- Senior Subordinated Bonds ABT
 - o Operating Revenues are at least equal to 2.0x combined Senior Bonds and Senior Subordinate Bonds maximum annual debt service
 - o Operating Revenues are at least equal to 1.5x maximum annual debt service on all System Indebtedness.
- Subordinated Bonds ABT
 - o Operating Revenues are at least equal to 1.5x maximum annual debt service on all System Indebtedness

A summary of PRASA's MAT DSC and ABT requirements is presented in **Table 8-23**.

Table 8-23. Summary of 2012 MAT DSC and ABT Requirements, as amended

Lien Level	Debt Secured	DSC for Additional Bonds Tests (MADS) ¹	DSC for Covenant Test	In Default if DSC not Achieved?
Senior	2008, 2012 & 2019 SRF & RD Loans	2.5/1.5	2.5	Yes
Senior Subordinate	Not currently applicable	2.0/1.5	2.0	Yes
Subordinate	Not currently applicable	1.5	1.5	Yes
Below Subordinate	Commonwealth Guaranteed Indebtedness	N/A	1.0	No
Below Subordinate	Commonwealth Supported Obligations	N/A	1.0	No

¹ Two tests apply to future debt. The first test is Operating Revenues divided by existing and proposed debt service (at the existing lien level); the second test is Operating Revenues divided by existing and proposed debt service (regardless of lien level) plus specified Reserve Fund deposits.

In accordance with the MAT, the flow of funds shall be as follows:

- Senior, Senior Subordinate and Subordinate debt (and any debt that is secured on a parity therewith) takes priority over current Operating Expenses.

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- Commonwealth Guaranteed Indebtedness (CGI) and Commonwealth Supported Obligations (CSO) would continue to be funded/paid only after funding of current operating expenses and other funds with priority over CGI and CSO.
- All revenues shall be deposited by PRASA in the first instance to the Operating Revenue Fund to make the required deposits set forth below. The Trustee transfers the moneys on deposit in the Operating Revenue Fund to the following funds in the following order or priority:
 - Senior Bond Fund – to fund principal and interest payments on Senior Indebtedness;
 - Senior Debt Service Reserve Fund – to fund deficiencies in the reserve fund upon the issuance of additional Senior Bonds or withdrawals or valuation losses;
 - Senior Subordinate Bond Fund – to fund principal and interest payments on Senior Subordinate Indebtedness;
 - Senior Subordinate Debt Service Reserve Fund – to fund deficiencies in the reserve fund upon the issuance of additional Senior Subordinate Bonds or withdrawals or valuation losses;
 - Subordinate Bond Fund – to fund principal and interest payments on Subordinate Indebtedness;
 - Subordinate Debt Service Reserve Fund – to fund deficiencies in the reserve fund upon the issuance of additional Subordinate Bonds or withdrawals or valuation losses;
 - Current Expense Fund (a new fund under the MAT) – to fund current operating expenses of PRASA;
 - Operating Reserve Fund – to fund Operating Reserve Requirement and to pay reimbursement obligations on Operating Reserve Facilities;
 - Capital Improvement Fund – to fund the Capital Improvement Fund Requirement;
 - Commonwealth Payments Fund – to fund principal and interest payments on CGI and CSO; and
 - Surplus Fund – to fund the Rate Stabilization Fund and, thereafter, for any lawful purpose.

8.5.2 Debt Service Coverage

A summary of PRASA's existing debt service obligations and coverages for FY2019 through FY2024 are presented in Exhibit 1 and summarized in Tables 8-21 through 8-24. PRASA's debt service includes: Senior Bonds (the 2008 Series A and B Senior Lien Revenue Bonds, Revenue Refunding Bonds 2008 Series A and B, and the 2012 Series A and B Senior Lien Revenue Bonds), as well as the USDA RD and USEPA SRF loan debts, among others.

FY2019 debt service obligations totaled \$276.5M, of which \$230.8M were Senior lien obligations. As shown, PRASA did not make payments for CSO debt. Total budgeted debt service payments as per current amortization schedules (currently under restructuring) were approximately \$327.7M for FY2019.

Commonwealth Guaranteed Indebtedness (CGI) includes those of PRASA's existing obligations which are guaranteed by the Commonwealth of Puerto Rico. Until June 2019, these obligations included the 2008 Revenue Refunding Commonwealth Guaranteed Bonds, the USDA RD Bonds, and the SRF Loans. On June 30, 2016, PRASA entered into forbearance agreements with both (i) USDA and (ii) the Puerto Rico

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Infrastructure Financing Agency (PRIFA), the Environmental Quality Board (EQB) and the Department of Health (DOH) (all three for the SRFs), which were later extended in various occasions until July 2019 when an agreement was reached between all parties.

Upon execution of the Seventh Supplemental Agreement of Trust dated as of July 26, 2019, the following amendments were made regarding the CGI:

- (a) Amendment to Section 1.02 of the MAT, Definition of "Commonwealth Guaranteed Indebtedness" was amended to read as follows: *"Commonwealth Guaranteed Indebtedness" shall mean any obligations of the Authority that are designated as Commonwealth Guaranteed Indebtedness by the Authority and Authority's Puerto Rico Aqueduct and Sewer Authority Revenue Refunding Bonds, Series 2088 but shall not include any loans from the United States Department of Agriculture, Rural Development, Rural Utilities Service or obligations of the Authority to the Puerto Rico Infrastructure Financing Authority evidencing revolving loans pursuant to the Puerto Rico Water Pollution control and Drinking Water Treatment Revolving Funds or any loans granted by the Commonwealth Revolving Funds under the provisions of the Federal Clean Water Act of 1972, as amended and the Federal Safe Drinking Water Act of 1996, as amended.*
- (b) Amendment to Section 2.20 of the MAT (new paragraph regarding Trustee notifications to each Fiduciary for, and Holder of (as applicable), Other System Indebtedness), amendment to Section 8.10 of the MAT regarding Waivers of Events of Default.
- (c) Amendment to Section 2.20 of the MAT (new paragraph regarding Trustee notifications to each Fiduciary for, and Holder of (as applicable), Other System Indebtedness).
- (d) Amendment to Section 8.10 of the MAT regarding Waivers of Events of Default.

In addition to the CGI, the Puerto Rico Public Finance Corporation (PFC) has an outstanding note, the proceeds of which were used to finance the construction of the North Coast Superaqueduct System (the "PFC Superaqueduct Note"), which is considered a Commonwealth Supported Obligation (CSO) under the MAT, subordinate to the payment of Senior, Senior Subordinate and Subordinate Indebtedness and to CGI debt. The PFC Superaqueduct Note is contractually payable "solely" from Commonwealth budgetary appropriations. Until 2006, the Commonwealth (directly or indirectly through budgetary appropriations) had made all the debt service payments on the CGI and CSO, including the PFC Superaqueduct Note. In 2006, in order to help alleviate its budget constraints, the Commonwealth requested that PRASA, as part of its actions to restore its operations to financial self-sufficiency, recommence, in respect of the CGI and begin, in respect of the PFC Superaqueduct Note, to make debt service payments on said obligations during fiscal years where sufficient funds are available. The PFC Superaqueduct Note remains, nevertheless, a limited obligation of PRASA, payable solely from appropriations made by the Government. As stipulated in the MAT, if PRASA is unable to make payments on the PFC debt, the obligation is not cumulative and therefore does not carry forward to future periods.

Renegotiated terms of PRASA's SRF and RD debt obligations, reclassified as Senior Level Debt per the Seventh Supplemental Agreement of Trust dated as of July 26, 2019, are summarized in **Table 8-24**.

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Table 8-24. Renegotiated Terms for SRF and RD Debt

Debt Category	SRF	RD
Outstanding Debt Balances including future loans of \$26M for SRF and accrued interests for RD	\$595,777,017.21	\$402,931,464.55
Term	30 years	40 years
Rate	0% until year 10 and 1.0% thereafter	2.0%
Payment Terms	Bi-annual principal only payment of \$5M in Years 1-10; bi-annual principal and interest payments of \$13.7M in Years 11-30	Bi-annual principal and interest payments of \$5M in Years 1-10; increasing to \$8.5M in Years 11-40
Maturity Date	7/1/2049	7/1/2059
Debt Level	Senior	Senior

A summary of PRASA's debt service obligations and projections for FY2019 and the forecast period are presented in **Tables 8-25** and **8-26**, respectively.

Table 8-25. FY2019 Debt Service Obligations and Preliminary Results (\$, Thousands)

Debt Category	FY2019 Obligations ¹	FY2019 Preliminary Results ²
Senior Debt	\$230,790	\$230,790
Senior Subordinated Debt	-	-
Subordinated Debt	-	-
Commonwealth Guaranteed Indebtedness (CGI)	87,916	45,674
Commonwealth Supported Obligations (CSO)	8,999	-
Total	\$327,705	\$276,464

¹ Considers the full debt service obligations due in FY2019 per amortization schedule.

² Considers forbearance agreements for SRF and RD debt and no payment of CSO (PFC Superaqueduct related debt, payable from Commonwealth appropriations). As provided in the MAT, the obligation to make CSO payments is not cumulative and therefore does not carry forward to future periods, and failure to make the payments or required deposits related to this debt is not an event of default under the MAT.

Table 8-26. FY2020-FY2024 Debt Service Obligations (\$, Thousands)

Debt Category ¹	FY2020 Projection	FY2021 Projection	FY2022 Projection	FY2023 Projection	FY2024 Projection
Senior Debt	\$250,791	\$250,790	\$250,789	\$250,788	\$250,787
Senior Subordinated Debt	-	-	-	-	-
Subordinated Debt	-	-	-	-	-

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Debt Category ¹	FY2020 Projection	FY2021 Projection	FY2022 Projection	FY2023 Projection	FY2024 Projection
Commonwealth Guaranteed Indebtedness (CGI)	20,920	25,956	27,935	28,360	31,962
Commonwealth Supported Obligations (CSO)	-	-	-	-	-
Total Debt	\$271,711	\$276,746	\$278,724	\$279,148	\$282,749

¹ Considers the July 2019 renegotiated agreements for SRF and RD debt service relief as included in PRASA's Governing Board-approved amended FY2020 Annual Budget. Assume no payment of CSO or PFC Superaqueduct related debt, payable from Commonwealth appropriations. As provided in the MAT the obligation to make CSO payments is not cumulative and therefore does not carry forward to future periods, and failure to make the payments or required deposits related to this debt is not an event of default under the MAT.

The DSC results presented in **Table 8-27** for the forecast period have been calculated using the Rate Covenant requirements per the MAT, as amended, and debt service obligations.

Table 8-27. FY2019 - FY2024 Debt Service Coverage

Debt Service Level	DSC Requirement	FY2019 Preliminary DSC	FY2020 DSC	FY2021 DSC	FY2022 DSC	FY2023 DSC	FY2024 DSC
Senior Debt ¹	2.50	4.55	4.10	4.42	4.54	4.58	4.72
Senior Subordinated Debt ¹	2.00	4.55	4.10	4.42	4.54	4.58	4.72
Subordinated Debt ¹	1.50	4.55	4.10	4.42	4.54	4.58	4.72
All Obligations ²	1.00	0.98	1.00	0.97	1.00	1.00	1.00

¹ DSC calculated with respect to Operating Revenues.

² DSC calculated with respect to Authority Revenues.

As shown in **Table 8-27**, FY2019 preliminary DSC results consider the forbearance agreements payment obligations and that PRASA will not pay the CSO debt; while the Forecast DSC results consider the renegotiated debt obligations, changes in the debt level of the SRF and RD debt, and that PRASA will not pay CSO debt. PRASA's Operating Revenues and Authority Revenues are projected to be sufficient to meet Senior Lien debt service payments during the forecast period. While PRASA does not project to meet All Obligations in FY2019 or FY2021, Authority Revenues shall be sufficient to meet DSC on All Obligations in FY2020 and FY2022 through FY2024. Final DSC for FY2019 will be recalculated after the issuance of the FY2019 Audited Financial Statement to determine if PRASA was able to comply with all its obligations.

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8.6 Reserve and Funds Deposit Requirements

8.6.1 Debt Service Reserve Funds

In accordance with the MAT as amended, Reserve Funds for Senior Debt, Senior Subordinate, and Subordinate Debt must be maintained in a reserve account at least equal to:

- (i) The amount set forth in the Supplemental Agreement authorizing the issuance of a particular Series of Bonds, or
- (ii) If not otherwise specified in a Supplemental Agreement authorizing the issuance of a particular Series of Bonds, the lesser of:
 - Maximum Annual Debt Service on the Outstanding Bonds secured by such Account, payable in any fiscal year for the related Bonds
 - Ten percent (10%) of the proceeds of the Outstanding Bonds secured by such Account calculated in accordance the Code
 - 125% of the average Annual Debt Service for the payment of the principal of and interest on the Outstanding Bonds secured by such Account

Debt service costs include the required contributions to the debt service reserves which were originally created and funded with 2008 bond proceeds. Should future bond issuances include required reserves, PRASA plans to contribute the additional funds in each of these reserves with part of the bond issuance proceeds, as necessary.

8.6.2 Operating Reserve Fund

The Sixth Supplemental Agreement to the MAT was executed on April 19, 2016. Before the Sixth Supplemental Agreement, the MAT required that an Operating Reserve Fund be established in the amount of \$150M until March 1, 2013 and thereafter:

- (i) If there is a line of credit on deposit in the reserve fund, the reserve shall mean for the term of line of credit an amount equal to at least ninety (90) days of current expenses determined on the first day of the fiscal year in which such line of credit is delivered or renewed as set forth in the annual budget for such fiscal year; or
- (ii) If the reserve fund is funded from revenues, the reserve shall mean an amount equal to not less than ninety (90) days of current expenses determined annually based on the current expenses relating to the fiscal year of such calculation as set forth in the annual budget for such fiscal year.

The Sixth Supplemental Agreement to the MAT, amended Section 5.10 (a) and (c) of the Operating Reserve Fund to read as follows:

- (a) *In each month, the Trustee shall deposit to the Operating Reserve Fund (i) beginning on the first Business Day of the month and after making the deposits required by Section 5.02 (b) (i) through (vii), an amount of the Authority Revenues equal to 1/60 of the amount, if any, necessary to restore the amount on deposit therein to the Operating Reserve Requirement and to pay interest on any reimbursement obligations due with respect to an Operating Reserve Facility. Earnings on moneys held in the Operating Reserve Fund shall be retained therein.*

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- (b) *In lieu of or in addition to cash or investments, at any time, the Authority may cause to be deposited to the credit of the Operating Reserve Fund, an Operating Reserve Facility, in the stated amount equal to all or a portion of the application Operating Reserve Requirement. Any withdrawals from the Operating Reserve Fund made in accordance with the above paragraph (b), shall be made first from any cash or investments on deposit therein and then to the extent no such cash or investments are available, from a draw on any Operating Reserve Facility.*

PRASA had a loan agreement (the GDB Loan Agreement) with the GDB under which the GDB provided a revolving line of credit to PRASA in the amount of \$180M (previously \$150M) that satisfied the balance that PRASA is required to maintain in the Operating Reserve Fund under the MAT. Under the GDB Loan Agreement, this line of credit is payable from moneys on deposit in the Operating Reserve Fund (after making deposits to the Current Expenses Fund) or proceeds from additional indebtedness issued under the MAT. The maturity of such line of credit was extended to June 30, 2018, contingent upon PRASA's successful completion of a 2015 Senior Bond issuance. Given that bonds were not issued on or before August 31, 2015, the facility matured on June 30, 2016. Therefore, PRASA is required to fund the Operating Reserve Fund at its requirement level from Operating Revenues in accordance with the flow of funds (as defined in the MAT) or obtain a new line of credit to satisfy the Operating Reserve Fund Requirement.

Therefore, in accordance with the Sixth Supplemental Agreement to the MAT, PRASA deposited \$36.2M in the Operating Reserve Fund during FY2019 (funding approximately 1/5 of the Operating Reserve Fund requirement). This deposit will continue recurrently for two additional years, until PRASA achieves the reserve fund of three months of current expenses. Deposits for the forecast period are projected to be in accordance with the MAT, as amended. As of June 30, 2019, the Operating Reserve Fund balance stood at \$107.1M (inclusive of the \$36.2M deposit made in FY2019). By the start of FY2022, PRASA is forecasting to have a total deposit balance in its Operating Reserve Fund of \$182.6M, meeting its requirement to maintain funds equal to three months of current expenses. In future years, PRASA is projecting to make smaller deposits to align the balance with the increases in Operating Expenses, seeking to always maintain three months of current expenses in deposit.

8.6.3 Capital Improvement Fund

In accordance with the MAT, a Capital Improvement Fund must be established and funded for each fiscal year in an amount equal to the greater of:

- (i) The amount set forth in the annual budget for such fiscal year, or
- (ii) The amount recommended by the Consulting Engineer.

Equal monthly deposits over the fiscal year must be deposited to the Fund to make the balance of the Fund equal to the annual requirement. In addition, the following must be credited to the Fund:

- (i) The proceeds of any condemnation awards,
- (ii) The proceeds of insurance (other than use and occupancy insurance),
- (iii) The proceeds of sales of property constituting a part of the Systems, and

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- (iv) The proceeds of any termination or similar payment received by PRASA under any interest rate swap or similar hedge agreement.

PRASA deposited \$73.5M from Operating Revenues in the Capital Improvement Fund during FY2019 to finance a portion of its projected CIP (R&R and hurricanes-related emergency projects already being executed). This deposit is net from the FEMA/Insurance proceeds that PRASA expects to receive for the identified projects to restore the system and netted from Special Charge and other restricted funds (\$42.5M for FY2019). PRASA is assuming to re-activate its CIP in FY2020.

In its FY2020, PRASA projected to make a deposit in the Capital Improvement Fund of \$84.3M from Operating Revenues, net from FEMA/Insurance proceeds, Special Charge funds, and the PRASA FY2019 Fiscal New Federal Funds initiative estimated at \$38.3M. From FY2021 onwards, PRASA projects to make deposits in the Capital Improvement Fund in the average amount of \$143.7M per year from Operating Revenues and the expected additional federal funds (SRF and RD) of \$86.5 on average per year over the forecast period. If PRASA is not able to secure the new federal funds, it will be required to reduce its projected CIP expenditures and/or increase the proposed rate adjustments to successfully meet its obligations.

Arcadis believes the assumptions taken for the Forecast period Capital Improvement Fund deposit are optimistic given the status of the CIP re-activation process, the on-going procurement process for the CIP program management consultants and the CIP start and ramp-up process which may potentially take longer than assumed to complete the program's actual execution.

8.6.4 Construction Fund

In accordance with the MAT, a Construction Fund must be established and funded with the following deposits:

- (i) the amounts required to be deposited under the resolution of the Board authorizing the issuance of particular Series of Bonds or the applicable Supplemental Agreement and,
- (ii) any moneys of the Authority that may properly be deposited to the credit of said Fund, or the proceeds of any grants received from any source, to be used for the purpose of paying the Cost of Improvements.

PRASA has not included any deposits into the Construction Fund for the Forecast period.

8.6.5 Commonwealth Payments Fund

Since July 2016 through July 2019 PRASA had entered into forbearance agreements for its SRF and RD debt (previously classified as CGI debt). In July 2019, PRASA completed the restructuring of its SRF and RD debt reclassifying such obligations to Senior Indebtedness.

In addition, no funds were deposited in the CSO Account during recent years, and accordingly, no funds were transferred by PRASA to the trustee of the PFC Bonds for the payment of debt service that was due on the PFC Bonds. Nevertheless, as per Section 5.02(c) of the MAT, any deficiency in the amounts required to be deposited into the Commonwealth Payments Fund to pay for the Commonwealth Guaranteed Indebtedness or the Commonwealth Supported Obligations shall not be cumulative and shall be deemed to be eliminated upon interest or principal payment date.

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In its FY2020 Annual Budget, PRASA projects to make a \$20.9M deposit to the Commonwealth Payment Fund. Also, as part of the 2019 PRASA's Fiscal Plan debt service reduction initiatives, PRASA has eliminated the outstanding annual \$9M debt service payments related to the CSO which is reflected in the deposits budgeted to be made during the forecast period. For the rest of the forecast period, PRASA projects to make an annual average deposit of \$29.3M in this Fund.

8.6.6 Surplus Fund and Rate Stabilization Account

After all deposits required by the MAT (as amended) have been accordingly made, any remaining moneys shall be deposited to the credit of the Surplus Fund which includes the Rate Stabilization Account. No deposits were made in FY2019; however, as a result of the debt relief achieved through the SRF and RD debt restructuring, PRASA is projecting to make deposits throughout the forecast period, including a \$20.8M deposit in FY2020, a minimal deposit in FY2022 (approximately \$22,000), and a \$14.6M deposit in FY2023.

As established by the MAT, "Operating Revenues shall mean all moneys received by or on behalf of the Authority, including... (v) amounts, if any, paid from the Rate Stabilization Account into the Operating Revenue Fund in any Fiscal Year minus the amounts, if any, paid from the Operating Revenue Fund into the Rate Stabilization Account during the same Fiscal Year...". Therefore, PRASA has the ability to use the Rate Stabilization Account balance as a cash infusion to supplement operating revenues, if needed. In FY2021 and FY2024, PRASA is projected to transfer \$20.8M and \$4.7M, respectively, from the Rate Stabilization Account to the Operating Revenue Fund.

8.7 Conclusions

PRASA's Forecast (see Exhibit 1) reflects the financial projections included in the Fiscal Plan certified by the Oversight Board on June 25, 2019 as amended by PRASA's Governing Board to incorporate the benefit of the federal debt restructuring completed on July 26, 2019. Despite PRASA's projected additional revenues, cost savings, new federal funds, and proposed rate increases, the Forecast reflects a total deficit of \$54.6M. PRASA plans to bridge this gap by identifying and securing additional revenue sources or financing, implementing higher rate increases, implementing additional controls in Operating Expenses, modifications to projected deposits to the Capital Improvement Fund, or through a combination of these actions.

While Operating Revenues are projected to be sufficient to meet Senior Lien debt service payments and meet Rate Covenant DSC requirements for Senior Lien Debt, Authority Revenues are not sufficient in every year of the forecast period to meet All Obligations per the MAT, which include the payment of the CGI and CSO debt service obligations in full. Therefore, PRASA is currently not projecting to meet its Rate Covenant requirement of 1.0x coverage of its current obligations throughout the Forecast. PRASA may need to reduce its projected CIP investments, increase projected annual rate adjustments, or implement additional operational cost controls to meet its obligations. Furthermore, PRASA must consider the overall sustainability and affordability of its rates given the overall economic situation affecting Puerto Rico and recent trends affecting customer consumption profiles.

The following events could have material negative effects on PRASA's Forecast, which may negatively impact PRASA's financial situation going forward:

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- Lower revenues or savings achieved, or timeliness of the 2019 PRASA Fiscal Plan initiatives.
- Higher impact from Hurricanes Irma and María on revenue, expenses or damages on PRASA infrastructure (continuing under revision and refinement by PRASA).
- Lower funding than expected from insurance, FEMA proceeds, SRF or RD federal funds.
- Higher overtime expenses than currently planned as a result of further delays in filling vacant positions.
- Higher energy costs as a result of higher PREPA electric costs (per kWh) and/or lower savings achieved through its Comprehensive Energy Management Program.
- Higher expense costs as a result of not eliminating the Christmas bonus or reducing the pension costs without identifying other sources of saving to compensate for not implementing these initiatives proposed by the Oversight Board.
- Higher annual inflation rates.
- Higher capital costs due to lower supply of professional and construction workforce, and higher materials and parts costs.

The probability of PRASA meeting its Forecast is conditioned on the following key assumptions:

1. **PRASA's ability to maintain its Service Revenues, billings, and collections in a continuing challenging economic environment** – Continued uncertainty and strain on the economy, population shifts, and changing consumption patterns could continue to cause further declines in PRASA's billings (reflected in lower Service Revenues than budgeted) and collections (reflected in higher Adjustment for uncollectibles).
2. **PRASA's ability to implement the necessary annual rate increases** – PRASA is projecting to implement annual modest rate increases that will generate about \$690M between FY2019 and FY2024. The actual amount of the rate increases to be implemented by PRASA will depend on their financial results, planned CIP investments, customer base and consumption trends, among others.
3. **PRASA's ability to continue to successfully implement the 2019 PRASA Fiscal Plan initiatives** – PRASA's Forecast includes additional revenue enhancing and cost reduction initiatives. Any changes to the funding, framework and execution of these initiatives may significantly alter PRASA's projected financial results. Although PRASA has made a commitment to implement the initiatives described in this Report (except for the ones proposed by the Oversight Board and noted throughout the Report). Also, there is a possibility that the projected results and, more specifically, the timing of those results may not be achieved.

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EXHIBIT 1

PRASA FINANCIAL FORECAST PRO FORMA* (\$, Thousands)	FY2019 PRELIMINARY ^b	FY2020 ANNUAL BUDGET	FY2021 PROJECTION	FY2022 PROJECTION	FY2023 PROJECTION	FY2024 PROJECTION
OPERATING REVENUES						
1. Service Revenues (Base Fee and Service Charges, Net of Subsidies) ^c	\$995,357	\$1,036,499	\$1,062,752	\$1,090,199	\$1,109,547	\$1,120,030
2. Transfer from / (to) Rate Stabilization Account	0	(20,753)	20,753	(22)	(14,553)	\$4,675
3. Other Income (Miscellaneous/Special Assessments)	2,000	500	800	800	1,100	1,100
4. Fiscal Plan - Revenue Enhancing Initiatives ^d	2,832	12,009	23,973	48,676	53,035	57,190
5. Insurance Reimbursement from Revenue Loss	50,000	0	0	0	0	0
6. Total Operating Revenues [Sum Lines 1-5]	\$1,050,189	\$1,028,255	\$1,108,278	\$1,139,654	\$1,149,129	\$1,182,995
ADDITIONAL REVENUES						
7. Transfer from Budgetary Reserve Fund	0	0	0	0	0	0
8. General Fund Grants/Appropriations/Contributions	0	0	0	0	0	0
9. Reimbursements to the Authority Revenues	0	-	0	0	0	0
10. Total Other Sources of Revenue [Sum Lines 7-9]	\$0	\$0	\$0	\$0	\$0	\$0
11. Total Authority Revenues [Line 6 + Line 10]	\$1,050,189	\$1,028,255	\$1,108,278	\$1,139,654	\$1,149,129	\$1,182,995
OPERATING EXPENSES						
12. Payroll and Benefits	\$321,011	\$326,606	\$330,832	\$334,425	\$337,020	\$338,090
13. Electric Power	136,005	152,523	163,299	168,517	166,140	169,447
14. Maintenance and Repair	50,438	57,418	55,601	56,420	57,244	58,085
15. Chemicals	33,903	33,339	34,872	35,386	35,903	36,430
16. Insurance	19,100	19,284	19,560	19,848	20,137	20,433
17. Other Expenses	150,730	156,914	159,156	161,500	163,858	166,264
18. Fiscal Plan - Cost Saving Initiatives ^e	(11,271)	(12,913)	(26,597)	(29,400)	(31,465)	(32,903)
19. Capitalized Operating Expenses	(7,112)	(27,605)	(28,243)	(28,716)	(28,871)	(29,184)
20. Total Operating Expenses [Sum Lines 12-19]	\$692,804	\$705,566	\$708,480	\$717,979	\$719,966	\$726,661
ADDITIONAL EXPENSES						
21. Hurricane Impact on OPEX ^f	25,393	(65,740)	0	0	0	0
22. Total Additional Expenses [Line 21]	\$25,393	(\$65,740)	\$0	\$0	\$0	\$0
23. Total Operating Expenses [Line 20 + Line 22]	\$718,198	\$639,826	\$708,480	\$717,979	\$719,966	\$726,661
DEPOSITS						
24. Deposit to the Senior Bond Fund ^g	\$230,790	\$250,791	\$250,790	\$250,789	\$250,788	\$250,787
25. Deposit to the Senior Debt Service Reserve Fund	0	0	0	0	0	0
26. Deposit to the Senior Subordinate Bond Fund	0	0	0	0	0	0
27. Deposit to the Senior Subordinate Debt Service Reserve Fund	0	0	0	0	0	0
28. Deposit to the Subordinate Bond Fund	0	0	0	0	0	0
29. Deposit to the Subordinate Debt Service Reserve Fund	0	0	0	0	0	0
30. Deposit to the Current Expense Fund	0	0	0	0	0	0
31. Deposit to the Operating Reserve Fund	36,197	32,384	39,974	3,076	1,013	2,033
32. Deposit to the Capital Improvement Fund (Net of Projected New Federal Funds)	42,472	84,334	114,578	139,875	149,002	171,552
33. Deposit to the Construction Fund	0	0	0	0	0	0
34. Deposit to the Commonwealth Payments Fund ^h	45,674	20,920	25,956	27,935	28,360	31,962
35. Deposit to the Surplus Fund	0	0	0	0	0	0
36. Total Deposits, excluding existing deposits available in the Current Expense Fund [Sum Lines 24-29 and 31-35]	\$355,133	\$388,429	\$431,298	\$421,675	\$429,163	\$456,334
37. Net Authority Revenues After Obligations and Deposits [Line 11 - Line 23 - Line 36] ⁱ	(\$23,141)	\$0	(\$31,499)	\$0	\$0	\$0
DEBT SERVICE PAYMENTS DUE						
38. Senior (S)	\$230,790	\$250,791	\$250,790	\$250,789	\$250,788	\$250,787
39. DS Coverage Required = 2.50	4.55	4.10	4.42	4.54	4.58	4.72
40. Senior Subordinated (SSUB)	0	0	0	0	0	0
41. DS Coverage Required = 2.00	4.55	4.10	4.42	4.54	4.58	4.72
42. Subordinated (SUB)	0	0	0	0	0	0
43. DS Coverage Required = 1.50	4.55	4.10	4.42	4.54	4.58	4.72
44. Commonwealth Guaranteed Indebtedness (CGI)	45,674	20,920	25,956	27,935	28,360	31,962
45. Commonwealth Supported Obligations (CSO)	0	0	0	0	0	0
46. Debt Not Covered Under the MAT	0	0	0	0	0	0
47. Total Debt Service Including Debt Not Covered Under the MAT, Net of Existing Deposits	\$276,464	\$271,711	\$276,746	\$278,724	\$279,148	\$282,749
48. DS Coverage on All Obligations (Coverage Required = 1.00)	0.98	1.00	0.97	1.00	1.00	1.00

^aNumbers may not add up due to rounding.

^bBased on projected results as presented in PRASA's June 25th, 2019 Revised Fiscal Plan.

^cIncludes additional revenues from rate increases and electronic bill discount, net additional billings from on-going initiatives, and the adjustment for billings not collected (net of collections from prior years).

^dProjected additional revenues from initiatives included in Fiscal Plan: P3 Project, Government Collections, New Disconnection Fee, and Adjustment Policy Revision.

^eProjected expense reductions from initiatives included in Fiscal Plan: Physical Losses Reduction, Universal Healthcare Plan, and Other Expense Reductions. Also includes Pension Reduction and Christmas Bonus Elimination which PRASA does not expect to implement but will work to identify equivalent savings to comply with the proposed total expenses.

^fIncludes amount to be deposited from FEMA funding reimbursement. FEMA funds shall be deposited to the credit of the Current Expense Fund as they are used to reimburse PRASA for Current Expenses.

^gAs adjusted to reflect the benefit of the federal debt restructuring.

^hDeficits to be addressed by PRASA either through additional controls of Operating Expenses, modification to projected deposits to the Capital Improvement Fund, additional rate increases, or through a combination of these actions.

FISCAL YEAR 2019 CONSULTING ENGINEER'S REPORT FOR THE PUERTO RICO AQUEDUCT AND SEWER AUTHORITY

9 CONCLUSIONS AND RECOMMENDATIONS

9.1 Considerations and Assumptions

In preparation of this Report and the conclusions contained herein, Arcadis has relied on certain assumptions and information provided by PRASA with respect to the conditions which may exist or events which may occur in the future. Arcadis believes the information and assumptions are reasonable but has not independently verified information provided by PRASA and others. To the extent that actual future conditions differ from those assumed herein or provided by others, the actual results will vary from those forecasts.

Arcadis has made several considerations and assumptions (as provided throughout this Report); some of the most notable are as follows:

1. Arcadis has made no determination as to the validity and enforceability of any contracts, agreements, existing laws, rules, or regulations applicable to PRASA and its operations. However, for purposes of this report, Arcadis has assumed that all such contracts, agreements, laws, rules, and regulations will be fully enforceable in accordance with their terms.
2. PRASA will continue the current policies of employing qualified and competent personnel; properly operating and maintaining the System in accordance with generally accepted industry practices; and of operating the System in a prudent and sound businesslike manner.
3. The proposed CIP reflects the general needs of the System, the CIP will be largely implemented as planned and reflected in this report, and PRASA will make modifications to the CIP investment forecast if the overall System condition is negatively affected by the investment levels projected in future years.

Set forth below are the most relevant opinions which Arcadis has reached regarding the review of PRASA's System, CIP, and financial projections as per the 2019 PRASA Fiscal Plan.

1. PRASA has reached below the optimum staffing level stipulated by the Executive Management Team but its staffing mix is not yet optimal. For example, PRASA continues to face challenges in filling critical operational staff needs in its Operations Department (i.e., plant operators, electromechanical staff, System maintenance staff and meter readers), which results in overtime hours, delayed repairs, or understaffed/deficient services. PRASA shall further assess its staff mix and implement a more targeted training and workforce development program to allow internal staff re-assignments thereby decreasing existing staffing needs. Also, PRASA may need to reevaluate their compensation package to critical positions in need, such as plant operators and electromechanical, in order to compete with the market and retain personnel (PRASA has indicated that they have begun the process of reevaluating existing compensation packages).
2. PRASA continues to assess administrative and operational performance, and to implement organizational and policy changes, focusing on customer service, System performance, and budget controls. KPI and metrics being measured, along with stronger management oversight continue to contribute to operational and organizational improvements, although KPI results are below established goals.

FISCAL YEAR 2019 CONSULTING ENGINEER'S REPORT FOR THE PUERTO RICO AQUEDUCT AND SEWER AUTHORITY

3. Arcadis visited a total of 173 facilities throughout PRASA's five Operational Regions between February and August of 2019, to conduct a condition assessment of water and wastewater facilities. In overall, facilities were found to be in the adequate range although the physical condition continues to deteriorate as capital improvements and R&R actions are limited due to the fiscal situation and budget limitations.
- Overall, the WTPs are in adequate condition and, to the extent that the physical structures and operational/ process controls are maintained or improved, they are expected to continue to serve their intended purpose of providing potable water supply in compliance with applicable regulations. Facility ratings decreased in equipment/maintenance, operations/process control and staff/training criteria compared to the 2017 inspections. The greatest concern currently is the physical condition of the facilities, which continues to deteriorate as capital and R&R improvements are delayed. Also, even though the WTPs are performing better with respect to compliance with limits of the SDWA and effluent discharge parameters, PRASA must continue to implement corrective measures to mitigate the production of disinfection by-products. Moreover, PRASA should address the shortcomings identified during inspections to improve the physical condition of its facilities, achieve/maintain continuous and consistent compliance, and optimize O&M expenses.
 - The WWTPs generally range from poor to adequate condition with compliance and equipment/maintenance as the categories of primary concern. There were nine facilities rated as poor compared to one in 2017 and from the remaining facilities rated as adequate. The greatest concern currently is the physical condition of the facilities, which continues to deteriorate as capital and R&R improvements are delayed. Also, despite some of the NPDES parameters having interim limits, the results showed that there were still many exceedances. Therefore, improvements are necessary not only to meet current interim limits but also future permanent, and more stringent limits. PRASA should verify the flood zone levels at all WWTPs to identify vulnerabilities of assets in these facilities and determine if the potential flood risks merit mitigation actions.
 - No significant changes were noted in the overall evaluation of ancillary facilities with most scoring on the lower end of adequate rating. Approximately 13% of the visited wastewater pump stations (WWPSs) have recorded overflows during the evaluation period. Prompt identification and actions enabled by remote monitoring should help PRASA mitigate overflows in the System, and adding pre-treatment (screens, comminutors) and preventive maintenance to facilities would help lessen overflows. Most of the deficiencies identified for ancillary facilities can be addressed through PRASA's R&R program and may not require major capital improvements. Finally, future regulatory requirements may require either the implementation of significant capital improvements to include and achieve additional treatment capabilities at well facilities, or the closure of certain wells.
4. The number of water leaks and sanitary overflows continue to be high when compared to U.S. benchmarks. However, PRASA has continued to improve its response time and attention/repair effectiveness, excluding the latter years because of the impacts and the after effect of the 2017 Hurricanes. PRASA continues to work on and improve its leak detection and monitoring practices and continues to aggressively address leak occurrences. Currently, PRASA is remotely monitoring levels of a number of tanks in the distribution system to avoid tank overflows and improve the water

FISCAL YEAR 2019 CONSULTING ENGINEER'S REPORT FOR THE PUERTO RICO AQUEDUCT AND SEWER AUTHORITY

distribution balance and continues conducting periodic water audits which are used to implement the necessary controls and develop action items to address NRW. Also, PRASA is implementing the 2019 PRASA Fiscal Plan WRO initiatives, which shall help reduce physical water losses. Additionally, PRASA is implementing sanitary sewer evaluations and repair plans to reduce levels of I/I that must be treated in their WWTPs. However, the progress of this initiative has been affected as well by the ongoing fiscal situation.

5. PRASA is redefining their NRW goals and metrics to phase out calculations that still use estimation methods, moving towards use of real measurements. Furthermore, the provision of meters or other mechanisms to measure the water discarded as part of the programmed drainages will further improve accounting for the volume of NRW in the System. Additionally, the Physical Losses Reduction initiatives along with the PRASA's P3 project will further support PRASA's efforts to reduce NRW. Lastly, significant capital investments and R&R funded budgets are required to accelerate the NRW program and address leak occurrences in both a corrective and preventive manner.
6. Except for buried infrastructure improvement needs, PRASA's six-year CIP along with the O&M initiatives are in alignment with the System needs and adequately addresses all mandated requirements of existing consent decrees and agreements with Regulatory Agencies. The CIP also includes funding for minor repair projects and PRASA's R&R program, as well as funding for recovery efforts and for System resilience/strengthening. Most of the investment included for the CIP is related to Emergency/Permanent Work projects. However, as noted in previous reports, given PRASA's high rate of leaks and overflows and continuing aging infrastructure, additional funds and a reactivation and acceleration of the R&R program are required to reduce/minimize these incidences. Hence, PRASA may need to further re-prioritize its funding and capital projects to address these critical System issues, as well as to address future regulations and other regulatory requirements of which impacts are not yet known. Finally, PRASA's six-year CIP includes funding for maintenance improvements, as well as for other necessary infrastructure projects (i.e., fleet and building renovation, and technological improvements) essential to maintaining and preserving the utility assets.
7. The insurance program covering PRASA's exposures to risks of accidental property and liability losses arising from on-going operations provides reasonable coverage. Also, the Owner Controlled Insurance Program (OCIP) covering PRASA's exposures to risks of accidental property and liability losses arising from construction activities provides reasonable coverage. PRASA should address the following key recommendations:
 - Conduct a PML Study considering new CAT Modellings and parameters. Specially after the lessons learned in the aftermath of the September 2017 Hurricanes.
 - PRASA should consider establishing a fund to cover possible financial losses from any future catastrophic or any non-catastrophic, peril that might affect infrastructure and operations and, therefore, impose an unexpected financial burden.
 - Consideration to Cyber Security Coverage, which is excluded under all current PRASA's Insurance Programs. Also, complete a self-assessment to determine potential areas of weakness

FISCAL YEAR 2019 CONSULTING ENGINEER'S REPORT FOR THE PUERTO RICO AQUEDUCT AND SEWER AUTHORITY

as compared to international standards and to determine the potential frequency and severity of a breach.

- Consideration to Terrorism Coverage, which is excluded under all current PRASA's Insurance Programs.
 - PRASA should consider including Fungi and/or Bacteria coverage, which is excluded under General liability and umbrella coverage and other programs.
 - PRASA should consider including a "Claims Preparation Expense" additional coverage sublimit in the OCIP Builder's Risk policy to provide for the necessary and reasonable fees or expenses incurred by the insured's customary auditors, accountants, architects, or engineers that may assist the insured proving a claim.
 - PRASA should consider requesting an endorsement to include a "Partial Occupancy Provision" to grant permission for partial occupancy of project areas in the OCIP Builder's Risk Policy. Therefore, coverage will not cease or expire due to the partial occupation of any project area or due to the project's substantial completion.
 - PRASA should consider changing the "Completed Operations" coverage extension to ten years to cover the full statutory limit (Statute of Limitations Law) in the OCIP Commercial General Liability Policy. Currently is for five years from the termination date of the policy or its renewal(s). Should also consider same action for the OCIP Commercial Umbrella Liability Policy.
8. PRASA's Forecast (Exhibit 1) reflects the financial plan certified by the Oversight Board: the FY2019 PRASA Fiscal Plan. Despite PRASA's projected additional revenues, cost savings, new federal funds, and proposed rate increases, the Forecast reflects a total deficit of \$54.6M. PRASA plans to bridge this gap by identifying and securing additional revenue sources or financing, implementing higher rate increases, implementing additional controls in Operating Expenses, modifications to projected deposits to the Capital Improvement Fund, or through a combination of these actions.

PRASA must continue the implementation and monitoring of Operational Initiatives so that adjustments, if needed, are made on a timely basis to both the program's operational elements and budget projections. Given the status of these initiatives, and considering the coordination, planning and implementation efforts still required to be completed; it is possible that the timing for achieving the projected benefits will not be as expected by PRASA. PRASA should re-evaluate the status and schedule of these initiatives and adjust the Forecast accordingly and/or identify actions to accelerate development and implementation.

9. While Operating Revenues are projected to be sufficient to meet Senior Lien debt service payments and meet Rate Covenant DSC requirements for Senior Lien Debt, Authority Revenues are not sufficient in every year of the forecast period to meet All Obligations per the MAT. Therefore, PRASA is currently not projecting to meet its Rate Covenant requirement of 1.0x coverage of its current obligations throughout the Forecast. PRASA may need to obtain new financing, refinance a portion of its current debt, reduce its projected CIP investments, increase projected annual rate adjustments, or implement additional operational cost controls to meet its obligations. Furthermore, PRASA must consider the overall sustainability and affordability of its rates given the overall economic situation affecting Puerto Rico and recent trends affecting customer consumption profiles.

FISCAL YEAR 2019 CONSULTING ENGINEER'S REPORT FOR THE PUERTO RICO AQUEDUCT AND SEWER AUTHORITY

The probability of PRASA meeting its Forecast is conditioned on the following key assumptions:

- **PRASA's ability to maintain its Service Revenues, billings, and collections in a continuing challenging economic environment** – Continued uncertainty and strain on the economy, population shifts, and changing consumption patterns could continue to cause further declines in PRASA's billings (reflected in lower Service Revenues than budgeted) and collections (reflected in higher Adjustment for uncollectibles).
- **PRASA's ability to implement the necessary annual rate increases** – PRASA is projecting to implement annual modest rate increases that will generate about \$690M between FY2019 and FY2024. The actual amount of the rate increases to be implemented by PRASA will depend on their financial results, planned CIP investments, customer base and consumption trends, among others.
- **PRASA's ability to continue to successfully implement the 2019 PRASA Fiscal Plan initiatives** – PRASA's Forecast includes additional revenue enhancing and cost reduction initiatives. Any changes to the funding, framework and execution of these initiatives may significantly alter PRASA's projected financial results. Although PRASA has made a commitment to implement the initiatives described in this Report (except for the ones proposed by the Oversight Board and noted throughout the Report). Also, there is a possibility that the projected results and, more specifically, the timing of those results may not be achieved.

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Appendix II

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MASTER AGREEMENT OF TRUST

between

PUERTO RICO

AQUEDUCT AND SEWER AUTHORITY

and

BANCO POPULAR DE PUERTO RICO,

as Trustee

Dated as of March 1, 2008

(as supplemented by the First Supplemental Agreement, dated as of March 1, 2008 and the Second Supplemental Agreement, dated as of January 17, 2012)

as Amended and Restated as of February 15, 2012

CONFORMED COPY AS OF NOVEMBER 23, 2020

(as supplemented and amended by (i) the Third Supplemental Agreement of Trust, dated as of February 15, 2012, (ii) the Fourth Supplemental Agreement of Trust, dated as of May 29, 2015, (iii) the Fifth Supplemental Agreement of Trust, dated as of September 15, 2015, (iv) First Amendment to Fifth Supplemental Agreement of Trust, dated as of November 30, 2015, (v) Sixth Supplemental Agreement of Trust, dated as of April 19, 2016, and (vi) Seventh Supplemental Agreement of Trust, dated as of July 26, 2019)

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THIS MASTER AGREEMENT OF TRUST, dated as of the 1st day of March, 2008, as Amended and Restated as of February 15, 2012 by and between Puerto Rico Aqueduct and Sewer Authority (the “Authority”) a public corporation and an autonomous governmental instrumentality of the Commonwealth of Puerto Rico, exercising essential governmental functions and created by the Aqueduct and Sewer Act of Puerto Rico hereinafter mentioned, and Banco Popular de Puerto Rico, as trustee (in such capacity, together with any successor in such capacity, herein called the “Trustee”), provides:

WHEREAS, in order to furnish the inhabitants of Puerto Rico an adequate water and sewerage service, the Legislature of Puerto Rico duly adopted Act No. 40, approved May 1, 1945, and by said Act created a governmental instrumentality of the Commonwealth of Puerto Rico by the name of the “Puerto Rico Aqueduct and Sewer Service”; and

WHEREAS, the Legislature of Puerto Rico duly adopted Act No. 163, approved May 3, 1949, known as the “Aqueduct and Sewer Act of Puerto Rico”, amending and reenacting said Act No. 40, approved May 1, 1945, and changing the name of the Puerto Rico Aqueduct and Sewer Service to “Puerto Rico Aqueduct and Sewer Authority” (said Act No. 163, as amended, hereinafter called the “Act”) and by the Act, the Authority is fully authorized and empowered:

(a) to have complete control and supervision of its properties and activities, including the power to make and enforce rules and regulations for the maintenance and operation thereof;

(b) to improve and extend the water and sewer facilities under its jurisdiction and to provide additional facilities of the same character;

(c) to borrow money and to issue its revenue bonds for any of its corporate purposes, including the following:

(i) to pay all or any part of the cost, as defined in the Act, of improvements to the Commonwealth Water System and to the Commonwealth Sewer System, as said systems are defined in the Act, as separate systems or as a single system for operating and financing purposes;

(ii) to fund, refund, purchase, pay or discharge any outstanding revenue bonds; and

(iii) to pay all proper costs of the Authority in connection with the issuance of the revenue bonds;

(d) to determine, fix, alter, charge or collect rates, fees, rentals, and other charges for the use of the facilities of the Authority, or for the water and sewerage services or other products or services sold, rendered or furnished by it; and

(e) to pledge all or any part of the revenues of the Authority to secure the payment of such revenue bonds; and

WHEREAS, the Authority has heretofore entered into a Trust Agreement, dated as of the first day of October, 1988, as amended, by and between the Authority and The Chase Manhattan Bank (National Association), as trustee (the “1988A Trust Agreement”) under which there have heretofore been issued revenue bonds of the Authority in the initial aggregate principal amount of \$400,001,438.40 for the purpose of paying a portion of the cost of the acquisition and construction of the Authority’s Systems (as defined in the 1988A Trust Agreement), of which revenue bonds \$365,186,438.40 is currently outstanding (the “1988A Bonds”); and

WHEREAS, the Authority has heretofore entered into a Trust Agreement, dated November 13, 1988, by and between the Authority and Banco Popular de Puerto Rico, as fiscal agent (the “1988AA Trust Agreement”) under which there have heretofore been issued revenue refunding bonds of the Authority in the initial aggregate principal amount of \$29,810,800 for the purpose of refinancing certain obligations incurred by the Authority to pay a portion of the cost of the acquisition and construction of the Systems, of which revenue bonds \$14,049,810.00 is currently outstanding (the “1988AA Bonds”); and

WHEREAS, the Authority on December 7, 1995 adopted Resolution No. 1583 (the “Original Guaranteed Resolution”) under which there have heretofore been issued revenue bonds of the Authority in the initial aggregate principal amount of \$400,340,000 (the “1995 Bonds”) for the purpose of refunding the 1988A Bonds and the 1988AA Bonds;

WHEREAS, on March 7, 2008, the Authority amended and restated the Original Guaranteed Resolution (the “Amended and Restated Guaranteed Resolution”), under which the Authority expects to issue two additional series of revenue refunding bonds (the “2008 Guaranteed Bonds”) for the purpose of refunding the 1995 Bonds;

WHEREAS, by virtue of Act No. 45 of the Legislature of Puerto Rico, approved July 28, 1994, the Legislature of Puerto Rico provided for the guaranty by the Commonwealth of Puerto Rico for the payment of the principal of and premium, if any, and interest on the 1988A Bonds and the 1988AA Bonds and any bonds or other obligations that may be issued by the Authority to refinance such bonds (collectively, the “guaranteed bonds”) to the extent the revenues, income or any other available funds of the Authority pledged for the payment of the principal of and premium, if any, and interest on the guaranteed bonds are insufficient to pay such principal, premium, if any, and interest when due or to maintain a reserve for such purpose, the bonds covered by such guaranty to be those specified by the Authority and containing a statement of such guaranty; and

WHEREAS, the Authority has determined to provide for the issuance of bonds of the Authority to refund the 1995 Bonds and for other lawful purposes of the Authority, said bonds to be payable from the Authority Revenues (as hereinafter defined) of the Authority, subject and subordinate to the prior payment of the Bonds and Other System Indebtedness (each as hereinafter defined), and from moneys paid or advanced by the Secretary of the Treasury pursuant to said Act No. 45; now, therefore, and

WHEREAS, the Authority has determined to enter into this Agreement of trust to enable it to issue revenue bonds and incur other indebtedness to finance or refinance its capital

improvement requirements over time and to this end has determined to enter into this Agreement; and

WHEREAS, the Authority has determined that the revenue bonds to be issued under this Agreement and the certificate of authentication by the Trustee shall be, respectively, in substantially the forms attached as Exhibit A hereto, with such variations, omissions and insertions as are required or permitted by this Agreement; and

WHEREAS, by virtue of the Act, the Authority is authorized to issue its revenue bonds and incur other indebtedness as hereinafter provided, to enter into this Agreement and to do or cause to be done all of the acts and things herein provided or required to be done as hereinafter covenanted; and

WHEREAS, the execution and delivery of this Agreement have been duly authorized by a resolution of the governing board of the Authority; and

WHEREAS, all acts, conditions and things required by the Puerto Rican Federal Relations Act and the Constitution and laws of Puerto Rico, including the Act, and the rules and regulations of the Authority to happen, exist and be performed precedent to and in the execution and delivery of this Agreement, have happened, exist and have been performed as so required, in order to make this Agreement a valid, binding and legal trust agreement for the security of the bonds in accordance with its terms; and

WHEREAS, the Trustee has accepted the trusts created by this Agreement and in evidence thereof has joined in the execution hereof;

NOW, THEREFORE, THIS AGREEMENT WITNESSETH, that in consideration of the premises, of the acceptance by the Trustee of the trusts hereby created, and of the purchase and acceptance of each Series of Bonds issued hereunder, by the holders thereof, and for the purpose of fixing and declaring the general terms and conditions upon which the Bonds issued hereunder, are to be issued, authenticated, delivered, secured and accepted by all persons who shall from time to time be or become holders thereof, and to secure the payment of each Series of Bonds issued hereunder, at any time issued and Outstanding hereunder and the interest and premium, if any, thereon according to their tenor, purport and effect, and to grant certain rights to the applicable holders of Indebtedness and Enhancement Facility Providers, if any, and to secure the performance and observance of all of the covenants, agreements and conditions contained in such Indebtedness or Enhancement Facilities, the Authority has executed this Agreement and does hereby grant a security interest in, assign, transfer, pledge and grant and convey unto the Trustee and its successors and assigns forever, on the terms set forth herein, for the benefit of the holders of said Indebtedness and Enhancement Facility Providers, if any, until said Indebtedness and applicable Enhancement Facilities are no longer outstanding and no amounts are due under the related documents, the following property:

(a) Amounts on deposit from time to time, and any investment earnings thereon, in the Operating Revenue Fund, the Senior Bond Fund, the Senior Debt Service Reserve Fund, the Senior Subordinate Bond Fund, the Senior Subordinate Debt Service Reserve Fund, the Subordinate Bond Fund, the Subordinate Debt Service Reserve Fund, the Current Expense Fund, the Commonwealth Payments Fund, the Operating Reserve Fund, the Capital Improvement Fund, the Surplus Fund and in any other funds and accounts created pursuant hereto (other than any fund established for the purpose of setting aside moneys to be paid to the United States Treasury in satisfaction of any rebate obligations imposed by federal law), including the earnings thereon, subject to the provisions of this Agreement permitting the application thereof for the purposes and on the terms and conditions set forth herein;

(b) Amounts constituting Authority Revenues pledged pursuant to Sections 2.11, 2.12, 2.13 and 2.14; provided, however, that any Authority Revenues received from the Commonwealth of Puerto Rico on account of Commonwealth Guaranteed Indebtedness or Commonwealth Supported Obligations are not subject to the lien hereof and shall only be used for the purposes set forth in Section 5.12 hereof;

(c) Any and all other property of any kind from time to time hereafter by delivery or by writing of any kind specifically conveyed, pledged, assigned or transferred, as and for additional security hereunder for the Indebtedness, by the Authority or by anyone on its behalf or with its written consent in favor of the Trustee, which is hereby authorized to receive any and all such property at any and all times and to hold and apply the same subject to the terms hereof; and

(d) All right, title and interest of the Authority owned or hereafter acquired in and to proceeds from the sale of Bonds issued hereunder required to be deposited in the Construction Fund pursuant to the provisions of this Agreement (except as limited by the following provisos) and all right, title, and interest in and to the investments held in the Construction Fund (except as limited by the following provisos) pursuant to the provisions of this Agreement; provided, however, that the Authority may establish one or more separate accounts in the Construction Fund to be funded with proceeds of any particular Series of Bonds, which accounts and the proceeds of the particular Series of Bonds deposited therein (together with all investments thereof and investment income earned thereon) may be pledged solely to the payment of one or more designated Series of Bonds for any designated periods, or otherwise, all as permitted in Section 4.02 hereof and as shall be more fully provided in any Supplemental Agreement with respect to the proceeds of the Series of Bonds issued thereunder;

TO HAVE AND TO HOLD all said properties pledged, assigned and conveyed by the Authority hereunder, including all additional property which by the terms hereof has or may become subject to the encumbrance hereof, unto the Trustee and its successors in trust and its assigns forever, subject, however, to the rights reserved hereunder;

TO HAVE AND TO HOLD IN TRUST upon the terms and trusts herein set forth for the equal and proportionate benefit, security and protection of all Holders and related Enhancement Facility Providers from time to time of all Senior Indebtedness issued hereunder or issued under other documents and secured by the lien of this Agreement, without privilege, priority or distinction as to lien or otherwise of any of the Senior Indebtedness over any other Senior

Indebtedness, except as otherwise provided herein, and on a basis subordinate and junior thereto, upon the terms and trusts herein set forth for the equal and proportionate benefit, security and protection of all Holders and related Enhancement Facility Providers, from time to time of all Senior Subordinate Indebtedness and Subordinate Indebtedness, issued hereunder or issued under other documents and secured by the lien of this Agreement, without privilege, priority or distinction as to lien or otherwise of any of the Senior Subordinate Indebtedness and Subordinate Indebtedness over any of the others except as otherwise provided herein;

TO HAVE AND TO HOLD IN TRUST upon the terms and trusts herein set forth for the equal and proportionate benefit, security and protection of all Holders and related Enhancement Facility Providers from time to time of all Senior Subordinate Indebtedness issued hereunder or issued under other documents and secured by the lien of this Agreement, without privilege, priority or distinction as to lien or otherwise of any of the Senior Subordinate Indebtedness over any other Senior Subordinate Indebtedness, except as otherwise provided herein;

TO HAVE AND TO HOLD IN TRUST, upon the terms and trusts herein set forth for the equal and proportionate benefit, security and protection of all Holders and related Enhancement Facility Providers from time to time of all Subordinated Indebtedness issued hereunder or issued under other documents and secured by the lien of this Agreement without privilege, priority or distinction as to lien or otherwise of any of the Subordinate Indebtedness over any other Subordinate Indebtedness;

PROVIDED, HOWEVER, that if the Authority shall pay fully and promptly when due all liabilities, obligations and sums at any time secured hereby or provide for the payment thereof in accordance with the provisions hereof, and shall promptly, faithfully and strictly keep, perform and observe, or cause to be kept, performed and observed, all of its covenants, warranties and agreements contained herein and in the related documents, then and in such event, this Agreement shall be and become void and of no further force and effect; otherwise, the same shall remain in full force and effect, and upon the trusts and subject to the covenants and conditions hereafter set forth.

ARTICLE I

DEFINITIONS AND RULES OF CONSTRUCTION

Section 1.02 Definitions.

The following words as used in this Agreement shall have the following meanings unless a different meaning clearly appears from the context:

“**Accreted Value**” shall mean, as of any date of computation with respect to any Capital Appreciation Bond, an amount equal to the principal amount of such Bond plus the interest accrued on such Bond from the date of original issuance of such Bond to the periodic date specified in the Supplemental Agreement authorizing such Capital Appreciation Bond on which interest on such Bond is to be compounded (hereinafter, a “Periodic Compounding Date”) next preceding the date of computation or the date of computation if a Periodic Compounding Date, such interest to accrue at the interest rate per annum of the Capital Appreciation Bonds set forth

in the Supplemental Agreement authorizing such Bonds, compounded periodically on each Periodic Compounding Date. Plus, if such date of computation shall not be a Periodic Compounding Date, a portion of the difference between the Accreted Value as of the immediately preceding Periodic Compounding Date (or the date of original issuance if the date of computation is prior to the first Periodic Compounding Date succeeding the date of original issuance) and the Accreted Value as of the immediately succeeding Periodic Compounding Date, calculated based upon an assumption that, unless otherwise provided in the Supplemental Agreement authorizing such Capital Appreciation Bonds, Accreted Value accrues in equal daily amounts on the basis of a year consisting of twelve 30-day months.

“Account” shall mean any of the Accounts established under this Agreement.

“Agreement” shall mean this Master Agreement of Trust, as supplemented or amended by one or more Supplemental Agreements.

“Annual Budget” shall mean the budget by that name referred to in Section 7.02.

“Annual Debt Service” shall mean for any Indebtedness (without duplication) the total payments required to be made for principal of and interest on such Indebtedness, including mandatory sinking fund redemptions, and payments to reimburse Enhancement Facility Providers with respect to such Indebtedness scheduled to come or coming due within a specified Fiscal Year, but excluding any capitalized interest funded from proceeds of Indebtedness. For purposes of calculating such principal and interest, the following assumptions are to be used:

(a) In determining the principal due in a Fiscal Year, payment shall be assumed to be made in accordance with the amortization schedule then in effect for such Indebtedness (unless a different subsection of this definition applies for purposes of determining principal maturities or amortization), including any scheduled redemption of such specified Indebtedness at its then Accreted Value and, for such purpose, the redemption payment shall be deemed a principal payment;

(b) For Tender Indebtedness, the options or obligations of the holders of such Indebtedness to tender the same for purchase or payment prior to their stated maturity or maturities shall be treated as principal on the first date on which such holders may or are required to tender such Indebtedness, except that any such option or obligation shall not be treated as principal if such Indebtedness is rated in at least one of the three highest long-term rating categories or in the two highest short-term rating categories (without regard to any gradations in such categories) by a Rating Agency;

(c) For purposes of computing the Rate Covenant only, if Variable Rate Indebtedness has been outstanding for any period prior to the date of calculation, interest on such Indebtedness shall be calculated using the higher of (i) the average rate or rates which were assumed by the Authority in its Annual Budget corresponding to the period for which such Rate Covenant computation is being made, and (ii) the actual weighted average rate or rates borne by such Indebtedness during such period; provided, however, that if a Hedge Agreement is in effect which provides that the Authority is to pay to the Qualified Counterparty an amount determined with reference to a fixed rate of interest on a notional amount equal to the principal of such

Indebtedness, for purposes of determining the Annual Debt Service on such Variable Rate Indebtedness, it will be deemed to bear interest at such fixed rate of interest or such stated rate in accordance with such Hedge Agreement;

(d) For purposes of determining whether Bonds may be issued in compliance with the respective tests set forth in Sections 2.16, 2.17 or 2.18, the rate of interest to be borne by Variable Rate Indebtedness will be deemed to be 120% of the rate quoted in an index generally accepted in the securities industry for securities having ratings and maturity or tender dates comparable to that of the applicable Variable Rate Indebtedness as of the date of issuance thereof; provided, however, that if a Hedge Agreement is in effect which provides that the Authority is to pay to the Qualified Counterparty an amount determined with reference to a fixed rate of interest on a notional amount equal to the principal of such Indebtedness for purposes of determining the Annual Debt Service on such Variable Rate Indebtedness, it will be deemed to bear interest at such fixed rate of interest in accordance with such Hedge Agreement; and provided, further, however, that interest on such Indebtedness that is the subject of a Qualified Swap shall be deemed to be 120% of the higher of (i) the average rate or rates which were assumed by the Authority in its Annual Budget corresponding to the period for which such Rate Covenant computation is being made, and (ii) the actual weighted average rate or rates borne by such Indebtedness during such period;

(e) For purposes of determining the Debt Service Reserve Requirement, if any, attributable to Variable Rate Indebtedness, the rate of interest to be borne by such Variable Rate Indebtedness will be deemed to be 120% of the rate quoted as of its date of issuance in an index generally accepted in the securities industry for securities having ratings and maturity or tender dates comparable to that of such Indebtedness and in no event will Qualified Swaps be considered;

(f) For purposes of determining the annual amount payable in respect of Bond Anticipation Notes and any other Indebtedness designated by the Authority as a Refundable Principal Installment, such Indebtedness that is or would be a Refundable Principal Installment shall be treated on the date of calculation as if (i) from the date of issuance thereof the principal amount of such Indebtedness had been payable as part of equal annual installments of principal and interest over a period extending from the due date thereof through the 30th anniversary of the issue date of such Indebtedness and (ii) interest accrued at a rate equal to the rate quoted in the 30-year revenue bond index, or if different, the revenue bond index most closely related to the term of the Indebtedness, as applicable, published in *The Bond Buyer* no more than two weeks prior to the date of calculation, or if that index is no longer published, another similar index selected by the Authority;

(g) The Accreted Value of Capital Appreciation Bonds or the Appreciated Value of Deferred Income Bonds shall be included in the calculation of Annual Debt Service at the times and in the manner provided in subsection (a) of Section 2.19;

(h) Any interest paid or to be paid from a Crossover Escrow Account on Crossover Refunding Bonds and any principal of and premium to be paid from such Escrow Account on Crossover Refunded Bonds shall be excluded from the calculation of Annual Debt Service;

(i) For any Indebtedness for which a binding commitment, letter of credit or other credit arrangement providing for the extension of such Indebtedness beyond its original maturity date exists, the computation of the Annual Debt Service payable on such Indebtedness shall, at the option of the Authority, be made on the assumption that such Indebtedness will amortize in accordance with such credit arrangement, as long as such credit arrangement is rated in one of the three highest long-term rating categories or in the highest short term rating category (without regard to any gradations within such categories) by a Rating Agency; and

(j) For purposes of computing the Rate Covenant and whether Bonds may be issued in compliance with respective tests set forth in Sections 2.16, 2.17 or 2.18, any termination payment due under a Qualified Swap or Hedge Agreement shall be included in the calculation of Annual Debt Service (assuming such amount will amortize as required under the applicable Qualified Swap or Hedge Agreement) to the extent such payment is not paid from the proceeds of Bonds or Other System Indebtedness.

“Appreciated Value” shall mean, with respect to any Deferred Income Bond, (i) as of any date of computation prior to the Current Interest Commencement Date, an amount equal to the principal amount of such Bond plus the interest accrued on such Bond from its date of original issuance to the Periodic Compounding Date next preceding the date of computation or the date of computation if a Periodic Compounding Date, such interest to accrue at the interest rate per annum of the Deferred Income Bonds set forth in the Supplemental Agreement authorizing such Bonds, compounded periodically on each Periodic Compounding Date as in such Agreement provided, plus, if such date of computation shall not be a Periodic Compounding Date, a portion of the difference between the Appreciated Value as of the immediately preceding Periodic Compounding Date (or the date of original issuance if the date of computation is prior to the first Periodic Compounding Date succeeding the date of original issuance) and the Appreciated Value as of the immediately succeeding Periodic Compounding Date, calculated based upon an assumption that, unless otherwise provided in the Supplemental Agreement authorizing such Deferred Income Bonds, Appreciated Value accrues in equal daily amounts on the basis of a year consisting of twelve 30-day months and (ii) as of any date of computation on and after the Current Interest Commencement Date, the Appreciated Value on the Current Interest Commencement Date.

“Authority” shall mean Puerto Rico Aqueduct and Sewer Authority, a public corporation and an autonomous governmental instrumentality of the Commonwealth of Puerto Rico created by the Act.

“Authority Revenues” shall mean Operating Revenues plus (i) any governmental grants or appropriations available to pay Current Expenses of the Authority, including grants or appropriations received by the Authority and specifically made for the payments of principal of and interest on obligations of the Authority or for reimbursing the Authority for such payments, (ii) any amounts received from the Commonwealth of Puerto Rico on account of Commonwealth Guaranteed Indebtedness (which is required to be deposited directly in the Commonwealth Payments Fund) or Commonwealth Supported Obligations (which is required to be deposited in the Commonwealth Payments Fund), (iii) any amounts transferred from the Budgetary Reserve Fund to the Trustee and (iv) any amounts received by the Authority from any source of funding that does not otherwise constitute Authority Revenues as reimbursement for Costs of

Improvements paid by the Authority in the current or the immediately preceding three fiscal years from Operating Revenues.

“Authorized Representative of the Authority” shall mean such person or persons as may be designated to act on behalf of the Authority by the Board.

“Beneficiaries” shall mean Bondholders, holders of Other System Indebtedness, Enhancement Facility Providers and the counterparties on any Qualified Swap or Hedge Agreement.

“Board” shall mean the Governing Board of the Authority as constituted from time to time pursuant to the Act, or, if said Board shall be abolished, the board, body or officer succeeding to the principal functions thereof or to whom the powers of the Authority shall be given by law.

“Bond Anticipation Notes” shall mean any obligations issued in anticipation of the issuance of Bonds.

“Bond Counsel” shall mean an attorney or firm of attorneys nationally recognized on the subject of municipal bonds.

“Bondholder” or **“Holder”** shall mean, as to Bonds, the person in whose name a Bond is registered and, as to Indebtedness other than Bonds, the lender or other entity to which the Authority is obligated with respect to such Indebtedness.

“Bond Insurance Policy” shall mean each financial guaranty insurance policy insuring the scheduled payment of principal and interest on a Series of Bonds.

“Bonds” shall mean any bonds, notes or other obligations issued from time to time pursuant to Article III, including Senior Bonds, Senior Subordinate Bonds, Subordinate Bonds or Bond Anticipation Notes, but not including Other System Indebtedness, Commonwealth Guaranteed Indebtedness or Commonwealth Supported Obligations.

“Budgetary Reserve Fund” shall mean the Budgetary Reserve Fund maintained by Government Development Bank for Puerto Rico in trust for the Authority, pursuant to the amended and restated Fiscal Oversight and Support Agreement, dated as of February 15, 2012, by and among the Authority, the Commonwealth of Puerto Rico and Government Development Bank for Puerto Rico.

“Business Day” shall mean a day on which banking business is transacted, but not including a Saturday, Sunday or legal holiday, or a day on which banking institutions are authorized by law to close in the city in which the Trustee has its principal corporate trust office or in the Commonwealth of Puerto Rico.

“Calculation Date” shall have the meaning set forth in Section 2.19(a).

“Capital Appreciation Bonds” shall mean any Bonds issued under this Agreement as to which interest is (i) compounded on the periodic compounding dates that are specified in the

Supplemental Agreement authorizing such Capital Appreciation Bonds and (ii) payable only at maturity, earlier redemption or other payment thereof pursuant to this Agreement or such Supplemental Agreement.

“Capitalized Interest Account” shall mean the Capitalized Interest Account established in Section 5.01.

“Capital Improvement Fund” shall mean the Capital Improvement Fund established in Section 5.01.

“Capital Improvement Fund Requirement” shall mean for each Fiscal Year, an amount equal to the greater of (i) the amount set forth in the Annual Budget for such Fiscal Year and (ii) the amount recommended by the Consulting Engineer.

“Code” shall mean the Internal Revenue Code of 1986, as amended, including applicable regulations, rulings and revenue procedures promulgated or applicable thereunder.

“Commonwealth Guaranteed Indebtedness” shall mean any obligations of the Authority that are designated as Commonwealth Guaranteed Indebtedness by the Authority and are guaranteed by the Commonwealth of Puerto Rico, including but not limited to the Authority’s Puerto Rico Aqueduct and Sewer Authority Revenue Refunding Bonds, Series 2008 but shall not include any loans from the United States Department of Agriculture, Rural Development, Rural Utilities Service or obligations of the Authority to the Puerto Rico Infrastructure Financing Authority evidencing revolving loans pursuant to the Puerto Rico Water Pollution Control and Drinking Water Treatment Revolving Funds or any loans granted by the Commonwealth Revolving Funds under the provisions of the Federal Clean Water Act of 1972, as amended and the Federal Safe Drinking Water Act of 1996, as amended.

“Commonwealth Payments Fund” shall mean the Commonwealth Payments Fund established in Section 5.01.

“Commonwealth Supported Obligations” shall mean the note of the Authority, dated June 28, 2004, relating to the construction of the North Coast Superaqueduct.

“Consent” shall have the meaning set forth in Section 13.01(a).

“Construction” or **“construction”** shall mean construction, acquisition, renovation, repair, renewal, replacement and expansion or any combination of the foregoing.

“Construction Fund” shall mean the Construction Fund established in Sections 4.01 and 5.01.

“Consultant” shall mean any qualified and experienced firm or corporation retained by or on behalf of the Authority to perform the acts and duties required of a Consultant under the provisions of this Agreement, which may be, without limitation, a firm of independent certified public accountants, the Consulting Engineer or an independent insurance consultant, and which may include governmental or nongovernmental entities, acceptable to the Consulting Engineer or

other Consultants depending on their skill and expertise for the specific acts and duties they are to perform under the provisions of this Agreement.

“Consulting Engineer” shall mean any qualified and experienced engineering firm or corporation retained by the Authority to perform the acts and duties required of the Consulting Engineer under the provisions of this Agreement.

“Cost of Improvements” shall mean the cost of construction of Improvements, including the cost of all labor, materials, machinery and equipment, the cost of all lands, structures, real or personal property, rights, rights-of-way, roads, easements, franchises and interest acquired or used for, or in connection with the Authority, any termination payments payable under any Qualified Swap or Hedge Agreements, the cost of engineering and legal services, the cost of preliminary surveys, plans and specifications, payments with respect to litigation, expenses of administration properly chargeable to such construction, legal, architectural and engineering expenses and fees, the cost of audits, the fees and expenses of Consultants, financing charges, taxes or other governmental charges lawfully assessed during construction, claims arising in connection with construction, premiums on insurance in connection with construction, interest on the Indebtedness or other obligations of the Authority issued to finance Costs of Improvements, during and for a reasonable period after completion of the acquisition, construction, reconstruction, repair, improvement or equipping of the Improvement; the annual fees for any Enhancement Facility and tender agent fees and fees payable for remarketing Indebtedness during such period as may be specified in the resolution of the Board or the Supplemental Agreement authorizing the issuance of such Bonds and all other items of expense not elsewhere in this definition specified, incident to the financing or construction of any Improvements and the placing of the same in operation.

“Cost of Issuance Account” shall mean the Cost of Issuance Account established in Section 5.01.

“Costs of Issuance” means the items of cost or expense incurred in connection with the authorization, sale and issuance of Indebtedness, which items of expenses shall include, but not be limited to, document printing, reproduction and execution and delivery costs, filing and recording fees, costs of credit ratings, initial fees and charges of the Trustee or a Qualified Depository, legal fees and charges, professional consultants’ fees, fees and charges for execution, authentication, transportation and safekeeping of Bonds, premiums, fees and charges for insurance on Bonds, commitment fees or similar charges relating to an Enhancement Facility, a Qualified Swap or a Hedge Agreement, costs and expenses in connection with the refunding of Indebtedness or other obligations of the Authority, costs and expenses incurred pursuant to a remarketing agreement and other costs, charges and fees, including those of the Authority, in connection with the foregoing.

“Crossover Amount” shall mean the amount of money and Defeasance Obligations on deposit in a Crossover Escrow Account and which, together with investment income thereon, are held as provided in the definition of “Crossover Refunded Bond.”

“Crossover Date” shall mean the date on which the Crossover Amount on deposit in a Crossover Escrow Account shall be used to retire all Outstanding Crossover Refunded Bonds for which such Crossover Escrow Account was established.

“Crossover Escrow Account” shall mean an escrow account in which a Crossover Amount is deposited.

“Crossover Escrow Deposit Agreement” shall mean an escrow deposit or similar agreement under which a Crossover Escrow Account is created and administered.

“Crossover Refunded Bond” shall mean any Indebtedness deemed to be refunded from the proceeds of Crossover Refunding Bonds. Any Indebtedness shall be deemed to have been refunded from the proceeds of Crossover Refunding Bonds and shall be deemed to be Crossover Refunded Bonds if the Trustee shall have received and shall hold in the applicable Crossover Escrow Account in trust therefor and irrevocably committed thereto.

(a) moneys, together with any amounts described in paragraph (b) below, sufficient, or

(b) Defeasance Obligations, which shall not contain provisions permitting the redemption thereof at the option of the issuer, the principal of and interest on which when due, and without any reinvestment thereof, will provide moneys, together with any amounts described in paragraph (a) above, sufficient:

(i) for the payment of all principal of and premium, if any, on such Crossover Refunded Bonds as the same become due, whether at their maturity or redemption dates or otherwise, as the case may be, or if a default in payment shall have occurred on any maturity or redemption date, then for the payment of all principal of and premium on such Crossover Refunded Bonds to the date of the tender of payment; provided, that if any of those Crossover Refunded Bonds are to be redeemed prior to the maturity thereof, notice of that redemption shall have been duly given or irrevocable provision shall have been duly made for the giving of that notice, and

(ii) for the payment of interest (in whole or in part) on such Crossover Refunding Bonds.

Prior to the Crossover Date, the Crossover Amount may be pledged as security for the Crossover Refunding Bonds, such Crossover Refunded Bonds, or both. The moneys and proceeds of such Defeasance Obligations shall, to the extent needed, be used for the foregoing purposes or used to reimburse an Enhancement Facility Provider for amounts advanced by it for the foregoing purposes.

“Crossover Refunding” shall mean a transaction in which Crossover Refunding Bonds are issued to refund Crossover Refunded Bonds and in which a Crossover Amount is deposited in a Crossover Escrow Account.

“Crossover Refunding Bonds” shall mean Bonds, to the extent that any proceeds from the sale thereof shall, upon deposit in a Crossover Escrow Account, constitute a Crossover Amount.

“Current Expenses” shall mean the reasonable and necessary current expenses, incurred by the Authority in the ordinary course of business, of maintaining, repairing and operating the properties constituting the Systems or causing said maintenance, repair and operation, which expenses shall exclude depreciation, reserves for allowances for doubtful accounts and other non-cash reserves or expenses. For purposes of Section 7.01 and the Annual Budget required by Section 7.02, Current Expenses will be calculated on an accrual basis. For all other purposes of this Agreement, Current Expenses will be calculated on a cash basis. Notwithstanding any accounting treatment to the contrary, the amount of any termination or similar payment under any interest rate swap or similar hedge agreement shall, if payable by the Authority, not be taken into account in computing Current Expenses to the extent the same is paid by or on behalf of the Authority from the proceeds of any Indebtedness.

“Current Expense Fund” shall mean the Current Expense Fund established in Section 5.01.

“Current Interest Commencement Date” shall mean, with respect to any particular Deferred Income Bonds, the date specified in the Supplemental Agreement authorizing such Deferred Income Bonds (which date must be prior to the maturity date for such Deferred Income Bonds) after which interest accruing on such Deferred Income Bonds shall be payable periodically on dates specified in such Supplemental Agreement with the first such payment date being the first such periodic date immediately succeeding such Current Interest Commencement Date.

“Debt Service Reserve Facility” shall mean (i) any irrevocable, unconditional letter of credit issued by a bank or savings and loan association whose long-term uncollateralized debt obligations are rated in one of the two highest long-term rating categories (without regard to any gradations within such categories) by each Rating Agency, and (ii) any insurance policy providing substantially equivalent liquidity as an instrument described in clause (i) and which is issued by a municipal bond or other insurance company, the obligations insured by which are rated in one of the two highest long-term rating categories (without regard to any gradations within such categories) by each Rating Agency and which is used, to the extent permitted hereunder, to fund all or a portion of the applicable Debt Service Reserve Requirement, provided that (x) the term of the Debt Service Reserve Facility is at least 36 months, (y) the only condition to a drawing under the Debt Service Reserve Facility is insufficient amounts in the applicable fund or account held by the Trustee to which such Facility relates when needed to pay debt service on the applicable Bonds or the expiration of such Facility and (z) the provider of the Debt Service Reserve Facility shall notify the Authority and the Trustee at least 24 months prior to the expiration of such Facility.

“Debt Service Reserve Requirement” shall mean with respect to each Account within the Senior Debt Service Reserve Fund, the Senior Subordinate Debt Service Reserve Fund or the Subordinate Debt Service Reserve Fund, as applicable, as of any particular date of computation an amount equal to (i) the amount set forth in the Supplemental Agreement authorizing the

issuance of a particular Series of Bonds, or (ii) if not otherwise specified in a Supplemental Agreement authorizing the issuance of a particular Series of Bonds, the lesser of (x) maximum Annual Debt Service on the Outstanding Bonds secured by such Account, payable in any Fiscal Year for the related Bonds, (y) ten percent (10%) of the proceeds of the Outstanding Bonds secured by such Account calculated in accordance the Code and (z) 125% of the average Annual Debt Service for the payment of the principal of and interest on the Outstanding Bonds secured by such Account.

“Deferred Income Bonds” shall mean any Bonds as to which interest accruing prior to the Current Interest Commencement Date is (i) compounded periodically on the dates specified in the Supplemental Agreement authorizing such Deferred Income Bonds and (ii) payable only at redemption or other payment thereof pursuant to such Supplemental Agreement.

“Defeasance Obligations” shall mean any non-callable and non-prepayable obligations described in clauses (a), (b) or (c) of the definition of Investment Obligations.

“Deposit Date” shall mean the last Business Day of each month.

“Disbursement Schedule” shall mean the schedule by that name referred to in Section 7.02.

“Enhancement Facility” shall mean any letter of credit, standby purchase agreement, line of credit, policy of bond insurance, surety bond, guarantee or similar instrument, or any other agreement, securing, providing liquidity for, supporting or enhancing outstanding Indebtedness, including any Bond Insurance Policy, Debt Service Reserve Facility, Operating Reserve Facility or any combination of the foregoing, or any agreement relating to the reimbursement thereof, whether or not such instrument or agreement has been drawn upon, obtained by the Authority.

“Enhancement Facility Provider” shall mean the provider or issuer of any Enhancement Facility.

“Event of Default” shall mean any of the events enumerated in Section 8.01.

“Executive President” shall mean the Executive President of the Authority or any other person designated by the Board or by the Authority’s legislation or by the bylaws of the Authority to perform the functions of the Executive President.

“Fiduciary” shall mean (i) the Trustee, (ii) a Qualified Depository or any other bank or trust company designated as trustee, fiscal agent, administrative agent or other fiduciary for Outstanding Other System Indebtedness and (iii) with respect to the Term Loan, Banco Popular de Puerto Rico, as administrative agent.

“Fiscal Year” shall mean the period commencing on the first day of July of any year and ending on the last day of June of the following year or any other twelve month period designated by the Board.

“Fitch” shall mean Fitch Ratings, New York, New York, or its successors or assigns.

“Government Certificates” shall mean certificates or other instruments representing proportionate ownership of Government Obligations, which Government Obligations are held by a bank or trust company organized under the laws of the United States of America or any of its states or territories in the capacity of custodian of such certificates or instruments.

“Government Obligations” shall mean (i) direct obligations of, or obligations the payment of the principal of and interest on which are unconditionally guaranteed by, the United States of America; (ii) Government Certificates, under which the owner of the investment is the real party in interest and has the right to proceed directly and individually against the obligor on the underlying obligations described in said clause (i) and which underlying obligations are not available to satisfy any claim of the custodian or any person claiming through the custodian or to whom the custodian may be obligated; and (iii) evidences of ownership of proportionate interests in future interest or principal payments on obligations specified in clauses (i) and (ii) above held by a bank (including the Trustee) or trust company as custodian, under which the owner of the investment is the real party in interest and has the right to proceed directly and individually against the underlying obligations described in said clauses (i) and (ii) and which underlying obligations are not available to satisfy any claim of the custodian or any person claiming through the custodian or to whom the custodian may be obligated.

“Guaranty Act” shall mean Act No. 45 of the Legislature of Puerto Rico, approved July 28, 1994, as amended.

“Hedge Agreement” shall mean an interest rate swap or other hedging agreement, arrangement or security however denominated, with or guaranteed by a Qualified Counterparty and expressly identified pursuant to its terms as being entered into in connection with and in order to hedge interest rate fluctuations on all or a portion of any Bonds where (i) interest on such Indebtedness or such portion of such Indebtedness is payable at a variable rate of interest for any future period of time or is calculated at a varying rate per annum, and (ii) a fixed rate is specified as payable by the Authority in such agreement, or such Indebtedness, taken together with such agreement, results in a net fixed rate payable by the Authority for such period of time (the “Hedge Fixed Rate”), assuming the Authority and the Qualified Counterparty(ies) with whom the Authority has entered into the agreement make all payments required to be made by the terms of the agreement. If the required rating of a Qualified Counterparty is lowered below the minimum rating level specified herein for such Qualified Counterparty and collateral has not been posted as required by such Hedge Agreement, such Hedge Agreement shall no longer constitute a “Hedge Agreement” hereunder.

“Improvements” shall mean such betterments, renewals and replacements of the Systems or any part thereof, and such additions and extensions thereto, as may be necessary or desirable to keep the same in proper condition for the safe, efficient and economic operation thereof and for the interconnection thereof where feasible to integrate into the Systems any unit or part thereof, and shall include such water and sewer projects as may be authorized to be constructed or acquired under the provisions of the Act, and such betterments, renewals and replacements of such properties and such additions and extensions thereto as may be necessary or desirable for continuous and efficient service by or on behalf of the Authority to the public.

“Indebtedness” shall mean, collectively, Bonds, Other System Indebtedness, Commonwealth Supported Obligations and Commonwealth Guaranteed Indebtedness.

“Insurance Consultant” shall mean any qualified and experienced firm or corporation retained by the Authority to perform the act and duties of an Insurance Consultant required by the provisions of this Agreement.

“Interest Accrual” shall mean for any period the amount of interest on Indebtedness that would accrue during such period if such interest accrued ratably on the basis of a year consisting of twelve (12) thirty-day months. Unless otherwise provided by resolution of the Authority or a Supplemental Agreement, the monthly accrual in respect of interest on Indebtedness shall commence on the later to occur of the date of issue of the applicable Indebtedness and the date that is six months prior to the due date of such interest and shall end on the first day of the month following the relevant Deposit Date. In the case of Variable Rate Indebtedness (i) other than the Term Loan, the Interest Accrual shall be calculated based on the sum of the interest accrued through the Business Day preceding the relevant Deposit Date and the interest (calculated at the rate on such Indebtedness on the Business Day preceding the Deposit Date plus one percent (1%)) that would accrue on such Indebtedness from the Deposit Date to the later to occur of the first day of the next calendar month and any interest payment date on such Indebtedness occurring prior to the next Deposit Date and (ii) with respect to the Term Loan, the amount accrued during such period as calculated thereunder.

“Interest Payment Date” shall mean each date on which interest on Indebtedness or any portion thereof is scheduled to be due and payable, as provided in the Supplemental Agreement, resolution or other document authorizing the issuance of such Indebtedness.

“Investment Obligations” shall mean any of the following, to the extent that the same is legal for the investment of public funds under the laws of the Commonwealth of Puerto Rico:

- (a) Government Obligations;
- (b) Obligations issued or guaranteed by any of the following:
 - (i) Federal Home Loan Bank System,
 - (ii) Export-Import Bank of the United States,
 - (iii) Federal Financing Bank,
 - (iv) Government National Mortgage Association,
 - (v) Federal Home Loan Mortgage Company,
 - (vi) Federal Housing Administration,
 - (vii) Private Export Funding Corp.,
 - (viii) Federal National Mortgage Association,
 - (ix) Federal Farm Credit Bank,
 - (x) Resolution Funding Corporation, and
 - (xi) Rural Economic Community Development Administration (formerly, Farmers Home Administration).

or any indebtedness issued or guaranteed by any instrumentality or agency of the United States;

(c) Refunded municipal obligations rated in the highest long-term rating category by at least one Rating Agency (without regard to any gradations within such category) and meeting the following conditions:

(i) (A) such obligations are not to be redeemed prior to maturity or the trustee therefor has been given irrevocable instructions concerning their call for redemption, and (B) the issuer of such obligations has covenanted not to redeem such obligations other than as set forth in such instructions;

(ii) such obligations are secured by Government Obligations that may be applied only to interest, principal, and premium payments on such obligations;

(iii) the principal of or interest on such Government Obligations (plus any cash held in escrow with respect to such obligations) are sufficient to meet the liabilities of such obligations;

(iv) such Government Obligations are held by an escrow agent or trustee; and

(v) such Government Obligations are not available to satisfy any other claims, including those against said trustee or escrow agent;

(d) Direct and general, long-term obligations of any state of the United States of America, the District of Columbia or the Commonwealth of Puerto Rico (each a "State"), to the payment of which the full faith and credit of such State is pledged and that are rated in any of the three highest long-term rating categories or in the highest short-term rating category (without regard to any gradations within such categories) by at least two Rating Agencies;

(e) Direct and general, short-term obligations of any State, to the payment of which the full faith and credit of such State are pledged and that are rated in either of the two highest short-term rating categories (without regard to any gradations within such categories) by at least two Rating Agencies;

(f) Interest-bearing demand or time deposits with, or interests in money market portfolios issued by, State banks or trust companies, national banking associations or savings and loan associations that are members of the Federal Deposit Insurance Corporation ("FDIC"), including the Trustee or any of its affiliates. Such deposits or interests must be (i) continuously and fully insured by FDIC or (ii) fully secured by Government Obligations or obligations described in clause (b) of this definition ("Clause (b) Securities") or (iii) secured by surety company bonds held by the Trustee which, when executed, shall be for an amount equal to the amount of such interest-bearing demand or time deposits that are not secured by (i) or (ii) above. Such Government Obligations or Clause (b) Securities must have a market value at all times at least equal to the principal amount of the deposits or interests. The Government Obligations or Clause (b) Securities must be held by a third party (who shall not be the provider of the collateral), or by any Federal Reserve Bank or depository, as custodian for the institution issuing the deposits or interests. Such third party shall have a perfected first lien in the Government Obligations or Clause (b) Securities serving as collateral, and such collateral is to be free from all other third party liens;

(g) Repurchase agreements entered into with a Qualified Counterparty. The repurchase agreement shall be in respect of Government Obligations or Clause (b) Securities. The repurchase agreement securities and, to the extent necessary, Government Obligations or Clause (b) Securities, plus accrued interest, shall be maintained in an amount equal to at least 100% of the amount invested in the repurchase agreements. In addition, the provisions of the repurchase agreement shall meet the following additional criteria;

- (A) An Authority designated third party (who shall not be the provider of the collateral selected by the Authority) has possession of the repurchase agreement securities and the Government Obligations or Clause (b) Securities;
- (B) Failure by the repurchase agreement provider to cure any deficiency in the requisite collateral levels within two (2) Business Days will require the person having possession of the securities to liquidate the securities immediately; and
- (C) The repurchase agreement provider represents to grant the person having possession of the securities a perfected, first priority security interest in the securities;

(h) Money market accounts of any state or federal bank, including the Trustee or any of its affiliates, or bank whose holding parent company is rated in any of the three highest long-term rating categories or the highest short-term rating category (without regard to any gradations within such categories) by at least two Rating Agencies;

(i) Investment agreements the issuer or guarantor of which is a Qualified Counterparty;

(j) Any debt or fixed income security the issuer of which is rated in any of the three highest long-term rating categories or the highest short-term rating category (without regard to any gradations within such categories) by at least two Rating Agencies;

(k) Demand deposits, including interest-bearing money market accounts trust deposits, time deposits or bankers acceptances (in each case having maturities of not more than 360 days) of a domestic bank (including the Trustee or any of its affiliates), including a branch office of a foreign bank, which branch office is located in the United States, provided that such bank at the time of purchase, has a short-term bank deposit rating of “prime-1” or better by Moody’s and a rating of “A-1” or better by Standard & Poor’s; and

(l) Money market mutual funds, including, without limitation any mutual fund for which the Trustee or any of its affiliates serves as investment manager, administrator, shareholder servicing agent, and/or custodian or sub custodian, notwithstanding that (i) the Trustee or such affiliate receives fees from such funds for services rendered, (ii) the Trustee or such affiliate charges and collects fees for services rendered pursuant to this Agreement which fees are separate from the fees received from such funds, and (iii) services performed for such funds and pursuant to this Agreement may at times duplicate those provided to such funds by the Trustee or such affiliate.

“Moody’s” shall mean Moody’s Investors Service, New York, New York, or its successors or assigns.

“1995 Resolution Trustee” shall mean the Fiscal Agent under the Authority’s Resolution No. 1583, adopted December 7, 1995 and as amended and restated as of March 1, 2008.

“Operating Reserve Facility” shall mean any irrevocable, unconditional letter of credit or revolving line of credit issued by (i) Government Development Bank for Puerto Rico or (ii) a bank or savings and loan association whose long-term uncollateralized debt obligations are rated in any of the three highest long-term rating categories or in the two highest short-term rating categories (without regard to any gradations within such categories) by each Rating Agency and which Facility is used, to the extent permitted hereunder, to fund all or a portion of the Operating Reserve Requirement.

“Operating Reserve Fund” shall mean the Operating Reserve Fund established in Section 5.01.

“Operating Reserve Requirement” shall mean \$150,000,000 until March 1, 2013, and thereafter (i) if there is an Operating Reserve Facility on deposit in the Operating Reserve Fund, shall mean for the term of such Operating Reserve Facility (without regard to any renewal provisions contained therein) an amount equal to at least ninety (90) days of Current Expenses determined on the first day of the Fiscal Year in which such Operating Reserve Facility is delivered or renewed as set forth in the Annual Budget for such Fiscal Year or (ii) if funded from Authority Revenues, shall mean an amount equal to not less than ninety (90) days of Current Expenses determined annually based on the Current Expenses relating to the Fiscal Year of such calculation as set forth in the Annual Budget for such Fiscal Year.

“Operating Revenue Fund” shall mean the Operating Revenue Fund established in Section 5.01.

“Operating Revenues” shall mean all moneys received by or on behalf of the Authority, including (i) the moneys derived by or on behalf of the Authority from the sale of water produced, treated or distributed by, or the collection, transmission, treatment or disposal of sewage by the Systems, (ii) any proceeds of use and occupancy insurance on the Systems or any part thereof, (iii) except as provided in the following sentence, any income from the investments made under this Agreement, (iv) any special assessments, including assessments in the nature of impact fees, (v) amounts, if any, paid from the Rate Stabilization Account into the Operating Revenue Fund in any Fiscal Year minus the amounts, if any, paid from the Operating Revenue Fund into the Rate Stabilization Account during the same Fiscal Year; and (vi) regularly scheduled payments received under any Qualified Swap or Hedge Agreement during such period. In no event shall Operating Revenues include (i) income from the investment of moneys on deposit to the credit of the Construction Fund, proceeds of insurance (except use and occupancy insurance) or condemnation awards (which are required to be deposited directly to the credit of the Capital Improvement Fund), (ii) proceeds of sales of property constituting a part of the Systems (which are required to be deposited directly to the credit of the Capital Improvement Fund), (iii) the proceeds of Bonds or other Indebtedness, (iv) any governmental grants or

appropriations available to pay Current Expenses of the Authority, including grants or appropriations received by the Authority and specifically made for the payments of principal of and interest on obligations of the Authority or for reimbursing the Authority for such payments, (v) any amounts received from the Commonwealth of Puerto Rico on account of Commonwealth Guaranteed Indebtedness (which is required to be deposited directly in the Commonwealth Payments Fund) or Commonwealth Supported Obligations (which is required to be deposited in the Commonwealth Payments Fund), (vi) any amounts transferred from the Budgetary Reserve Fund to the Trustee and (vii) any termination or similar payment under any interest rate swap or similar hedge agreement received by the Authority (which are required to be deposited directly to the credit of the Capital Improvement Fund).

“Opinion of Counsel” or “Opinion” shall mean an opinion of any attorney or firm of attorneys acceptable to the Trustee, who may be counsel for the Authority but shall not be an employee of either the Authority or the Trustee.

“Other System Indebtedness” shall mean the Term Loan and any other obligation of the Authority, including Qualified Swaps and Hedge Agreements and any termination payments thereunder but not including Bonds, that the Authority is required, or has elected, to treat as payable on a parity with Bonds with respect to the pledge of Authority Revenues.

“Outstanding” shall mean Indebtedness that has been duly issued and delivered under this Agreement or under other documents and has not been (i) canceled or surrendered to the Trustee or a comparable fiduciary for cancellation or (ii) deemed to have been paid as provided in Article XI or under similar provisions of such different documents, has not had other obligations issued in exchange therefor or had its principal become due and moneys sufficient for its payment deposited with the Trustee as provided in Section 2.09, or otherwise so treated under comparable issuance documents.

In determining whether holders of a requisite aggregate principal amount of the Outstanding Indebtedness have concurred in any request, demand, authorization, direction, notice, consent or waiver under this Agreement or other applicable documents, words referring to or connoting “principal of” or “principal amount of” Outstanding Indebtedness shall include the Accreted Value or similar value of Indebtedness as of the immediately preceding interest compounding or similar date for such Indebtedness. Indebtedness that is owned by or for the benefit of the Authority shall be disregarded and deemed not to be Outstanding for the purpose of any such determination.

“Principal Accrual” shall mean for any period the amount of principal or sinking fund installment on Indebtedness that would accrue during such period if such principal or sinking fund installment accrued ratably on the basis of a year consisting of twelve (12) thirty-day months. Unless otherwise provided by resolution of the Authority or a Supplemental Agreement, the monthly accrual in respect of the principal of Indebtedness or sinking fund installment for a Term Bond shall commence on the first day of the twelfth month preceding the due date of such principal or sinking fund installment and shall end on the first day of the month succeeding the relevant Deposit Date.

“Qualified Counterparty” shall mean (at the time of delivery of the applicable Investment Obligation or the execution of the applicable Hedge Agreement or Qualified Swap) (i) a bank, trust company, savings and loan association, national banking association, insurance company or other financial services company, including the Trustee or any of its affiliates, whose senior long term debt obligations, other senior unsecured long term obligations, financial program rating, counterparty rating or claims paying ability are rated in any of the three highest long-term rating categories (without regard to any gradations within such categories) by a Rating Agency or any institution listed as a primary government securities dealer in the Federal Reserve Bank of New York and (ii) in the case of Hedge Agreements and Qualified Swaps, a person whose obligations are guaranteed by a person whose senior long term debt obligations, other senior unsecured long term obligations, financial program rating, counterparty rating or claims paying ability, are rated in any of the three highest long-term rating categories (without regard to any gradations within such categories) by a Rating Agency, or whose obligation, if any, to make payment to the Authority upon the termination of the subject Hedge Agreement or Qualified Swap is fully collateralized by Investment Obligations described in clauses (a), (b) or (c) of the definition of Investment Obligations; provided, however, that such obligation shall be deemed to be fully collateralized if the Investment Obligations shall have a market value, determined periodically in accordance with such Hedge Agreement or Qualified Swap, that is not less than 100% of the amount of any termination payment. If the required rating of a Qualified Counterparty is lowered below the minimum rating level specified herein for such Qualified Counterparty and collateral has not been posted as required by such Hedge Agreement, such Qualified Counterparty shall no longer constitute a “Qualified Counterparty” hereunder.

“Qualified Depository” or **“Depositaries”** shall mean one or more banks or trust companies meeting the requirements of Section 10.13 and designated or permitted to be designated by the Secretary of the Treasury of the Commonwealth as a depository for funds of agencies and instrumentalities of the Commonwealth of Puerto Rico, which have been designated as depositaries of the Authority by resolution of the Board remaining in full force and effect. A certified copy of each resolution of the Board designating a Qualified Depository or Depositaries shall be filed with the Trustee.

“Qualified Swap” shall mean a contract pursuant to which a Qualified Counterparty has agreed to make payments to the Authority during a particular period equal to the interest payable on specified Indebtedness or on a specified nominal amount at the actual rate or rates or, if on a nominal amount at a stated rate or rates, payable thereon and, in consideration therefor, the Authority agrees to make payments to the Qualified Counterparty equal to the interest required to be paid on the specified Indebtedness or stated to be due on the nominal amount during the period calculated as if the specified Indebtedness or nominal amount bore an assumed rate (fixed or variable) of interest specified in the contract.

“Rate Covenant” shall mean the obligation of the Authority to fix, charge, collect and revise rates, fees and other charges for the use of and the services furnished by the Systems sufficient to meet the requirements of Section 7.01(a).

“Rate Stabilization Account” shall mean the account within the Surplus Fund established in Section 5.01 hereof.

“**Rating Agency**” or “**Rating Agencies**” shall mean Fitch, Moody’s, Standard & Poor’s or any other nationally recognized securities rating agency which then maintains a rating on Bonds at the request of the Authority.

“**Refundable Principal Installment**” shall mean the Term Loan, Bond Anticipation Notes or any other Indebtedness, the principal of which the Authority intends to pay with moneys which are not Authority Revenues, provided that such intent shall have been expressed in the Supplemental Agreement or other document authorizing such Indebtedness and provided further that such Indebtedness shall be a Refundable Principal Installment only through the date which is thirty (30) days prior to the date on which such Indebtedness comes due or such earlier time as the Authority has determined to pay such Indebtedness with moneys which are not Authority Revenues.

“**Reserve Determination Date**” shall mean (a) each Interest Payment Date for Bonds, or (b) any other date established in writing by an Authorized Representative of the Authority for the valuation of obligations on deposit in any Senior Debt Service Reserve Account or Senior Subordinate Debt Service Reserve Account.

“**Secretary**” shall mean the Secretary or Assistant Secretary of the Authority from time to time, or if there is no secretary or assistant secretary, then any person designated by the Board or by the by-laws of the Authority to perform the functions of the Secretary.

“**Senior Bond Fund**” shall mean the Senior Bond Fund established in Section 5.01.

“**Senior Bonds**” shall mean Bonds issued pursuant to Section 2.16.

“**Senior Debt Service Reserve Fund**” shall mean the Senior Debt Service Reserve Fund established in Section 5.01.

“**Senior Indebtedness**” shall mean, collectively, Senior Bonds and any Other System Indebtedness secured on a parity therewith.

“**Senior Interest Account**” shall mean the Senior Interest Account in the Senior Bond Fund established in Section 5.01.

“**Senior Principal Account**” shall mean the Senior Principal Account in the Senior Bond Fund established in Section 5.01.

“**Senior Sinking Fund Account**” shall mean the Senior Sinking Fund Account in the Senior Bond Fund established in Section 5.01.

“**Senior Subordinate Bond Fund**” shall mean the Senior Subordinate Bond Fund established in Section 5.01.

“**Senior Subordinated Bonds**” shall mean Bonds issued pursuant to Section 2.17.

“**Senior Subordinated Debt Service Reserve Fund**” shall mean the Senior Subordinated Debt Service Reserve Fund established in Section 5.01.

“Senior Subordinated Indebtedness” shall mean, collectively, Senior Subordinated Bonds and any Other System Indebtedness secured on a parity therewith.

“Senior Subordinate Interest Account” shall mean the Senior Subordinate Interest Account in the Senior Subordinate Bond Fund established in Section 5.01.

“Senior Subordinate Principal Account” shall mean the Senior Subordinate Principal Account in the Senior Subordinate Bond Fund established in Section 5.01.

“Senior Subordinate Sinking Fund Account” shall mean the Senior Subordinate Sinking Fund Account in the Senior Subordinate Bond Fund established in Section 5.01.

“Series” or **“Series of Bonds”** shall mean a separate series of Bonds issued under this Agreement and a Supplemental Agreement.

“Series 2008 Bonds” shall mean the initial series of Bonds issued under this Agreement.

“Standard and Poor’s” shall mean Standard & Poor’s Ratings Service, a Division of The McGraw-Hill Companies, Inc., New York, New York, or its successors or assigns.

“Subordinate Bond Fund” shall mean the Subordinate Bond Fund established in Section 5.01.

“Subordinate Bonds” shall mean Bonds issued pursuant to Section 2.18.

“Subordinated Debt Service Reserve Fund” shall mean the Subordinated Debt Service Reserve Fund established in Section 5.01.

“Subordinated Indebtedness” shall mean, collectively, Subordinate Bonds and any Other System Indebtedness secured on a parity therewith.

“Subordinate Interest Account” shall mean the Subordinate Interest Account in the Subordinate Bond Fund established in Section 5.01.

“Subordinate Principal Account” shall mean the Subordinate Principal Account in the Subordinate Bond Fund established in Section 5.01.

“Subordinate Sinking Fund Account” shall mean the Subordinate Sinking Fund Account in the Subordinate Bond Fund established in Section 5.01.

“Subordinated Obligations” shall have the meaning set forth in Section 12.01.

“Supplemental Agreement” shall mean any Agreement supplementing or modifying the provisions of this Agreement entered into by the Authority and the Trustee pursuant to Sections 9.01 or 9.02.

“Surplus Fund” shall mean the Surplus Fund established in Section 5.01.

“**Systems**” shall mean collectively, the existing water supply, treatment and distribution system and the existing sewage collection, transmission, treatment and disposal system owned or operated by or on behalf of the Authority, together with all Improvements, and shall include any rights of service, leasehold interests or other contractual rights of the Authority in said Systems and any Improvements.

“**Tender Indebtedness**” shall mean any Indebtedness a feature of which is an option or obligation on the part of the Holders of such Indebtedness to tender all or a portion of such Indebtedness to a fiduciary for purchase or redemption prior to the stated maturity date of such Indebtedness, which may include Variable Rate Indebtedness with such a feature.

“**Term Bonds**” shall mean any Bonds stated to mature on a specified date and required to be redeemed in part prior to maturity according to a sinking fund schedule.

“**Term Loan**” shall mean that loan made to the Authority pursuant to the Term Loan Agreement, dated as of September 8, 2006, by and among the Authority, Banco Popular de Puerto Rico, as administrative agent, and the other financial institutions which are parties thereto.

“**Trustee**” shall mean Banco Popular de Puerto Rico or its successors serving as such hereunder.

“**Trustee’s Fees and Expenses**” shall mean an initial acceptance fee and an annual administrative fee plus expenses in accordance with an agreement between the Trustee and the Authority, as the same may be renegotiated from time to time.

“**Variable Rate Indebtedness**” shall mean any Indebtedness the interest rate on which is not established at the time of incurrence at a fixed or constant rate, provided that (a) the maximum interest rate on such Indebtedness and the maximum rate payable to any Enhancement Facility Provider with respect to such Indebtedness shall be specified at the time of issuance of such Indebtedness; (b) the Enhancement Facility shall cause such Indebtedness to be rated by a Rating Agency in the two highest long-term or one of the two highest short-term rating categories (without regard to any gradations within such categories) of such Rating Agency; (c) any obligation of the Authority to reimburse such Enhancement Facility Provider shall (i) amortize in equal annual installments of principal and interest over a term of no less than the shorter of ten years and stated final maturity of such Variable Rate Indebtedness or (ii) be payable solely from amounts on deposit in the Subordinate Debt Service Fund, and (d) any two or more Series of Bonds that are issued on the same date, the interest on which when such Series are considered in the aggregate shall be a fixed or constant rate, shall not be considered Variable Rate Indebtedness.

Section 1.03 Rules of Construction.

Unless the context clearly indicates to the contrary, the following rules shall apply to the construction of this Agreement:

(a) Words importing the singular number shall include the plural number and vice versa.

(b) Words importing the redemption or calling for redemption of Bonds shall not be deemed to refer to or connote the payment of Bonds at their stated maturity.

(c) All references herein to particular Articles or Sections are references to Articles or Sections of this Agreement.

(d) The headings herein and Table of Contents to the Agreement are solely for convenience of reference and shall not constitute a part of this Agreement nor shall they affect its meaning, construction or effect.

(e) All references herein to the payment of Bonds are references to payment of principal of and premium, if any, and interest on Bonds.

ARTICLE II

EXECUTION, AUTHENTICATION, DELIVERY REGISTRATION AND FORM OF BONDS

Section 2.01 Form and Details of Bonds.

Unless otherwise provided in the applicable Supplemental Agreement, the Bonds shall be substantially in the form set forth in Exhibit A hereto, shall bear an appropriate series designation, shall be issuable only as registered Bonds without coupons, in denominations of \$5,000 and multiples thereof, and shall be appropriately numbered. The Bonds shall be issued in fully registered form.

The Bonds of a Series shall be payable, with respect to interest, principal and premium, if any, in any coin or currency of the United States of America which at the time of payment is legal tender for public and private debts (or other coin or currency provided for in the applicable Supplemental Agreement). The principal of Bonds shall be payable only to the Holder or his legal representative at the principal corporate trust office of the Trustee and at such other office or agency of any paying agent as the Board may designate from time to time upon the presentation and surrender of the Bonds (except as otherwise contemplated in Section 2.05 hereof).

The Bonds of each Series shall be dated as provided in the applicable Supplemental Agreement; shall bear interest, which may be fixed or variable, at the rates provided in such Supplemental Agreement, from the Interest Payment Date next preceding the date on which they are authenticated, unless authenticated on an Interest Payment Date, in which event they shall bear interest from such Interest Payment Date, or unless authenticated before the first Interest Payment Date in which event they shall bear interest from their date; provided, however, that if at the time of authentication of any Bond interest is in default, such Bond shall bear interest from the date to which interest has been paid. Unless otherwise provided in the applicable Supplemental Agreement, interest on the Bonds shall be computed on the basis of a three hundred sixty (360) day year of twelve (12) thirty (30) day months.

Capital Appreciation Bonds shall bear interest as described under the defined term Accreted Value, payable only upon redemption or maturity thereof, and Deferred Income Bonds

shall bear interest as described under the defined term Appreciated Value, payable from and after the Interest Commencement Date or upon the prior redemption thereof.

Prior to the issuance of Variable Rate Indebtedness, the applicable Supplemental Agreement shall specify, without limitation, the interest rate calculation methods and any conversion features, and any Enhancement Facility which may be drawn upon to make principal and interest payments on the Variable Rate Indebtedness. The Variable Rate Indebtedness may provide that the Holder of any such Bond may demand payment of principal and interest within a stated period after delivering notice to a designated agent for the Authority and providing a copy of the notice with the tender of the Variable Rate Indebtedness to such agent. The designated agent for the Authority, in accordance with the terms of a remarketing agreement, may provide for the resale or redelivery of the Variable Rate Indebtedness on behalf of the Authority at a price provided for in such agreement. If the Variable Rate Indebtedness shall not be resold or redelivered within a stated period, the agent for the Authority may be authorized to draw upon a previously executed Enhancement Facility for payment of interest and principal for a particular Series of Variable Rate Indebtedness to which such Enhancement Facility shall pertain. The particular form or forms of such demand provisions, the period or periods for payment of principal and interest after delivery of notice, the appointment of the agent for the Authority, the terms and provisions for the remarketing agreement, and the terms and provisions of the Enhancement Facility shall be as set forth in the applicable Supplemental Agreement.

The Bonds shall be lettered and numbered in such manner and shall be in the denominations provided in the applicable Supplemental Agreement. Unless otherwise specified in the applicable Supplemental Agreement, in the event that interest is not punctually paid or duly provided for, such interest shall forthwith cease to be payable to the Holder shown on the registration books held by the Trustee at the close of business on the fifteenth (15th) day of the calendar month preceding such Interest Payment Date and may be paid to the person in whose name Bonds are registered at the close of business on a special record date to be fixed by the Trustee, on a special payment date designated by the Trustee, notice having been given by the Trustee to the Holders not less than ten (10) days prior to such special record date or may be paid at any time in any other lawful manner not inconsistent with the requirements of any securities exchange on which Bonds may be listed and upon such notice as may be required by such exchange, or as more fully provided for in the applicable Supplemental Agreement.

Section 2.02 Execution of Bonds.

Unless otherwise provided in the applicable Supplemental Agreement, the Bonds shall be signed in the name of the Authority by the manual or facsimile signature of the Executive President, and the Authority's seal shall be affixed thereto or a facsimile thereof printed thereon, attested by the manual or facsimile signature of the Secretary of the Authority. In case any officer whose signature or a facsimile of whose signature shall appear on any Bond shall cease to be such officer before the delivery of such Bond, such signature or such facsimile shall nevertheless be valid and sufficient for all purposes the same as if he had remained in office until such delivery. Any Bond may bear the facsimile signature of or may be signed by such persons as at the actual time of the execution thereof shall be the proper officers to sign such Bond although at the date of such Bond such persons may not have been such officers.

Section 2.03 Authentication of Bonds.

Unless otherwise provided in the applicable Supplemental Agreement, the Bonds shall bear a certificate of authentication and shall not be valid until the Trustee shall have executed the certificate of authentication and inserted the date of authentication thereon. The Trustee shall authenticate each Bond with the signature of an authorized officer or employee, but it shall not be necessary for the same person to authenticate all of the Bonds or all of the Bonds of any Series. Only such authenticated Bonds shall be entitled to any right or benefit under this Agreement, and such certificate on any Bond issued hereunder shall be conclusive evidence that the Bond has been duly issued and is secured by the provisions hereof.

Section 2.04 Registration and Transfer of Bonds; Persons Treated as Owners.

(a) All Bonds issued under this Agreement shall be negotiable, subject to the provisions for registration and registration of transfer thereof contained herein or in the Bonds.

(b) The Trustee shall maintain registration books with respect to each Series of Bonds at the offices of the Trustee and shall provide for the registration, registration of transfer and exchange of any Bond of such Series under such reasonable regulations as the Trustee may prescribe.

(c) Each Bond shall be registered and the transfer of such Bond shall be registered only upon the registration books maintained by the Trustee, by the Bondholder thereof in person or by his attorney duly authorized in writing, upon presentation and surrender thereof together with a written instrument of transfer satisfactory to the Trustee duly executed by the registered Bondholder or his duly authorized attorney. Upon surrender for registration of transfer of any such Bond, the Authority shall cause to be executed and the Trustee shall authenticate and deliver, in the name of the transferee, one or more new Bonds of the same Series, interest rate, maturity, principal amount and date as the surrendered Bond, as fully registered Bonds only.

(d) The Trustee shall treat the registered owner as the person exclusively entitled to payment of principal, premium, if any, and interest and the exercise of all other rights and powers of the owner on the registration books, except that interest payments shall be made to the person shown as owner on the fifteenth day of the month preceding each Interest Payment Date.

Section 2.05 Exchange of Bonds; Charges for Exchange of Bonds.

Bonds, upon presentation and surrender thereof to the Trustee together with written instructions satisfactory to the Trustee, duly executed by the registered Bondholder or his attorney duly authorized in writing, may be exchanged for an equal aggregate principal amount of fully registered Bonds of the same Series and tenor.

Any exchange of Bonds shall be at the expense of the Authority, except that the Trustee may charge the person requesting such exchange the amount of any tax or other governmental charge required to be paid with respect thereto.

Section 2.06 Temporary Bonds.

Prior to the preparation of Bonds in definitive form, the Authority may issue temporary Bonds in the form of registered bonds without coupons in such denominations, or in the form of a single registered bond without coupons in a denomination equal to the aggregate principal amount of such definitive bonds of such Series, with payment record attached for the notation of payments of principal and interest, without presentation and surrender of such single registered bond, as the Authority may direct, substantially of the tenor herein set forth and with such appropriate omissions, insertions and variations as may be required.

Until definitive bonds of any Series are ready for delivery, any temporary bond may, if so provided by the Authority by resolution, be exchanged at the corporate trust office of the Trustee, without charge to the Holder thereof, for an equal aggregate principal amount of temporary registered bonds without coupons of authorized denominations, of like tenor, of the same Series and maturity and bearing interest at the same rate. The Authority shall promptly prepare, execute and deliver to the Trustee Bonds in definitive form and thereupon, upon surrender of Bonds in temporary form, the Trustee shall authenticate and deliver in exchange therefor Bonds in definitive form of the same Series and maturity having an equal aggregate principal amount. Until so exchanged, the temporary Bond or Bonds of any Series shall in all respects be entitled to the same benefit and security of this Agreement as the corresponding definitive Bonds of such Series to be issued and authenticated hereunder. No charge of any kind shall be made against the Holder upon an exchange of a temporary bond for a definitive Bond.

Section 2.07 Mutilated, Lost or Destroyed Bonds.

If any Bond has been mutilated, lost or destroyed, the Authority shall cause to be executed, and the Trustee shall authenticate and deliver, a new Bond of like date, number and tenor in exchange and substitution for and upon the cancellation of such mutilated Bond or in lieu of and in substitution for such lost or destroyed Bond; provided, however, that the Authority and the Trustee shall so execute and deliver any new Bond only if the Holder has paid the reasonable expenses and charges of the Authority and the Trustee in connection therewith and, in the case of a lost or destroyed Bond, (a) has filed with the Authority and the Trustee evidence satisfactory to them that such Bond was lost or destroyed and of his ownership thereof, and (b) has furnished indemnity satisfactory to them. If any such Bond has matured, or is about to mature, instead of issuing a new Bond the Trustee may pay the same without surrender thereof.

Upon the issuance of any new Bond under this Section, the Authority may require the payment of a sum sufficient to cover any tax or other governmental charge that may be imposed in relation thereto and any other expenses (including the fees and expenses of the Trustee) connected therewith.

Section 2.08 Cancellation and Disposition of Bonds.

All Bonds that have been surrendered for registration of transfer or exchange pursuant to Sections 2.04 and 2.05, paid (whether at maturity, by sinking fund redemption, acceleration, call for redemption or otherwise), or delivered by the Authority to the Trustee for cancellation shall not be reissued, and the Trustee shall, unless otherwise directed by the Authority, shred or

otherwise destroy such Bonds. The Trustee shall deliver to the Authority a certificate of any such shredding or other destruction.

Section 2.09 Non-Presentation of Bonds.

(a) If any Bond is not presented for payment when the principal thereof becomes due (whether at maturity, by sinking fund redemption, upon acceleration or call for redemption or otherwise), all liability of the Authority to the Holder thereof for the payment of such Bond shall be completely discharged if moneys sufficient to pay such Bond and the interest due thereon shall be held by the Trustee for the benefit of such Holder, and thereupon it shall be the duty of the Trustee to hold such moneys, subject to subsection (b) below, without liability for interest thereon, for the benefit of such Holder, who shall thereafter be restricted exclusively to such moneys for any claim of whatever nature on his part under this Agreement or on, or with respect to, such Bond.

(b) Notwithstanding anything in this Agreement to the contrary, any cash, Government Obligations or Government Certificates deposited with the Trustee for the payment of the principal of and premium, if any, and interest on any Series of Bonds remaining unclaimed for more than one year after the principal of such Series of Bonds has become due and payable shall be paid to the Authority and shall be held by the Authority in trust for the benefit of Holders of such Bonds in a separate account for seven years and thereafter in the general fund of the Authority. After such moneys have been paid to the Authority, the Holders of such Bonds shall be entitled to look only to the Authority, and all liability of the Trustee with respect to such amounts shall cease.

Section 2.10 Purposes of Bonds.

Bonds may be issued to pay Cost of Improvements and to provide funds for any other lawful purposes, including (a) to refund any obligations of the Authority, (b) to fund reserves, (c) to pay Costs of Issuance of such Bonds or (d) for a combination of such purposes.

Section 2.11 Parity of Senior Indebtedness; Pledge of Authority Revenues and Certain Funds and Accounts.

(a) This Agreement constitutes a continuing, irrevocable pledge of Authority Revenues to secure payment of all amounts due with respect to all Senior Indebtedness that may from time to time be issued or incurred and Outstanding, including but not limited to the principal of and premium, if any, and interest thereon and for the other purposes as provided herein; provided, however, that any Authority Revenues received from the Commonwealth of Puerto Rico on account of Commonwealth Guaranteed Indebtedness or Commonwealth Supported Obligations are not subject to the lien hereof and shall only be used for the purposes set forth in Section 5.12 hereof.

(b) Senior Indebtedness shall be issued pursuant to a Supplemental Agreement or evidenced by other documents and shall be equally and ratably secured by the pledge of Authority Revenues under this Agreement, without preference, priority or distinction over any other issue of Senior Indebtedness; provided, however, that the moneys in any Senior Debt Service Reserve Account shall only secure the Series of Senior Bonds to which such

Account relates, and provided, further, that any Senior Bonds may have additional security pledged to its payment. In no event will moneys in any Senior Debt Service Reserve Account be available to pay Other System Indebtedness secured on a parity with Senior Bonds. The Senior Bond Fund, the Construction Fund (but only to the extent of moneys derived from the proceeds of Senior Indebtedness on deposit therein), the Current Expense Fund, the Operating Reserve Fund, the Capital Improvement Fund and the Surplus Fund shall be trust funds and are hereby pledged equally and ratably to the payment of the principal of and interest on all Senior Indebtedness and for the other purposes as provided herein.

(c) In connection with the issuance or incurrence of Senior Indebtedness, the Authority, as provided in the applicable Supplemental Agreement or evidenced in other documentation, may create additional accounts and subaccounts within any fund or account established by this Agreement. Moneys in any account of the Senior Bond Fund relating to particular Senior Indebtedness shall only secure such Senior Indebtedness.

(d) Nothing herein shall be construed, however, as (a) requiring that any Senior Indebtedness bear interest at the same rate or in the same manner as any other Senior Bonds, have the same, or an earlier or later, maturity, or be subject to redemption prior to maturity on the same basis as any other Senior Indebtedness, (b) prohibiting the Authority from entering into financial arrangements designed to assure that moneys will be available for the payment of certain Senior Indebtedness when due, or (c) prohibiting the Authority from pledging moneys or assets of the Authority other than those pledged herein for the benefit of certain Senior Indebtedness.

(e) The lien and trust hereby created are for the benefit of the Holders of Senior Indebtedness and any Beneficiaries relating thereto and for their additional security until all the Senior Indebtedness have been paid or defeased in accordance with Article XI or if such Indebtedness was not incurred hereunder, in accordance with similar provisions of the controlling document.

Section 2.12 Parity of Senior Subordinate Indebtedness; Pledge of Authority Revenues and Certain Funds and Accounts.

(a) This Agreement constitutes a continuing, irrevocable pledge of Authority Revenues to secure payment of all amounts due with respect to all Senior Subordinate Indebtedness that may from time to time be issued or incurred and Outstanding, including but not limited to the principal of and premium, if any, and interest thereon, subject and subordinate to the right of the Authority to pledge Authority Revenues to secure payment of the principal and premium, if any, and interest on all Senior Indebtedness Outstanding; provided, however, that any Authority Revenues received from the Commonwealth of Puerto Rico on account of Commonwealth Guaranteed Indebtedness or Commonwealth Supported Obligations are not subject to the lien hereof and shall only be used for the purposes set forth in Section 5.12 hereof.

(b) Senior Subordinate Indebtedness shall be issued pursuant to a Supplemental Agreement or evidenced by other documents and shall be equally and ratably secured by the pledge of Authority Revenues under this Agreement, without preference, priority or distinction over any other issue of Senior Subordinate Indebtedness; provided, however, that

the moneys in any Senior Subordinate Debt Service Reserve Account shall only secure the Series of Senior Subordinate Bonds to which such Account relates, and provided, further, that any Series of Senior Subordinate Bonds may have additional security pledged to its payment. In no event will moneys in any Senior Subordinate Debt Service Reserve Account be available to pay Other System Indebtedness secured on a parity with Senior Subordinate Bonds. The Senior Subordinate Bond Fund (but only to the extent of moneys derived from the proceeds of Senior Subordinate Indebtedness on deposit therein), the Current Expense Fund, the Operating Reserve Fund, the Capital Improvement Fund and the Surplus Fund are hereby pledged equally and ratably to the payment of the principal of and interest on all Senior Subordinate Indebtedness, subject only and subordinate to the pledge of Authority Revenues to secure payment of the principal of and premium, if any, and interest on all Senior Indebtedness Outstanding and for the other purposes as provided herein.

(c) In connection with the issuance or incurrence of Senior Subordinate Indebtedness, the Authority, as provided in the applicable Supplemental Agreement or evidenced in other documentation, may create additional accounts and subaccounts within any fund or account established by this Agreement. Moneys in any account of the Senior Subordinate Bond Fund relating to particular Senior Subordinate Indebtedness shall only secure such Senior Subordinate Indebtedness.

(d) Nothing herein shall be construed, however, as (a) requiring that any Senior Subordinate Indebtedness bear interest at the same rate or in the same manner as any other Senior Subordinate Indebtedness, have the same, or an earlier or later, maturity date, or be subject to redemption prior to maturity on the same basis as any other Senior Subordinate Indebtedness, (b) prohibiting the Authority from entering into financial arrangements designed to assure that moneys will be available for the payment of certain Senior Subordinate Indebtedness when due, or (c) prohibiting the Authority from pledging moneys or assets of the Authority other than those pledged herein for the benefit of certain Senior Subordinate Indebtedness.

(e) The lien and trust hereby created are for the benefit of the Holders of Senior Subordinate Indebtedness and any Beneficiaries relating thereto and for their additional security until all the Senior Subordinate Indebtedness have been paid or defeased in accordance with Article XI or if such Indebtedness was not incurred hereunder, in accordance with similar provisions of the controlling document.

Section 2.13 Parity of Subordinate Indebtedness; Pledge of Authority Revenues and Certain Funds and Accounts.

(a) This Agreement constitutes a continuing, irrevocable pledge of Authority Revenues to secure payment of all amounts due with respect to all Subordinate Indebtedness that may from time to time be issued or incurred and Outstanding, including but not limited to the principal of and premium, if any, and interest thereon, subject and subordinate to the right of the Authority to pledge Authority Revenues to secure payment of the principal of and premium, if any, and interest on all Senior Indebtedness and Senior Subordinate Indebtedness Outstanding; provided, however, that any Authority Revenues received from the Commonwealth of Puerto Rico on account of Commonwealth Guaranteed Indebtedness or Commonwealth Supported

Obligations are not subject to the lien hereof and shall only be used for the purposes set forth in Section 5.12 hereof.

(b) Subordinate Indebtedness shall be issued pursuant to a Supplemental Agreement or evidenced by other documents and shall be equally and ratably secured by the pledge of Authority Revenues under this Agreement, without preference, priority or distinction over any other issue of Subordinate Indebtedness; provided, however, that the moneys in any Subordinate Debt Service Reserve Account shall only secure the Series of Subordinate Bonds to which such Account relates, and provided, further, that any Series of Subordinate Bonds may have additional security pledged to its payment. In no event will moneys in any Subordinate Debt Service Reserve Account be available to pay Other System Indebtedness secured on a parity with Subordinate Bonds. The Subordinate Bond Fund, the Construction Fund (but only to the extent of moneys derived from the proceeds of Subordinate Bonds on deposit therein), the Current Expense Fund, the Operating Reserve Fund, the Capital Improvement Fund and the Surplus Fund are hereby pledged equally and ratably to the payment of the principal of and interest on all Subordinate Indebtedness, subject only and subordinate to the pledge of Authority Revenues to secure payment of the principal of and premium, if any, and interest on all Senior Indebtedness and Senior Subordinate Indebtedness Outstanding and for the other purposes as provided herein.

(c) In connection with the issuance or incurrence of Subordinate Indebtedness, the Authority, as provided in the applicable Supplemental Agreement or evidenced in other documentation, may create additional accounts and subaccounts within any fund or account established by this Agreement. Moneys in any account of the Subordinate Bond Fund relating to particular Subordinate Indebtedness shall only secure such Subordinate Indebtedness.

(d) Nothing herein shall be construed, however, as (a) requiring that any Subordinate Indebtedness bear interest at the same rate or in the same manner as any other Subordinate Indebtedness, have the same, or an earlier or later, maturity, or be subject to mandatory, optional or extraordinary redemption prior to maturity on the same basis as any other Subordinate Indebtedness, (b) prohibiting the Authority from entering into financial arrangements designed to assure that moneys will be available for the payment of certain Subordinate Indebtedness when due, or (c) prohibiting the Authority from pledging moneys or assets of the Authority other than those pledged herein for the benefit of certain Subordinate Indebtedness.

(e) The lien and trust hereby created are for the benefit of the Holders of Subordinate Indebtedness and any Beneficiaries relating thereto and for their additional security until all the Subordinate Indebtedness shall have been paid or defeased in accordance with Article XI or if such Indebtedness was not incurred hereunder, in accordance with similar provisions of the controlling document.

Section 2.14 Parity of Commonwealth Guaranteed Indebtedness and Commonwealth Supported Obligations; Pledge of Authority Revenues.

Authority Revenues are hereby pledged equally and ratably to the payment of principal of and interest on all Commonwealth Guaranteed Indebtedness and Commonwealth Supported

Obligations subject and subordinate to the liens securing Senior Indebtedness, Senior Subordinate Indebtedness and Subordinate Indebtedness, and for the payment of Current Expenses; provided, however, that any Authority Revenues received from the Commonwealth of Puerto Rico on account of Commonwealth Guaranteed Indebtedness or Commonwealth Supported Obligations are not subject to the lien hereof and shall only be used for the purposes set forth in Section 5.12 hereof. The lien and trust hereby created are for the benefit of the Holders of Commonwealth Guaranteed Indebtedness and Commonwealth Supported Obligations, and for their additional security until all Commonwealth Guaranteed Indebtedness and Commonwealth Supported Obligations have been paid or its payment has been duly provided for.

Section 2.15 Conditions for Issuing Bonds.

On or prior to the issuance and authentication of any Series of Bonds by the Trustee, the Authority shall file with the Trustee the following:

- (a) In the case of the initial Series of Bonds issued hereunder:
 - (1) An original executed counterpart of this Agreement;
 - (2) A certified copy of a resolution of the Board of the Authority authorizing the execution and delivery of this Agreement; and
 - (3) An Opinion or Opinions of Counsel, subject to customary exceptions and qualifications, substantially to the effect that this Agreement has been duly authorized, executed and delivered to the Trustee and is a valid, binding and enforceable obligation of the Authority.

- (b) An original executed counterpart of a Supplemental Agreement which (1) shall, in addition to any other provisions otherwise mandated by this Agreement, include: (A) whether such Bonds are being issued as Senior Bonds, Senior Subordinate Bonds or Subordinate Bonds; (B) provisions authorizing the issuance, fixing the principal amount and setting forth the details of such Bonds, including their date, the interest rate or rates and the manner in which the Bonds are to bear and pay interest, the principal and Interest Payment Dates of the Bonds, the purposes for which such Bonds are being issued, the manner of numbering of such Bonds, the Series designation, the denominations, the maturity dates and principal maturities, the principal amounts required to be redeemed pursuant to any mandatory redemption provisions or the manner for determining such principal amounts, any provisions for optional or extraordinary redemption before maturity, any provisions regarding the Senior Debt Service Reserve Account, Senior Subordinate Debt Service Reserve Account, or Subordinate Debt Service Reserve Account and whether the interest on such Bonds shall be excluded from gross income for Federal income tax purposes or subject to Federal income taxation; and (C) provisions for the application of the proceeds of such Bonds; and (2) may include: (A) provisions for Enhancement Facilities and for other Funds and Accounts to be established with respect to such Bonds; (B) provisions necessary or expedient for the issuance of Variable Rate Indebtedness or other manner of bearing interest, including remarketing provisions, Enhancement Facility provisions and provisions for establishing the variable rate and converting

to a fixed rate; (C) provisions for entering into Qualified Swaps or Hedge Agreements, guarantees or other arrangements to limit interest rate risks; and (D) such other provisions as the Authority may deem appropriate.

(c) A certified copy of applicable resolution(s) of the Board authorizing the execution and delivery of a Supplemental Agreement, the issuance, sale, award, execution and delivery of such Bonds and, in the case of a Series of Bonds issued to refund Indebtedness, calling for redemption or payment of the Indebtedness to be refunded, fixing any redemption date and authorizing any required notice of redemption in accordance with the provisions of this Agreement.

(d) A certificate signed by the Executive President of the Authority and dated the date of such issuance, to the effect that:

(1) Upon the issuance of such Series of Bonds, the balance to the credit of each Account within each Debt Service Reserve Fund will not be less than the Debt Service Reserve Requirement corresponding thereto; provided, that if the Authority has elected upon the issuance of a Series of Bonds to fund the applicable Debt Service Reserve Account in accordance with Section 5.04(a), 5.06(a) or 5.08(a), such Account shall be deemed to be funded at the applicable requirement therefor so long as the deposits required by Sections 5.02(c)(ii), (iv) and (vi) have been made;

(2) Upon and immediately following such issuance, no Event of Default has occurred which has not been cured or waived, and no event or condition exists which, with the giving of notice or lapse of time or both, would become an Event of Default and

(3) All required approvals, limitations, conditions and provisions precedent to the issuance of such Series of Bonds have been obtained, observed, met and satisfied.

(e) An Opinion of Counsel, subject to customary exceptions and qualifications, substantially to the effect that the Supplemental Agreement for such Series of Bonds has been duly authorized, executed and delivered, is binding on the Authority and complies in all respects with the requirements of this Agreement.

(f) An opinion of Bond Counsel, subject to customary exceptions and qualifications, substantially to the effect that the issuance of such Bonds has been duly authorized, that such Bonds are valid and binding limited obligations of the Authority, and with respect to Bonds to be issued on a tax-exempt basis that the interest on such Bonds is excludable from gross income for purposes of Federal income taxation.

(g) Except upon the issuance of the Series 2008 Bonds, if the Bonds are issued to refund any obligations of the Authority, the following:

(1) evidence that the Authority has made provision as required by this Agreement or other similar agreement relating to the obligations being refunded for the payment or redemption of all obligations to be refunded;

(2) the certificates required in Sections 2.16 or 2.17 or in clauses (a) and (b) of Section 2.18, as applicable, provided that the Authority need not deliver said certificates if the Executive President delivers a certificate to the effect that (i) the Annual Debt Service on such refunding Bonds for each applicable Fiscal Year following the issuance thereof is not greater than the Annual Debt Service for each such Fiscal Year on the obligations to be refunded; or (ii) the maximum aggregate Annual Debt Service for any Fiscal Year thereafter on the Indebtedness Outstanding after the issuance of such refunding Bonds is not greater than the maximum aggregate Annual Debt Service for any Fiscal Year thereafter on the Indebtedness Outstanding prior to the issuance of such refunding Bonds. For purposes of this clause (2), applicable Fiscal Year shall mean any Fiscal Year in which such refunding Bonds are Outstanding.

(h) A request and authorization of the Authority, signed by an Authorized Representative of the Authority, to the Trustee to authenticate and deliver such Bonds to the purchasers upon payment by such purchasers to the Trustee for the account of the Authority of the purchase price thereof plus accrued interest, if any, to the date of delivery.

None of the requirements in this Section may be waived without the consent of the Holders of not less than a majority in aggregate principal amount of the Outstanding Senior Bonds.

Section 2.16 Special Provisions Relating to the Issuance of Senior Bonds.

Except for the Series 2008 Bonds or as provided in Section 2.15(g) above, if the Bonds to be issued are to be issued as Senior Bonds, the Authority shall also file with the Trustee a certificate dated the date of initial issuance of such Senior Bonds, signed by the Executive President and approved by a Consultant, setting forth:

(i) the amount of the Operating Revenues for any twelve (12) consecutive calendar months out of the eighteen (18) calendar months immediately preceding the date of issuance of such Senior Bonds; provided that such amount shall be adjusted to give effect for such twelve (12) month period to any increases or decreases in rates, fees, rentals or other charges for which all legal conditions to effectiveness have been met on the date of issuance of such Senior Bonds;

(ii) the amount of the maximum aggregate Annual Debt Service for any Fiscal Year thereafter on the Senior Indebtedness then Outstanding, the Senior Bonds to be issued and any other Senior Indebtedness to be issued or incurred simultaneously therewith;

(iii) the amount of the maximum aggregate Annual Debt Service for any Fiscal Year thereafter on all Bonds and Other System Indebtedness then Outstanding, the Senior Bonds proposed to be issued and any other Bonds and Other System Indebtedness to be issued or incurred simultaneously therewith, plus amounts required to be deposited in the Senior Debt Service Reserve Fund, the Senior Subordinate Debt Service Reserve Fund and the Subordinate Debt Service Reserve Fund pursuant to Section 5.02;

(iv) the percentage derived by dividing the amount in item (i) above by the amount shown in item (ii) above, which percentage shall not be less than 250%; and

(v) the percentage derived by dividing the amount in item (i) above by the amount shown in item (iii) above, which percentage shall not be less than 150%.

Section 2.17 Special Provisions Relating to the Issuance of Senior Subordinated Bonds.

Except as provided in Section 2.15(g) above, if the Bonds to be issued are to be issued as Senior Subordinate Bonds, the Authority shall also file with the Trustee a certificate dated the date of initial issuance of such Senior Subordinate Bonds, signed by the Executive President and approved by a Consultant, setting forth:

(i) the amount of the Operating Revenues for any twelve (12) consecutive calendar months out of the eighteen (18) calendar months immediately preceding the date of issuance of such Senior Subordinate Bonds; provided that such amount shall be adjusted to give effect for such twelve (12) month period to any increases or decreases in rates, fees, rentals or other charges for which all legal conditions to effectiveness have been met on the date of issuance of such Senior Subordinate Bonds;

(ii) the amount of the maximum aggregate Annual Debt Service for any Fiscal Year thereafter on the Senior Indebtedness and the Senior Subordinate Indebtedness then Outstanding, the Senior Subordinate Bonds to be issued and any other Senior or Senior Subordinate Indebtedness to be issued or incurred simultaneously therewith;

(iii) the amount of the maximum aggregate Annual Debt Service for any Fiscal Year thereafter on all Bonds and Other System Indebtedness then Outstanding, the Senior Subordinate Bonds proposed to be issued and any other Bonds and Other System Indebtedness to be issued or incurred simultaneously therewith, plus amounts required to be deposited in the Senior Debt Service Reserve Fund, the Senior Subordinate Debt Service Reserve Fund and the Subordinate Debt Service Reserve Fund pursuant to Section 5.02;

(iv) the percentage derived by dividing the amount in item (i) above by the amount shown in item (ii) above, which percentage shall not be less than 200%; and

(v) the percentage derived by dividing the amount in item (i) above by the amount shown in item (iii) above, which percentage shall not be less than 150%.

Section 2.18 Special Provisions Relating to the Issuance of Subordinate Bonds.

Except as provided in Section 2.15(g) above, if the Bonds to be issued are to be issued as Subordinate Bonds, the Authority shall also file with the Trustee the following:

(a) a certificate dated the date of initial issuance of such Subordinate Bonds, signed by the Executive President and approved by a Consultant, setting forth:

(i) the amount of the Operating Revenues for any twelve (12) consecutive calendar months out of the eighteen (18) calendar months immediately preceding the date of issuance of such Subordinate Bonds; provided that such amount shall be adjusted to give effect for such twelve (12) month period to any increases or decreases in rates, fees, rentals or

other charges for which all legal conditions to effectiveness have been met on the date of issuance of such Subordinate Bonds;

(ii) the amount of the maximum aggregate Annual Debt Service for any Fiscal Year thereafter on the Bonds and Other System Indebtedness then Outstanding, the Subordinate Bonds proposed to be issued and any Bonds or Other System Indebtedness to be issued or incurred simultaneously therewith, plus amounts required to be deposited to the Senior Debt Service Reserve Fund, the Senior Subordinate Debt Service Reserve Fund and the Subordinate Debt Service Reserve Fund pursuant to Section 5.02;

(iii) the percentage derived by dividing the amount in item (i) above by the amount shown in item (ii) above, which percentage shall not be less than 150%; and

(b) a certificate dated the date of original issuance of such Subordinate Bonds, signed by a Consultant, setting forth:

(i) the amount of the projected Operating Revenues for each of the three (3) full Fiscal Years following the issuance of such Subordinate Bonds;

(ii) the amount of the maximum aggregate Annual Debt Service for any Fiscal Year thereafter on all Bonds and Other System Indebtedness then Outstanding, the Subordinate Bonds proposed to be issued and any other Bonds and Other System Indebtedness to be issued or incurred simultaneously therewith, plus amounts required to be deposited in the Senior Debt Service Reserve Fund, the Senior Subordinate Debt Service Reserve Fund and the Subordinate Debt Service Reserve Fund pursuant to Section 5.02; and

(iii) the percentage derived by dividing each amount in item (i) above by the amount shown in item (ii) above, which percentages shall not be less than 150% in each such year.

Section 2.19 Special Provisions Relating to Capital Appreciation Bonds and Deferred Income Bonds

(a) The Accreted Value of Capital Appreciation Bonds or the Appreciated Value of Deferred Income Bonds becoming due at maturity or by virtue of a sinking fund installment shall be included in the calculations of accrued and unpaid and accruing interest or principal installments made under the definitions of Annual Debt Service only from and after the date (the "Calculation Date") which is one year prior to the date on which such Accreted Value or Appreciated Value, as the case may be, becomes so due, and the principal and interest portions of such Accreted Value or Appreciated Value shall be deemed to accrue in equal daily installments from the Calculation Date to such due date.

(b) For the purposes of (i) receiving payment of the redemption price if a Capital Appreciation Bond is redeemed prior to maturity, or (ii) receiving payment of a Capital Appreciation Bond if the principal of Bonds is declared immediately due and payable following an Event of Default, as provided in Section 8.03, or (iii) computing the principal amount of Bonds held by the Holder of a Capital Appreciation Bond in giving to the Authority any notice, consent, request, or demand pursuant to this Agreement for any purpose whatsoever, the

principal amount of such Capital Appreciation Bond shall be deemed to be its then current Accredited Value.

(c) For the purposes of (i) receiving payment of the redemption price if a Deferred Income Bond is redeemed prior to maturity, or (ii) receiving payment of a Deferred Income Bond if the principal of Bonds is declared immediately due and payable following an Event of Default, as provided in Section 8.03, or (iii) computing the principal amount of Bonds held by the Holder of a Deferred Income Bond in giving to the Authority any notice, consent, request, or demand pursuant to the provisions hereof for any purpose whatsoever, the principal amount of a such Deferred Income Bond shall be deemed to be its then current Appreciated Value.

Section 2.20 Other System Indebtedness.

(a) In addition to the Term Loan, which the Authority hereby designates as Other System Indebtedness secured hereunder on a parity with the Senior Subordinate Bonds, the Authority may incur or refinance Other System Indebtedness, including entering into Qualified Swaps or Hedge Agreements, or any agreements with Enhancement Facility Providers, provided that: (1) the documents relating to the Other System Indebtedness (A) acknowledge that such debt (i) constitutes Other System Indebtedness under this Agreement and (ii) is subject to the applicable terms and conditions hereof, (B) specify the amounts and due dates of Annual Debt Service with respect to the Other System Indebtedness, and (C) provide for all notices given thereunder to be given to the Trustee, (2) the Authority designates such Other System Indebtedness as Senior Indebtedness, Senior Subordinate Indebtedness or Subordinate Indebtedness and certifies that, except with respect to Qualified Swap and Hedge Agreements, the requirements of Sections 2.16, 2.17 or 2.18, as appropriate, have been met as if the Other System Indebtedness was an additional Series of Bonds, (3) the Trustee receives written notice of the issuance of the Other System Indebtedness and the material terms and conditions thereof, and the Trustee shall register the lender or holder as owner thereof as such on its books and records, and (4) the Trustee receives an Opinion of Counsel that the documents creating the Other System Indebtedness have been duly authorized, executed and delivered on behalf of the Authority and constitute valid, binding and enforceable obligations. In connection with the incurrence of any Other System Indebtedness other than Qualified Swaps or Hedge Agreements, the Fiduciary or Beneficiary therefor shall enter into an intercreditor arrangement with the Fiduciaries and/or Beneficiaries for any Outstanding Other System Indebtedness, including the Fiduciary for the Term Loan, the terms of which shall be determined at the time of incurrence of such Other System Indebtedness.

(b) The Authority shall fulfill its obligations under all contracts or agreements creating Other System Indebtedness as they may exist from time to time.

(c) The Trustee hereby agrees to provide to each Fiduciary for, and Holder of (as applicable), Other System Indebtedness (1) copies of all notices required under this Agreement to be delivered by the Trustee to Holders of Bonds and any written notice delivered by the Trustee to the Authority pursuant to Section 8.04 of this Agreement declaring the entire unpaid principal of the Bonds due and payable, (2) copies of all notices from Holders of Bonds received by the Trustee in accordance with the provisions of this Agreement, (3) notice of the

resignation of the Trustee hereunder at least thirty (30) days prior to the effective date of any such resignation, (4) notice that the Trustee has received an instrument or concurrent instruments or other notice of the removal of the Trustee in accordance with the provisions of this Agreement within thirty (30) days of receiving such an instrument or instruments and (5) notice that the Trustee has appointed a co-trustee in accordance with the provisions of the Agreement. The Trustee shall not, however, be subject to any liability to any Fiduciary or Holder by reason of its failure to provide any such notice.

ARTICLE III

REDEMPTION OF BONDS

Section 3.01 Redemption Provisions to be Fixed by Supplemental Agreements.

The Bonds of any Series shall be subject to mandatory, extraordinary or optional redemption prior to maturity on such dates and under such conditions as may be provided in the Supplemental Agreement authorizing the issuance of such Series of Bonds. The Bonds of any Series to be called for redemption shall be selected as provided in the applicable Supplemental Agreement. The Trustee shall treat each Bond of a denomination greater than the minimum denomination authorized in the applicable Supplemental Agreement as representing the number of Bonds as can be obtained by dividing the principal amount of such Bond by such minimum denomination.

Section 3.02 Notice of Redemption.

Unless otherwise provided in the applicable Supplemental Agreement, the Trustee shall send notice of the call for redemption, not less than thirty (30) nor more than sixty (60) days prior to the redemption date, (a) by registered or certified mail or overnight express delivery, to the Holder of each Bond to be redeemed at the address as it appears on the registration books kept by the Trustee, (b) by registered or certified mail or overnight express delivery, to all organizations registered with the Securities and Exchange Commission as securities depositories, and (c) to each nationally recognized municipal securities information repository designated as such by the Securities and Exchange Commission. Such notice shall specify: (i) the Bonds to be redeemed which shall be identified by the designation of the Bonds, the maturity dates and interest rates of the Bonds to be redeemed and the date such Bonds were issued; (ii) the numbers and other distinguishing marks of the Bonds to be redeemed, including CUSIP numbers; (iii) the redemption date; (iv) the redemption price; (v) of each such Bond, the principal amount thereof to be redeemed; (vi) that such Bonds will be redeemed at the principal corporate trust office of the Trustee, giving the address thereof and the name and telephone number of a representative of the Trustee to whom inquiries may be directed; (vii) that no representation is made as to the correctness of the CUSIP number either as printed on the Bonds or as contained in such notice and that an error in a CUSIP number as printed on such Bond or as contained in such notice shall not affect the validity of the proceedings for redemption; and (viii) if the Authority's obligation to redeem the Bonds is subject to one or more conditions, a statement to the effect that describes the condition to such redemption. In preparing and delivering such notice, the Trustee shall take into account, to the extent applicable, the prevailing tax exempt securities industry standards and any regulatory statement of any federal or state administrative body having jurisdiction over the

Authority or the tax exempt securities industry, including Release No. 34-23856 of the Securities and Exchange Commission or any subsequent amending or superseding release.

Failure to give any notice specified in clause (a) of the previous paragraph or any defect therein, shall not affect the validity of any proceedings for the redemption of any other Bond. Failure to give any notice specified in clause (b) or (c) of the previous paragraph, or any defect therein, shall not affect the validity of any proceedings for the redemption of any Bonds.

Any notice mailed or provided herein shall conclusively be presumed to have been given whether or not actually received by any Bondholder.

Notice of any optional redemption may be canceled by the Authority prior to the designated redemption date by giving written notice of such cancellation to all parties who were given notice of redemption in the same manner as the notice was given.

Section 3.03 Bonds Payable on Redemption Date; Interest Ceases to Accrue.

On or before the date fixed for redemption, moneys shall be deposited with the Trustee to pay the principal of and premium, if any, and interest accrued to the redemption date on the Bonds called for redemption. Upon the happening of the conditions of this Section, the Bonds or portions thereof duly called for redemption shall cease to bear interest from and after the redemption date, shall no longer be entitled to the benefits provided by this Agreement and shall not be deemed to be Outstanding under the provisions of this Agreement.

Section 3.04 Selection of Bonds to be Redeemed. Unless otherwise required by any Supplemental Agreement, in the event of redemption of less than all the Outstanding Bonds of the same Series and maturity, the particular Bonds or portions thereof to be redeemed shall be selected by the Trustee in such manner as the Trustee in its discretion may deem fair, except that to the extent practicable, the Trustee shall select Bonds for redemption such that no Bond remaining Outstanding shall be of a denomination of less than \$5,000. In the event of redemption of less than all the Outstanding Bonds of the same Series stated to mature on different dates, the principal amount of such Series of Bonds to be redeemed shall be applied in any order of maturity of the Outstanding Series of Bonds to be redeemed that the Authority may elect upon receipt of an opinion of Bond Counsel that such redemption would not result in the interest payable on such Bonds being included in gross income for federal income tax purposes to the Holders thereof under the Code. The portion of Bonds of any Series to be redeemed in part shall be in the principal amount of the minimum authorized denomination thereof or some integral multiple thereof and, in selecting Bonds of a particular Series for redemption, the Trustee shall treat each such Bond as representing that number of Bonds of such Series which is obtained by dividing the principal amount of such registered Bond by the minimum denomination (referred to below as a "unit") then issuable rounded down to the integral multiple of such minimum denomination. If it is determined that one or more, but not all, of the units of principal amount represented by any such Bond is to be called for redemption, then, upon notice of intention to redeem such unit or units, the Holder of such Bond shall forthwith surrender such Bond to the Trustee for (a) payment to such Holder of the redemption price of the unit or units of principal amount called for redemption and (b) delivery to such Holder of a new Bond or Bonds of such Series in the aggregate unpaid principal amount of the unredeemed balance of the

principal amount of such Bond. New Bonds of the same Series and maturity representing the unredeemed balance of the principal amount of such Bond shall be issued to the registered Holder thereof, without charge therefor. If the Holder of any such Bond of a denomination greater than a unit shall fail to present such Bond to the Trustee for payment and exchange as aforesaid, such Bond shall, nevertheless, become due and payable on the date fixed for redemption to the extent of the unit or units of principal amount called for redemption (and to that extent only).

Section 3.05 Purchase of Bonds.

The Authority may purchase or cause to be purchased any Bonds of any particular Series or maturity in lieu of redemption of such Bonds (in which event any Bonds so purchased shall be cancelled and shall cease to bear interest as provided in Sections 2.08 and 4.03) or for any other purpose pursuant to written instructions given by the Authority to the Trustee. Such purchases shall be made in such manner as directed by the Authority. The Authority or the Trustee shall pay the purchase price of such Bonds together with accrued interest thereon from such funds as may be available therefor pursuant to this Agreement, any Supplemental Agreement, or as otherwise may be made available by the Authority.

ARTICLE IV

CONSTRUCTION FUND

Section 4.01 Construction Fund.

A special fund is hereby created and designated the “Puerto Rico Aqueduct and Sewer Authority Construction Fund” (herein called the “Construction Fund”) which shall be held by the Trustee.

There shall be deposited with the Trustee to the credit of the Construction Fund (i) the amounts required to be deposited under the resolution of the Board authorizing the issuance of particular Series of Bonds or the applicable Supplemental Agreement and (ii) at the election of the Board, any moneys of the Authority that may properly be deposited to the credit of said Fund, or the proceeds of any grants received from any source, to be used for the purpose of paying the Cost of Improvements. All earnings on moneys in each Account and subaccount shall be credited to such Account and subaccount and in accordance with Section 6.01(a).

The moneys in the Construction Fund shall be held in trust, separate and apart from all other funds of the Authority and applied only to the payment of the Costs of Issuance of the Bonds, interest during construction and for such period thereafter as the Authority shall determine and the Cost of Improvements (in accordance with and subject to the limitations of this Article), and, pending such application, such moneys shall be subject to a lien and charge in favor of the Holders of the Bonds and for the further security of such Holders until paid out as herein provided.

The Authority may establish additional Accounts and subaccounts within the Construction Fund as may be provided in said Supplemental Agreement which Accounts and the proceeds of the particular Series of Bonds deposited therein (together with all investments

thereof and investment income earned thereon), unless otherwise provided in the applicable Supplemental Agreement, are pledged solely to the payment of such particular Series of Bonds. Deposits shall be made to the credit of the Construction Fund and any Accounts and subaccounts as provided in such Supplemental Agreement.

Section 4.02 Payment From Construction Fund.

(a) Payment or reimbursement from the Construction Fund of the Cost of Improvements shall be made by the Trustee upon written approval of an Authorized Representative of the Authority stating the name of the payee, the purpose of each payment in terms sufficient for identification, the amount of each payment and that such cost constitutes a Cost of Improvement hereunder.

(b) Payment of Costs of Issuance shall be made by the Trustee upon receipt of, and in accordance with, a certificate signed by an Authorized Representative of the Authority stating the name of the payee, the purpose of each payment in terms sufficient for identification, and the amount of each such payment.

(c) Payment of interest on Bonds during construction and for such period thereafter as aforesaid shall be made by the Trustee upon receipt of, and in accordance with, the written direction of an Authorized Representative of the Authority instructing the Trustee to transfer such amount from the Construction Fund to the applicable Interest Account.

(d) When the construction of any Improvement for which a Series of Bonds was issued shall have been completed, which fact shall be evidenced to the Trustee by a certificate stating the date of such completion, signed by the Executive President and approved by the Consulting Engineer, the balance in the Construction Fund not reserved by the Authority for the payment of any remaining part of any Cost of Improvements or for any other purpose for which moneys to the credit of the Construction Fund may be expended shall be transferred to the credit of the Capital Improvement Fund, or at the option of the Authority, to the credit of the Sinking Fund for the payment of principal of Bonds or retained in the Construction Fund for other Improvements.

ARTICLE V

FUNDS AND ACCOUNTS

Section 5.01 Establishment of Certain Funds and Accounts.

(a) There are hereby established the following funds and accounts to be held by the Trustee, each of which Fund shall include "Puerto Rico Aqueduct and Sewer Authority" in its designation:

(i) Operating Revenue Fund;

(ii) Construction Fund, in which there shall be established a Capitalized Interest Account and a Costs of Issuance Account;

(iii) Senior Bond Fund, in which there shall be established a Senior Interest Account, a Senior Principal Account and a Senior Sinking Fund Account, and a separate subaccount in each such Account with respect to each issue of Senior Indebtedness;

(iv) Senior Debt Service Reserve Fund, in which there shall be established a Senior Debt Service Reserve Account for each Series of Senior Bonds as required by the applicable Supplemental Agreement;

(v) Senior Subordinate Bond Fund, in which there shall be established a Senior Subordinate Interest Account, a Senior Subordinate Principal Account and a Senior Subordinate Sinking Fund Account, and a separate subaccount in each such Account with respect to each issue of Senior Subordinate Indebtedness;

(vi) Senior Subordinate Debt Service Reserve Fund, in which there shall be established a Senior Subordinate Debt Service Reserve Account for each Series of Senior Subordinate Bonds as required by the applicable Supplemental Agreement;

(vii) Subordinate Bond Fund, in which there shall be established a Subordinate Interest Account, a Subordinate Principal Account and a Subordinate Sinking Fund Account, and a separate subaccount in each Account with respect to each issue Subordinate Indebtedness;

(viii) Subordinate Debt Service Reserve Fund in which there shall be established a Subordinate Debt Service Reserve Account for each Series of Subordinate Bonds, as required by the applicable Supplemental Agreement;

(ix) Operating Reserve Fund;

(x) Capital Improvement Fund;

(xi) Commonwealth Payments Fund in which there shall be established a Commonwealth Guaranteed Indebtedness Account and a Commonwealth Supported Obligations Account; and

(xii) Surplus Fund in which there shall be established a Rate Stabilization Account.

(b) There is hereby established the Current Expense Fund to be held by the Authority or by a Qualified Depository on behalf of the Authority.

Section 5.02 Disposition of Operating Revenues and Authority Revenues

(a) The Authority shall deposit, or cause to be deposited, all Operating Revenues in the Operating Revenue Fund. Upon the occurrence of an Event of Default specified in Section 8.01(a), (b), (c), (d) or (e) hereof, amounts on deposit in the Operating Revenue Fund shall be applied in accordance with Section 8.06 hereof. Authority Revenues consisting of governmental grants or appropriations available to pay Current Expenses of the Authority, shall be deposited in the Current Expense Fund. Authority Revenues consisting of grants or

appropriations received by the Authority for the purpose of paying of principal of and interest on Bonds or Other System Indebtedness shall be deposited in the applicable debt service fund. Authority Revenues consisting of amounts transferred from the Budgetary Reserve Fund to the Trustee shall be deposited in the fund designated in the applicable Disbursement Schedule. Authority Revenues consisting of amounts received from the Commonwealth on account of Commonwealth Guaranteed Indebtedness or Commonwealth Supported Obligations shall be deposited directly in the Commonwealth Payments Fund, are not subject to the lien of the Trust Agreement and shall only be applied to the payment of principal and interest on Commonwealth Guaranteed Indebtedness or Commonwealth Supported Obligations, as applicable.

(b) Beginning on the first Business Day of each month, the Trustee shall transfer the amount on deposit in the Operating Revenue Fund, in the following order of priority, but if the amounts so transferred shall be insufficient (after taking into account all prior deposits) to make any deposit as set forth below in this subsection, the Trustee shall only be required to deposit the amount then remaining after such prior deposits:

(i) To the Senior Bond Fund, the amount required to be deposited therein pursuant to Section 5.03(a);

(ii) To the Senior Debt Service Reserve Fund, the amount required to be deposited therein pursuant to Section 5.04(a);

(iii) To the Senior Subordinate Bond Fund, the amount required to be deposited therein pursuant to Section 5.05(a);

(iv) To the Senior Subordinate Debt Service Reserve Fund, the amount required to be deposited therein pursuant to Section 5.06(a);

(v) To the Subordinate Bond Fund, the amount required to be deposited therein pursuant to Section 5.07(a);

(vi) To the Subordinate Debt Service Reserve Fund, the amount required to be deposited therein pursuant to section 5.08(a);

(vii) To the Current Expense Fund, the amount required to be deposited therein pursuant to section 5.09;

(viii) To the Operating Reserve Fund, the amount required to restore the balance on deposit therein to the Operating Reserve Requirement and to pay interest on and reimbursement obligations due with respect to an Operating Reserve Facility in accordance with Section 5.10(a);

(ix) To the Capital Improvement Fund, the amount required to be deposited therein pursuant to Section 5.11(a);

(x) To the Commonwealth Payments Fund, the amount required to be deposited therein pursuant to Section 5.12(a) and (b); and

(xi) To the Surplus Fund, any remaining balance.

(c) The Trustee shall provide the Authority with a monthly certificate setting forth that, to the extent that amounts on deposit in the Operating Revenue Fund were sufficient therefor, the transfers required by clauses (i) through (x) of subsection (b) above have been made and the respective balances of such Funds and Accounts. If the amount so deposited on or before any Deposit Date to the credit of the foregoing Funds, Account and subaccounts shall be less than the respective required amounts for such month, said requirements therefor shall nevertheless be cumulative and the amount of any deficiency on any Deposit Date shall be added to the amount otherwise required to be deposited in each month thereafter until such time as such deficiency shall have been eliminated; provided, however, that any deficiency in the amounts required to be deposited in the Commonwealth Payments Fund pursuant to clause (x) of subsection (b) above to pay the Interest Accrual and the Principal Accrual on Commonwealth Guaranteed Indebtedness or Commonwealth Supported Obligations on any applicable Interest Payment Date or principal payment date shall not be cumulative and shall be deemed to be eliminated as of such Interest Payment Date or principal payment date. In accordance with the provisions of Section 10.02 hereof, in the event that by any Deposit Date there are insufficient moneys to make in full the deposit to the Commonwealth Payments Fund for such month as required by clause (x) of subsection (b) above, the Trustee shall provide notice of such insufficiency to the Consulting Engineer, other Consultants, if any, and to the Government Development Bank for Puerto Rico. In no event will failure to make the transfers required by subsection (b) of this Section 5.02 be an Event of Default hereunder if such failure is due to insufficient moneys therefor.

Section 5.03 Senior Bond Fund.

(a) Deposits to the Senior Bond Fund. In accordance with Section 5.02 (except that no distinction or preference shall exist in making the following deposits into the Senior Interest Account, the Senior Principal Account or the Senior Sinking Fund Account of the Senior Bond Fund, in each case, such accounts being on a parity with each other as to the deposits therein under said Section 5.02), beginning on the first Business Day of a month, the Trustee shall make the following deposits:

(1) to the subaccounts established for each issue of Senior Indebtedness in the Senior Interest Account, (i) an amount of Authority Revenues equal to the Interest Accrual on all the outstanding Senior Indebtedness to and including the last day of the next calendar month; (ii) the amount of any payments or reimbursements due in the next ensuing month to each Enhancement Facility Provider to the extent such payment or reimbursement obligation constitutes Senior Indebtedness hereunder; and (iii) the amount of any payments due in the next ensuing month under any Hedge Agreement or Qualified Swap secured on a parity with Senior Indebtedness; provided, further, that any such deposits shall be adjusted to give credit for any other available money then in such interest account or subaccount or otherwise available and designated to be used for such purpose; and

(2) to the subaccounts established for each issue of Senior Indebtedness in the Senior Principal Account and Senior Sinking Fund Account, an amount of Authority Revenues equal to the Principal Accrual on the outstanding Senior Indebtedness to and

including the last day of the next calendar month; provided, however, such deposits shall be adjusted to give credit for any other available money then in the principal or sinking fund account or subaccount or otherwise available and designated to be used for such purpose.

(b) Use of Moneys in Senior Bond Fund. (1) On or before each Interest Payment Date, the Trustee shall pay to the Holders of Senior Indebtedness from funds on deposit in the Senior Interest Account, the amount required for the payment of the interest becoming due on Senior Indebtedness on such Interest Payment Date; provided, however, if the Trustee is not the Fiduciary for such Senior Indebtedness, the Trustee will withdraw from the Senior Interest Account and transfer to the Fiduciary therefor not later than one (1) Business Day prior to the applicable Interest Payment Date the amount required for the payment of interest becoming due on the Senior Indebtedness for which such Fiduciary so serves. On or before the date on which (x) regularly scheduled payments under a Hedge Agreement or Qualified Swap are due or (y) payments or reimbursements to an Enhancement Facility Provider are to be made, in each case relating to Senior Indebtedness, the Trustee shall pay to the persons entitled thereto from funds on deposit in the Senior Interest Account the corresponding amounts owing to such persons on such date.

(2) On or before each payment date, the Trustee shall pay to the Holders of Senior Indebtedness from funds on deposit in the Senior Principal Account, the amount required for the payment of principal becoming due on and any termination payment due in respect of Senior Indebtedness on such payment date and with respect to Senior Indebtedness as to which the Trustee is not the Fiduciary therefor, the Trustee shall pay to each such Fiduciary not later than one (1) Business Day prior to the applicable payment date from funds on deposit in the Senior Principal Account the corresponding amounts required for the payment of principal becoming due on and any termination payment due in respect of such Senior Indebtedness.

(3) On or before each mandatory redemption date, the Trustee shall pay to the Holders of Senior Indebtedness from funds on deposit in the Senior Sinking Fund Account, the amount required for the payment of mandatory sinking fund installments becoming due on Senior Indebtedness on such mandatory redemption payment date and with respect to Senior Indebtedness as to which the Trustee is not the Fiduciary therefor, the Trustee shall pay to each such Fiduciary not later than one (1) Business Day prior to the applicable mandatory redemption payment date from funds on deposit in the Senior Sinking Fund Account the corresponding amounts required for the payment of mandatory sinking fund installments becoming due on such Senior Indebtedness.

(4) Any amount in the Senior Sinking Fund Account not applied in accordance with subsection (c) below to the purchase of Senior Indebtedness by the forty-fifth (45th) day prior to the next date on which such Senior Indebtedness is so redeemable shall be applied to the redemption of such Senior Indebtedness on such redemption date. Any amounts deposited in the Senior Sinking Fund Account and not applied within twelve (12) months of their date of deposit to the purchase or redemption of Senior Indebtedness (except if held in accordance with Section 11.01 hereof) shall be transferred to the Senior Interest Account. The Senior Indebtedness to be purchased or redeemed shall be selected by the Trustee in the manner provided in Section 3.04 hereof. Amounts in the Senior Sinking Fund Account to be applied to the redemption of Senior Indebtedness shall be paid to the respective Trustee or Fiduciary on or

before the redemption date and applied by them on such redemption date to the payment of the redemption price of the Senior Indebtedness being redeemed.

(c) Notwithstanding the provisions of clause (3) of paragraph (b) of this Section, the Authority may, at any time but in no event less than forty-five (45) days prior to the date on which a mandatory sinking fund installment is scheduled to be due on Senior Indebtedness, direct the Trustee or Fiduciary to purchase, with money on deposit in the Senior Sinking Fund Account, at a price not in excess of par plus interest accrued and unpaid to the date of such purchase, term bonds to be redeemed on such date. At the direction of the Authority, any term bond so purchased may be cancelled upon receipt thereof by the Trustee or the Fiduciary and evidence of such cancellation shall be given to the Authority. The principal amount of each term bond so canceled shall be credited against the sinking fund installment due on such date as long as such term bond is canceled by the Trustee or Fiduciary prior to the date on which notice of redemption is given.

(d) In the event the amount on deposit in the Senior Interest Account on any Interest Payment Date exceeds the amount required to pay interest on the Senior Indebtedness on such Interest Payment Date, the Authority shall, if the amount on deposit in any Senior Debt Service Reserve Account is less than the applicable Debt Service Reserve Requirement, instruct the Trustee to transfer such excess to such Senior Debt Service Reserve Account to the extent of such deficiency, and otherwise retain any remaining excess in the Senior Interest Account or instruct the Trustee to transfer any such remaining excess to the Senior Principal Account or Senior Sinking Fund Account to be credited against subsequent required deposits thereto, as determined by the Authority.

(e) In the event the amount on deposit in the Senior Principal Account or Senior Sinking Fund Account on any principal or mandatory redemption payment date exceeds the amount required on such date to pay Senior Indebtedness at maturity or pursuant to mandatory sinking fund requirements, the Authority shall, if the amount on deposit in any Senior Debt Service Reserve Account is less than the applicable Debt Service Reserve Requirement, instruct the Trustee to transfer such excess to such Senior Debt Service Reserve Account to the extent of such deficiency, and otherwise retain such excess in the Senior Principal Account or Senior Sinking Fund Account, as the case may be, or instruct the Trustee to transfer such excess to the Senior Interest Account to be credited against subsequent required deposits thereto, as determined by the Authority.

(f) In the event the balance on deposit in the Senior Principal Account, the Senior Sinking Fund Account or the Senior Interest Account is insufficient for the purposes thereof, the Trustee shall deposit in such Accounts such amounts as may be necessary therefor first, from other legally available funds transferred by the Authority to the Trustee not subject to the lien of this Agreement; second, from the Surplus Fund; third, from the Commonwealth Payments Fund; fourth, from the Capital Improvement Fund; fifth, from the Operating Reserve Fund; sixth, from the Current Expense Fund and last, from the applicable Senior Debt Service Reserve Account pursuant to Section 5.04.

Section 5.04 Senior Debt Service Reserve Fund.

(a) In each month the Trustee shall deposit to each Account in the Senior Debt Service Reserve Fund (i) beginning on the first Business Day of such month, after making the deposit required by Section 5.02 (b)(i), an amount of Authority Revenues equal to (x) 1/60 of the amount (or such greater amount specified in the Supplemental Agreement authorizing any Senior Bonds), if any, necessary to restore the amount on deposit therein to the related Debt Service Reserve Requirement in the event of an increase in the applicable Debt Service Reserve Requirement upon the issuance of additional Senior Bonds, and (y) except as provided in paragraph (c) below, 1/12 of the amount, if any, necessary to restore the amount on deposit therein to the related Debt Service Reserve Requirement in the event of any other deficiency and (ii) the amount of proceeds of any Senior Bonds as required by the applicable Supplemental Agreement.

(b) Amounts in each Account in the Senior Debt Service Reserve Fund shall be used to pay debt service on the related Series of Senior Bonds on the dates such debt service is due when insufficient funds for that purpose are available in the Senior Bond Fund, after making any transfers pursuant to Section 5.03(f) and all cash and investments in an Account in the Senior Debt Service Reserve Fund shall be used, together with other amounts available for such purpose hereunder, to provide for payment in full of the related Series of Senior Bonds when the aggregate of such amounts is sufficient for such purpose. Amounts in each Account of the Senior Debt Service Reserve Fund shall be pledged to the Holders of the applicable Series of Senior Bonds to which such Account relates. In no event shall amounts on deposit in the Senior Debt Service Reserve Fund be used to pay principal of, interest on, or any other amounts due with respect to, Other System Indebtedness.

(c) In lieu of or in addition to cash or investments, at any time the Authority may cause to be deposited to the credit of any Senior Debt Service Reserve Account, a Debt Service Reserve Facility in the stated amount equal to all or a portion of the applicable Debt Service Reserve Requirement, irrevocably payable to the Trustee, as beneficiary for the Holders of the Senior Bonds to which such Account relates. If (x) the Authority receives an expiration notice and the applicable Enhancement Facility Provider does not extend the expiration date of a Debt Service Reserve Facility, (y) the Authority receives notice of the termination of a Debt Service Reserve Facility, or (z) the Authority receives notice that the applicable Enhancement Facility Provider of a Debt Service Reserve Facility no longer has the required credit rating, the Authority immediately shall (i) provide a substitute Debt Service Reserve Facility, (ii) deposit a sum equal to the Debt Service Reserve Requirement to the credit of the Senior Debt Service Reserve Account to which such Debt Service Reserve Facility relates (A) in equal monthly installments over the next succeeding 12 months in the case of receipt of an expiration notice, (B) prior to the termination date in the case of receipt of a termination notice, or (C) immediately in the case of such reduction in credit rating, or (iii) instruct the Trustee to draw on such Debt Service Reserve Facility (A) 12 months prior to expiration of the Debt Service Reserve Facility in the case of receipt of an expiration notice, (B) prior to the termination date in the case of receipt of a termination notice, or (C) immediately in the case of such reduction in credit rating and deposit the proceeds of such drawing to the credit of the Senior Debt Service Reserve Account to which such Debt Service Reserve Facility relates.

If a disbursement is made pursuant to a Debt Service Reserve Facility, the Authority shall either (i) reinstate such Facility in full or (ii) deposit to the credit of the Senior Debt Service Reserve Account a sum equal to the amount of the disbursement made under such Facility in accordance with its provisions.

(d) On or within five days after each Reserve Determination Date, the Trustee shall determine whether the balance on deposit in each Senior Debt Service Reserve Account was, as of the Reserve Determination Date, at least equal to the applicable Debt Service Reserve Requirement. In making such determination, any obligations in a Senior Debt Service Reserve Account shall be valued in accordance with Section 6.01.

In the event the amount on deposit in a Senior Debt Service Reserve Account exceeds the applicable Debt Service Reserve Requirement, the Trustee shall transfer such excess as directed in writing by an Authorized Representative of the Authority, such direction to be accompanied by an Opinion of Bond Counsel that such transfer will not adversely affect the exclusion (if applicable) from gross income of interest on the respective Series of Senior Bonds to which such excess relates (i) to the subaccount of the Senior Principal Account corresponding to such Series of Senior Bonds, (ii) to fund the Operating Reserve Fund until the balance therein equals the Operating Reserve Requirement, or (iii) to the Authority to be used to pay all or any portion of the Costs of Improvements designated by the Authority and approved by Bond Counsel. If an Authorized Representative of the Authority calls for a Reserve Determination Date in connection with the refunding and/or defeasance of a Series of Senior Bonds, then the Trustee is authorized to take such refunding and/or defeasance into account in valuing the Senior Debt Service Reserve Account securing such Series of Senior Bonds and is further authorized to apply the amount of any surplus arising from such valuation to reduce the amount of the refunding Bonds and/or to provide for the refunding or defeasance of the Series of Senior Bonds in such manner as such Authorized Representative may direct.

(e) In connection with any issuance of Senior Bonds, the Authority may, in the applicable Supplemental Agreement, provide that no deposit to the Senior Debt Service Reserve Fund shall be made for or with respect to such additional Senior Bonds, in which case: (i) the lien of and pledge on the Senior Debt Service Reserve Fund shall not extend to or be for the benefit of the Holders of such Senior Bonds, and (ii) the Annual Debt Service on such Senior Bonds shall not be taken into account in determining the applicable Debt Service Reserve Requirement.

In the event that a Supplemental Agreement so provides, then such Supplemental Agreement may also provide for the creation of a special reserve account solely for the Senior Bonds to which such Supplemental Agreement relates, separate from the Senior Debt Service Reserve Fund, and may provide for the deposit therein, at the time of issuance or from time to time thereafter, of an amount specified in the applicable Supplemental Agreement as the required reserve for such Senior Bonds, or may require the Authority to deposit to the credit of such special reserve account a Debt Service Reserve Facility to enhance the security for such Senior Bonds in lieu of a funded reserve account.

Section 5.05 Senior Subordinate Bond Fund.

(a) Deposits to the Senior Subordinate Bond Fund. In accordance with Section 5.02 (except that no distinction or preference shall exist in making the following deposits into the Senior Subordinate Interest Account, the Senior Subordinate Principal Account or the Senior Subordinate Sinking Fund Account of the Senior Subordinate Bond Fund, in each case, such accounts being on a parity with each other as to the deposits therein under said Section 5.02), beginning on the first Business Day of the month, after making the deposits required by Section 5.02(b)(i) and (ii), the Trustee shall make the following deposits:

(1) to the subaccounts established for each issue of Senior Subordinate Indebtedness in the Senior Subordinate Interest Account, (i) an amount of Authority Revenues equal to the Interest Accrual on all the outstanding Senior Subordinate Indebtedness to and including the last day of the next calendar month; (ii) the amount of any payments or reimbursements due in the next ensuing month to each Enhancement Facility Provider to the extent such payment or reimbursement obligation constitutes Senior Subordinate Indebtedness hereunder; (iii) the amount of any payments due in the next ensuing month under any Hedge Agreement or Qualified Swap secured on a parity with Senior Subordinate Indebtedness; provided, further, that any such deposits shall be adjusted to give credit for any other available money then in such interest account or subaccount or otherwise available and designated to be used for such purpose; and

(2) to the subaccounts established for each issue of Senior Subordinate Indebtedness in the Senior Subordinate Principal Account and Senior Subordinate Sinking Fund Account, an amount of Authority Revenues equal to the Principal Accrual on the outstanding Senior Subordinate Indebtedness to and including the last day of the next calendar month; provided, however, such deposits shall be adjusted to give credit for any other available money then in the principal or sinking fund account or subaccount or otherwise available and designated to be used for such purpose.

(b) Use of Moneys in Senior Subordinate Bond Fund. (1) On or before each Interest Payment Date, the Trustee shall pay to the Holders of Senior Subordinate Indebtedness from funds on deposit in the Senior Subordinate Interest Account, the amount required for the payment of the interest becoming due on Senior Subordinate Indebtedness on such Interest Payment Date; provided, however, if the Trustee is not the Fiduciary for such Senior Subordinate Indebtedness, the Trustee will withdraw from the Senior Subordinate Interest Account and transfer to the Fiduciary therefor not later than one (1) Business Day prior to the applicable Interest Payment Date the amount required for the payment of interest becoming due on the Senior Subordinate Indebtedness to which the Fiduciary so serves. On or before the date on which (x) regularly scheduled payments under a Hedge Agreement or Qualified Swap are due or (y) payments or reimbursements to an Enhancement Facility Provider are to be made, in each case relating to Senior Subordinate Indebtedness, the Trustee shall pay to the persons entitled thereto from funds on deposit in the Senior Subordinate Interest Account the corresponding amounts owing to such persons on such date.

(2) On or before each payment date, the Trustee shall pay to the Holders of Senior Subordinate Indebtedness from funds on deposit in the Senior Subordinate

Principal Account, the amount required for the payment of principal becoming due on and any termination payment due in respect of Senior Subordinate Indebtedness on such payment date and with respect to Senior Subordinate Indebtedness as to which the Trustee is not the Fiduciary therefor, the Trustee shall pay to each such Fiduciary not later than one (1) Business Day prior to the applicable payment date from funds on deposit in the Senior Subordinate Principal Account the corresponding amounts required for the payment of principal becoming due on and any termination payment due in respect of such Senior Subordinate Indebtedness.

(3) On or before each mandatory redemption date, the Trustee shall pay to the Holders of Senior Subordinate Indebtedness from funds on deposit in the Senior Subordinate Sinking Fund Account, the amount required for the payment of mandatory sinking fund installments becoming due on Senior Subordinate Indebtedness on such mandatory redemption payment date and with respect to Senior Subordinate Indebtedness as to which the Trustee is not the Fiduciary therefor, the Trustee shall pay to each such Fiduciary not later than one (1) Business Day prior to the applicable mandatory redemption payment date from funds on deposit in the Senior Subordinate Sinking Fund Account the corresponding amounts required for the payment of mandatory sinking fund installments becoming due on such Senior Subordinate Indebtedness.

(4) Any amount in the Senior Subordinate Sinking Fund Account not applied in accordance with subsection (c) below to the purchase of Senior Subordinate Indebtedness by the forty-fifth (45th) day prior to the next date on which such Senior Subordinate Indebtedness is so redeemable shall be applied to the redemption of such Senior Subordinate Indebtedness on such redemption date. Any amounts deposited in the Senior Subordinate Sinking Fund Account and not applied within twelve (12) months of their date of deposit to the purchase or redemption of Senior Subordinate Indebtedness (except if held in accordance with Section 11.01 hereof) shall be transferred to the Senior Subordinate Interest Account. The Senior Subordinate Indebtedness to be purchased or redeemed shall be selected by the Trustee in the manner provided in Section 3.04 hereof. Amounts in the Senior Subordinate Sinking Fund Account to be applied to the redemption of Senior Subordinate Indebtedness shall be paid to the respective Trustee or Fiduciary on or before the redemption date and applied by them on such redemption date to the payment of the redemption price of the Senior Subordinate Indebtedness being redeemed.

(c) Notwithstanding the provisions of this Section, the Authority may, at any time but in no event less than forty-five (45) days prior to the date on which a mandatory sinking fund installment is scheduled to be due on Senior Subordinate Indebtedness, direct the Trustee or Fiduciary to purchase, with money on deposit in the Senior Subordinate Sinking Fund Account, at a price not in excess of par plus interest accrued and unpaid to the date of such purchase, term bonds to be redeemed on such date. At the direction of the Authority, any term bond so purchased may be cancelled upon receipt thereof by the Trustee or the Fiduciary and evidence of such cancellation shall be given to the Authority. The principal amount of each term bond so canceled shall be credited against the sinking fund installment due on such date as long as such term bond is canceled by the Trustee or Fiduciary prior to the date on which notice of redemption is given.

(d) In the event the amount on deposit in the Senior Subordinate Interest Account on any Interest Payment Date exceeds the amount required to pay interest on the Senior Subordinate Indebtedness on such Interest Payment Date, the Authority shall, if the amount on deposit in any Senior Subordinate Debt Service Reserve Account is less than the applicable Debt Service Reserve Requirement, instruct the Trustee to transfer such excess to such Senior Subordinate Debt Service Reserve Account to the extent of such deficiency, and otherwise retain any remaining excess in the Senior Subordinate Interest Account or instruct the Trustee to transfer any such remaining excess to the Senior Subordinate Principal Account or Senior Subordinate Sinking Fund Account to be credited against subsequent required deposits thereto, as determined by the Authority.

(e) In the event the amount on deposit in the Senior Subordinate Principal Account or Senior Subordinate Sinking Fund Account on any principal or mandatory redemption payment date exceeds the amount required on such date to pay Senior Subordinate Indebtedness at maturity or pursuant to mandatory sinking fund requirements, the Authority shall, if the amount on deposit in any Senior Subordinate Debt Service Reserve Account is less than the applicable Debt Service Reserve Requirement, instruct the Trustee to transfer such excess to such Senior Subordinate Debt Service Reserve Account to the extent of such deficiency, and otherwise retain such excess in the Senior Subordinate Principal Account or Senior Subordinate Sinking Fund Account, as the case may be, or instruct the Trustee to transfer such excess to the Senior Subordinate Interest Account to be credited against subsequent required deposits thereto, as determined by the Authority.

(f) In the event the balance on deposit in the Senior Subordinate Principal Account, the Senior Subordinate Sinking Fund Account or the Senior Subordinate Interest Account is insufficient for the purposes thereof, the Trustee shall deposit in such Accounts such amounts as may be necessary therefor, after any transfer required by Section 5.03(f), first, from other legally available funds transferred by the Authority to the Trustee not subject to the lien of this Agreement; second, from the Surplus Fund; third, from the Commonwealth Payments Fund; fourth, from the Capital Improvement Fund; fifth, from the Operating Reserve Fund; sixth, from the Current Expense Fund and last, from the applicable Senior Subordinate Debt Service Reserve Account pursuant to Section 5.06.

Section 5.06 Senior Subordinate Debt Service Reserve Fund.

(a) In each month the Trustee shall deposit to each Account in the Senior Subordinate Debt Service Reserve Fund (i) beginning on the first Business Day of such month, after making the deposits required by Section 5.02(b)(i) through (iii), an amount of Authority Revenues equal to (x) 1/60 of the amount (or such greater amount specified in the Supplemental Agreement authorizing any Senior Subordinate Bonds), if any, necessary to restore the amount on deposit therein to the related Debt Service Reserve Requirement in the event of an increase in the applicable Debt Service Reserve Requirement upon the issuance of additional Senior Subordinate Bonds, and (y) except as provided in paragraph (c) below, 1/12 of the amount, if any, necessary to restore the amount on deposit therein to the related Debt Service Reserve Requirement in the event of any other deficiency and (ii) the amount of proceeds of any Senior Subordinate Bonds as required by the applicable Supplemental Agreement.

(b) Amounts in each Account in the Senior Subordinate Debt Service Reserve Fund shall be used to pay debt service on the related Series of Senior Subordinate Bonds on the dates such debt service is due when insufficient funds for that purpose are available in the Senior Subordinate Bond Fund, after making any transfers pursuant to Section 5.05(f) and all cash and investments in an Account in the Senior Subordinate Debt Service Reserve Fund shall be used, together with other amounts available for such purpose hereunder, to provide for payment in full of the related Series of Senior Subordinate Bonds when the aggregate of such amounts is sufficient for such purpose. Amounts in each Account of the Senior Subordinate Debt Service Reserve Fund shall be pledged to Holders of the Senior Subordinate Bonds to which such Account relates. In no event shall amounts on deposit in the Senior Subordinate Debt Service Reserve Fund be used to pay principal of, interest on or any other amounts due with respect to Other System Indebtedness.

(c) In lieu of or in addition to cash or investments, at any time the Authority may cause to be deposited to the credit of any Senior Subordinate Debt Service Reserve Account, a Debt Service Reserve Facility, in the stated amount equal to all or a portion of the applicable Debt Service Reserve Requirement, irrevocably payable to the Trustee, as beneficiary for the Holders of the Senior Subordinate Bonds to which such Account relates. If (x) the Authority receives an expiration notice and the applicable Enhancement Facility Provider does not extend the expiration date of a Debt Service Reserve Facility, (y) the Authority receives notice of the termination of a Debt Service Reserve Facility, or (z) the Authority receives notice that the Enhancement Facility Provider of a Debt Service Reserve Facility no longer has the required credit rating, the Authority immediately shall (i) provide a substitute Debt Service Reserve Facility, (ii) deposit a sum equal to the applicable Debt Service Reserve Requirement to the credit of the Senior Subordinate Debt Service Reserve Account to which such Debt Service Reserve Facility relates (A) in equal monthly installments over the next succeeding 12 months in the case of receipt of an expiration notice, (B) prior to the termination date in the case of receipt of a termination notice, or (C) immediately in the case of such reduction in credit rating, or (iii) instruct the Trustee to draw on such Debt Service Reserve Facility (A) 12 months prior to expiration of the Debt Service Reserve Facility in the case of receipt of an expiration notice, (B) prior to the termination date in the case of receipt of a termination notice, or (C) immediately in the case of such reduction in credit rating and deposit the proceeds of such drawing to the credit of the Senior Subordinate Debt Service Reserve Account to which such Debt Service Reserve Facility relates.

If a disbursement is made pursuant to a Debt Service Reserve Facility, the Authority shall either (i) reinstate such Facility in full or (ii) deposit to the credit of the Senior Subordinate Debt Service Reserve Account a sum equal to the amount of the disbursement made under such Facility in accordance with its provisions.

(d) On or within five days after each Reserve Determination Date, the Trustee shall determine whether the balance on deposit in each Senior Subordinate Debt Service Reserve Account was, as of the Reserve Determination Date, at least equal to the applicable Debt Service Reserve Requirement. In making such determination, any obligations in a Senior Subordinate Debt Service Reserve Account shall be valued in accordance with Section 6.01.

In the event the amount on deposit in a Senior Subordinate Debt Service Reserve Account exceeds the applicable Debt Service Reserve Requirement, the Trustee shall transfer such excess as directed in writing by an Authorized Representative of the Authority, such direction to be accompanied by an Opinion of Bond Counsel that such transfer will not adversely affect the exclusion (if applicable) from gross income of interest on the respective Series of Senior Subordinate Bonds to which such excess relates, (i) to the subaccount of the Senior Subordinate Principal Account corresponding to such Series of Senior Subordinate Bonds, (ii) to Fund the Operating Reserve Fund until the balance thereof equals the Operating Reserve Requirement, or (iii) to the Authority to be used to pay all or any portion of the Costs of Improvements designated by the Authority and approved by Bond Counsel. If an Authorized Representative of the Authority calls for a Reserve Determination Date in connection with the refunding and/or defeasance of a Series of Senior Subordinate Bonds, then the Trustee is authorized to take such refunding and/or defeasance into account in valuing the Senior Subordinate Debt Service Reserve Account securing such Series of Senior Subordinate Bonds and is further authorized to apply the amount of any surplus arising from such valuation to reduce the amount of the refunding bonds and/or to provide for the refunding or defeasance of the Series of Senior Subordinate Bonds in such manner as such Authorized Representative may direct.

(e) In connection with any issuance of Senior Subordinate Bonds, the Authority may, in the applicable Supplemental Agreement, provide that no deposit to the Senior Subordinate Debt Service Reserve Fund shall be made for or with respect to such additional Senior Subordinate Bonds, in which case: (i) the lien of and pledge on the Senior Subordinate Debt Service Reserve Fund shall not extend to or be for the benefit of the Holders of such Senior Subordinate Bonds, and (ii) the Annual Debt Service on such Senior Subordinate Bonds shall not be taken into account in determining the applicable Debt Service Reserve Requirement.

In the event that a Supplemental Agreement so provides, then such Supplemental Agreement may also provide for the creation of a special reserve account solely for the Senior Subordinate Bonds to which such Supplemental Agreement relates, separate from the Senior Subordinate Debt Service Reserve Fund, and may provide for the deposit therein, at the time of issuance or from time to time thereafter, of an amount specified in the applicable Supplemental Agreement as the required reserve for such Senior Subordinate Bonds, or may require the Authority to deposit to the credit of such special reserve account a Debt Service Reserve Facility to enhance the security for such Senior Subordinate Bonds in lieu of a funded reserve account.

Section 5.07 Subordinate Bond Fund.

(a) Deposits to the Subordinate Bond Fund. In accordance with Section 5.02 (except that no distinction or preference shall exist in making the following deposits into the Subordinate Interest Account, the Subordinate Principal Account or the Subordinate Sinking Fund Account of the Subordinate Bond Fund, in each case, such accounts being on a parity with each other as to the deposits therein under said Section 5.02), beginning on the first Business Day of the month, after making the deposits required by Section 5.02(b)(i) through (iv), the Trustee shall make the following deposits:

(1) to the subaccounts established for each issue of Subordinate Indebtedness in the Subordinate Interest Account, (i) an amount of Authority Revenues equal to the Interest Accrual on all the outstanding Subordinate Indebtedness to and including the last day of the next calendar month; (ii) the amount of any payments or reimbursements due in the next ensuing month to each Enhancement Facility Provider to the extent such payment or reimbursement obligation constitutes Subordinate Indebtedness hereunder; and (iii) the amount of any payments due in the next ensuing month under any Hedge Agreement or Qualified Swap secured on a parity with Subordinate Indebtedness; provided, further, that any such deposits shall be adjusted to give credit for any other available money then in such interest account or subaccount or otherwise available and designated to be used for such purpose; and

(2) to the subaccounts established for each issue of Subordinate Indebtedness in the Subordinate Principal Account and Subordinate Sinking Fund Account, an amount of Authority Revenues equal to the Principal Accrual on the outstanding Subordinate Indebtedness to and including the last day of the next calendar month; provided, however, such deposits shall be adjusted to give credit for any other available money then in the principal or sinking fund account or subaccount or otherwise available and designated to be used for such purpose.

(b) Use of Moneys in Subordinate Bond Fund. (1) On or before each Interest Payment Date, the Trustee shall pay to the Holders of Subordinate Indebtedness from funds on deposit in the Subordinate Interest Account, the amount required for the payment of the interest becoming due on Subordinate Indebtedness on such Interest Payment Date; provided, however, if the Trustee is not the Fiduciary for such Subordinate Indebtedness, the Trustee will withdraw from the Subordinate Interest Account and transfer to the Fiduciary therefor not later than one (1) Business Day prior to the applicable Interest Payment Date the amount required for the payment of interest becoming due on the Subordinate Indebtedness to which the Fiduciary so serves. On or before the date on which (x) regularly scheduled payments under a Hedge Agreement or Qualified Swap are due or (y) payments or reimbursements to an Enhancement Facility Provider are to be made, in each case relating to Subordinate Indebtedness, the Trustee shall pay to the persons entitled thereto from funds on deposit in the Subordinate Interest Account the corresponding amounts owing to such persons on such date.

(2) On or before each payment date, the Trustee shall pay to the Holders of Subordinate Indebtedness from funds on deposit in the Subordinate Principal Account, the amount required for the payment of principal becoming due on and any termination payment due in respect of Subordinate Indebtedness on such payment date and with respect to Subordinate Indebtedness as to which the Trustee is not the Fiduciary therefor, the Trustee shall pay to each such Fiduciary not later than one (1) Business Day prior to the applicable payment date from funds on deposit in the Subordinate Principal Account the corresponding amounts required for the payment of principal becoming due on and any termination payment due in respect of such Subordinate Indebtedness.

(3) On or before each mandatory redemption date, the Trustee shall pay to the Holders of Subordinate Indebtedness from funds on deposit in the Subordinate Sinking Fund Account, the amount required for the payment of mandatory sinking fund installments becoming due on Subordinate Indebtedness on such mandatory redemption payment date and

with respect to Subordinate Indebtedness as to which the Trustee is not the Fiduciary therefor, the Trustee shall pay to each such Fiduciary not later than one (1) Business Day prior to the applicable mandatory redemption payment date from funds on deposit in the Subordinate Sinking Fund Account the corresponding amounts required for the payment of mandatory sinking fund installments becoming due on such Subordinate Indebtedness.

(4) Any amount in the Subordinate Sinking Fund Account not applied in accordance with subsection (c) below to the purchase of Subordinate Indebtedness by the forty-fifth (45th) day prior to the next date on which such Subordinate Indebtedness is so redeemable shall be applied to the redemption of such Subordinate Indebtedness on such redemption date. Any amounts deposited in the Subordinate Sinking Fund Account and not applied within twelve (12) months of their date of deposit to the purchase or redemption of Subordinate Indebtedness (except if held in accordance with Section 11.01 hereof) shall be transferred to the Subordinate Interest Account. The Subordinate Indebtedness to be purchased or redeemed shall be selected by the Trustee in the manner provided in Section 3.04 hereof. Amounts in the Subordinate Sinking Fund Account to be applied to the redemption of Subordinate Indebtedness shall be paid to the respective Trustee or Fiduciary on or before the redemption date and applied by them on such redemption date to the payment of the redemption price of the Subordinate Indebtedness being redeemed.

(c) Notwithstanding the provisions of this Section, the Authority may, at any time but in no event less than forty-five (45) days prior to the date on which a mandatory sinking fund installment is scheduled to be due on Subordinate Indebtedness, direct the Trustee or Fiduciary to purchase, with money on deposit in the Subordinate Sinking Fund Account, at a price not in excess of par plus interest accrued and unpaid to the date of such purchase, term bonds to be redeemed on such date. At the direction of the Authority, any term bond so purchased may be cancelled upon receipt thereof by the Trustee or the Fiduciary and evidence of such cancellation shall be given to the Authority. The principal amount of each term bond so canceled shall be credited against the sinking fund installment due on such date as long as that such term bond is canceled by the Trustee or Fiduciary prior to the date on which notice of redemption is given.

(d) In the event the amount on deposit in the Subordinate Interest Account on any Interest Payment Date exceeds the amount required to pay interest on the Subordinate Indebtedness on such Interest Payment Date, the Authority shall, if the amount on deposit in any Subordinate Debt Service Reserve Account is less than the applicable Debt Service Reserve Requirement, instruct the Trustee to transfer such excess to such Subordinate Debt Service Reserve Account to the extent of such deficiency, and otherwise retain any remaining excess in the Subordinate Interest Account or instruct the Trustee to transfer any such remaining excess to the Subordinate Principal Account or Subordinate Sinking Fund Account to be credited against subsequent required deposits thereto, as determined by the Authority.

(e) In the event the amount on deposit in the Subordinate Principal Account or Subordinate Sinking Fund Account on any principal or mandatory redemption payment date exceeds the amount required on such date to pay Subordinate Indebtedness at maturity or pursuant to mandatory sinking fund requirements, the Authority shall, if the amount on deposit in any Subordinate Debt Service Reserve Account is less than the applicable Debt Service Reserve

Requirement, instruct the Trustee to transfer such excess to such Subordinate Debt Service Reserve Account to the extent of such deficiency, and otherwise retain such excess in the Subordinate Principal Account or Subordinate Sinking Fund Account, as the case may be, or instruct the Trustee to transfer such excess to the Subordinate Interest Account to be credited against subsequent required deposits thereto, as determined by the Authority.

(f) In the event the balance on deposit in the Subordinate Principal Account, the Subordinate Sinking Fund Account or the Subordinate Interest Account is insufficient for the purposes thereof, the Trustee shall deposit in such Accounts such amounts as may be necessary therefor after any transfers required by Section 5.03(f) and 5.05(f), first, from other legally available funds transferred by the Authority to the Trustee not subject to the lien of this Agreement; second, from the Surplus Fund; third, from the Commonwealth Payments Fund; fourth, from the Capital Improvement Fund; fifth, from the Operating Reserve Fund; sixth, from the Current Expense Fund and last, from the applicable Subordinate Debt Service Reserve Account pursuant to Section 5.08.

Section 5.08 Subordinate Reserve Fund.

(a) In each month the Trustee shall deposit to each Account in the Subordinate Debt Service Reserve Fund (i) beginning on the first Business Day of such month, after making the deposits required by Section 5.02(b)(i) through (v), an amount of Authority Revenues equal to (x) 1/60 of the amount (or such greater amount specified in the Supplemental Agreement authorizing such additional Subordinate Bonds), if any, necessary to restore the amount on deposit therein to the related Debt Service Reserve Requirement in the event of an increase in the applicable Debt Service Reserve Requirement upon the issuance of additional Subordinate Bonds, and (y) except as provided in paragraph (c) below, 1/12 of the amount, if any, necessary to restore the amount on deposit therein to the related Debt Service Reserve Requirement in the event of any other deficiency and (ii) the amount of proceeds of any Subordinate Bonds as required by the applicable Supplemental Agreement.

(b) Amounts in each Account in the Subordinate Debt Service Reserve Fund shall be used to pay debt service on the related Series of Subordinate Bonds on the dates such debt service is due when insufficient funds for that purpose are available in the Subordinate Bond Fund, after making any transfers pursuant to Section 5.07(f) and all cash and investments in an Account in the Subordinate Debt Service Reserve Fund shall be used, together with other amounts available for such purpose hereunder, to provide for payment in full of the related Series of Subordinate Bonds when the aggregate of such amounts is sufficient for such purpose. Amounts in each Account of the Subordinate Debt Service Reserve Fund shall be pledged to Holders of the Subordinate Bonds to which such Account relates. In no event shall amounts on deposit in the Senior Subordinate Debt Service Reserve Fund be used to pay principal of, interest on or any other amounts due with respect to Other System Indebtedness.

(c) In lieu of or in addition to cash or investments, at any time the Authority may cause to be deposited to the credit of any Subordinate Debt Service Reserve Account, a Debt Service Reserve Facility, in the stated amount equal to all or a portion of the applicable Debt Service Reserve Requirement, irrevocably payable to the Trustee, as beneficiary for the Holders of the Subordinate Bonds to which such Account relates. If (x) the Authority receives

an expiration notice and the applicable Enhancement Facility Provider does not extend the expiration date of a Debt Service Reserve Facility, (y) the Authority receives notice of the termination of a Debt Service Reserve Facility, or (z) the Authority receives notice that the Enhancement Facility Provider of a Debt Service Reserve Facility no longer has the required credit rating, the Authority immediately shall (i) provide a substitute Debt Service Reserve Facility, (ii) deposit a sum equal to the applicable Debt Service Reserve Requirement to the credit of the Subordinate Debt Service Reserve Account to which such Debt Service Reserve Facility relates (A) in equal monthly installments over the next succeeding 12 months in the case of receipt of an expiration notice, (B) prior to the termination date in the case of receipt of a termination notice, or (C) immediately in the case of such reduction in credit rating, or (iii) instruct the Trustee to draw on such Debt Service Reserve Facility (A) 12 months prior to expiration of the Debt Service Reserve Facility in the case of receipt of an expiration notice, (B) prior to the termination date in the case of receipt of a termination notice, or (C) immediately in the case of such reduction in credit rating and deposit the proceeds of such drawing to the credit of the Subordinate Debt Service Reserve Account to which such Debt Service Reserve Facility relates.

If a disbursement is made pursuant to a Debt Service Reserve Facility, the Authority shall either (i) reinstate such Facility in full or (ii) deposit to the credit of the Subordinate Debt Service Reserve Account a sum equal to the amount of the disbursement made under such Facility in accordance with its provisions.

(d) On or within five days after each Reserve Determination Date, the Trustee shall determine whether the balance on deposit in each Subordinate Debt Service Reserve Account was, as of the Reserve Determination Date, at least equal to the applicable Debt Service Reserve Requirement. In making such determination, any obligations in a Subordinate Debt Service Reserve Account shall be valued in accordance with Section 6.01.

In the event the amount on deposit in a Subordinate Debt Service Reserve Account exceeds the applicable Debt Service Reserve Requirement, the Trustee shall transfer such excess as directed by an Authorized Representative of the Authority, such direction to be accompanied by an Opinion of Bond Counsel that such transfer will not adversely affect the exclusion (if applicable) from gross income of interest on the respective Series of Subordinate Bonds to which such excess relates, (i) to the subaccount of the Subordinate Principal Account corresponding to such Series of Subordinate Bonds, (ii) to Fund the Operating Reserve Fund until the balance therein is equal to the Operating Reserve Requirement, or (iii) to the Authority to be used to pay all or any portion of the Costs of Improvements designated by the Authority and approved by Bond Counsel. If an Authorized Representative of the Authority calls for a Reserve Determination Date in connection with the refunding and/or defeasance of a Series of Subordinate Bonds, then the Trustee is authorized to take such refunding and/or defeasance into account in valuing the Subordinate Debt Service Reserve Account securing such Series of Subordinate Bonds and is further authorized to apply the amount of any surplus arising from such valuation to reduce the amount of the refunding bonds and/or to provide for the refunding or defeasance of the Series of Subordinate Bonds in such manner as such Authorized Representative may direct.

(e) In connection with any issuance of Subordinate Bonds, the Authority may, in the applicable Supplemental Agreement, provide that no deposit to the Subordinate Debt Service Reserve Fund shall be made for or with respect to such additional Subordinate Bonds, in which case: (i) the lien of and pledge on the Subordinate Debt Service Reserve Fund shall not extend to or be for the benefit of the Holders of such Subordinate Bonds, and (ii) the Annual Debt Service on such Subordinate Bonds shall not be taken into account in determining the applicable Debt Service Reserve Requirement.

In the event that a Supplemental Agreement so provides, then such Supplemental Agreement may also provide for the creation of a special reserve account solely for the Subordinate Bonds to which such Supplemental Agreement relates, separate from the Subordinate Debt Service Reserve Fund, and may provide for the deposit therein, at the time of issuance or from time to time thereafter, of an amount specified in the applicable Supplemental Agreement as the required reserve for such Subordinate Bonds, or may require the Authority to deposit to the credit of such special reserve account a Debt Service Reserve Facility to enhance the security for such Subordinate Bonds in lieu of a funded reserve account.

Section 5.09 Current Expense Fund.

(a) In accordance with Section 5.02, beginning on the first Business Day of the month and after making the deposits required by Section 5.02(b)(i) through (vi), the Trustee shall transfer to the Current Expense Fund, Authority Revenues in an amount equal to the amount set forth in the Disbursement Schedule delivered on the most recent Deposit Date to pay Current Expenses of the Systems for the current month and, at the discretion of the Authority, up to two additional months.

(b) Amounts on deposit in the Current Expense Fund shall be available (i) to pay Current Expenses and (ii) subject to the provisions of Sections 5.03(f), 5.05(f) and 5.07(f), to the extent that moneys on deposit in the Senior Bond Fund, the Senior Subordinate Bond Fund or the Subordinate Bond Fund are insufficient to make the required interest and principal payments, prior to any withdrawal from the Senior Debt Service Reserve Fund, the Senior Subordinate Debt Service Reserve Fund or the Subordinate Debt Service Reserve Fund. In accordance with the provisions of Section 10.02 hereof, in the event that amounts on deposit in the Current Expense Fund are transferred to pay a termination payment or to fund a deficiency in the Senior Bond Fund, the Senior Subordinate Bond Fund or the Subordinate Bond Fund, the Trustee shall provide notice of such transfer to the Consulting Engineer, any other Consultants identified by the Authority, if any, and to Government Development Bank for Puerto Rico.

Section 5.10 Operating Reserve Fund.

(a) In each month the Trustee shall deposit to the Operating Reserve Fund (i) beginning on the first Business Day of the month and after making the deposits required by Section 5.02(b)(i) through (vii), an amount of Authority Revenues equal to 1/60 of the amount, if any, necessary to restore the amount on deposit therein to the Operating Reserve Requirement and to pay interest on any reimbursement obligations due with respect to an Operating Reserve Facility. Earnings on moneys held in the Operating Reserve Fund shall be retained therein.

(b) Amounts on deposit in the Operating Reserve Fund shall be available (i) to be requisitioned by the Authority to pay Current Expenses, (ii) to pay any termination payment due under a Qualified Swap or Hedge Agreement, (iii) to pay interest or any reimbursement obligation due with respect to an Operating Reserve Facility, and (iv) subject to the provisions of Sections 5.03(f), 5.05(f) and 5.07(f), to the extent that moneys on deposit in the Senior Bond Fund, the Senior Subordinate Bond Fund or the Subordinate Bond Fund are insufficient to make the required interest and principal payments, prior to any withdrawal from the Senior Debt Service Reserve Fund, the Senior Subordinate Debt Service Reserve Fund or the Subordinate Debt Service Reserve Fund. In accordance with the provisions of Section 10.02 hereof, in the event that (i) there is no deposit required to be made to the Commonwealth Payments Fund and (ii) amounts on deposit in the Operating Reserve Fund are transferred to pay a termination payment or to fund a deficiency in the Senior Bond Fund, the Senior Subordinate Bond Fund or the Subordinate Bond Fund, the Trustee shall provide notice of such transfer to the Consulting Engineer, any other Consultants identified by the Authority, if any, and to Government Development Bank for Puerto Rico.

(c) In lieu of or in addition to cash or investments, at any time, the Authority may cause to be deposited to the credit of the Operating Reserve Fund, an Operating Reserve Facility, in the stated amount equal to all or a portion of the application Operating Reserve Requirement. Any withdrawals from the Operating Reserve Fund made in accordance with the above paragraph (b), shall be made first from any cash or investments on deposit therein and then to the extent no such cash or investments are available, from a draw on any Operating Reserve Facility.

(d) For so long as the provisions of Section 8.05(a) remain in effect, from the time during any Fiscal Year at which aggregate Current Expenses for such year exceed the amount therefor set forth in the applicable Annual Budget, each requisition from the Operating Reserve Fund must be approved in writing by the Consulting Engineer.

Section 5.11 Capital Improvement Fund.

(a) There shall be credited to the Capital Improvement Fund (i) beginning on the first Business Day of the month and after making the deposits required by Section 5.02(b)(i) through (viii) an amount of Authority Revenues equal to that which may be necessary to make the balance on deposit therein equal to the Capital Improvement Fund Requirement for the Fiscal Year as set forth in the applicable Annual Budget in equal monthly deposits over such Fiscal Year, (ii) the proceeds of any condemnation awards, (iii) proceeds of insurance (other than use and occupancy insurance), (iv) the proceeds of sales of property constituting a part of the Systems and (v) the proceeds of any termination or similar payment received by the Authority under any interest rate swap or similar hedge agreement. Earnings on moneys held in the Capital Improvement Fund shall be retained therein.

(b) Amounts on deposit in the Capital Improvement Fund shall be available (i) to pay or reimburse the Authority for Costs of Improvements, such Costs of Improvements to be paid in accordance with the procedures established in Section 4.02(a) and (ii) subject to the provisions of Sections 5.03(f), 5.05(f) and 5.07(f), to the extent that moneys on deposit in the Senior Bond Fund, the Senior Subordinate Bond Fund or the Subordinate Bond Fund are

insufficient to make the required interest and principal payments on Bonds prior to any withdrawal from the Senior Debt Service Reserve Fund, the Senior Subordinate Debt Service Reserve Fund or the Subordinate Debt Service Reserve Fund, to satisfy any such deficiencies.

Section 5.12 Commonwealth Payments Fund.

(a) There shall be credited to the Commonwealth Guaranteed Indebtedness Account (i) any Authority Revenues received by the Authority from the Commonwealth of Puerto Rico on account of Commonwealth Guaranteed Indebtedness and (ii) beginning on the first Business Day of the month and after making the deposits required by Section 5.02(b)(i) through (ix) an amount of Authority Revenues sufficient to pay:

(i) the Interest Accrual on Commonwealth Guaranteed Indebtedness in respect of the next Interest Payment Date; provided, however, that such deposits shall be adjusted to give credit for any other available money then in such account or otherwise available and designated to be used for such purpose; and

(ii) the Principal Accrual on Commonwealth Guaranteed Indebtedness in respect of the next principal payment date; provided, however, that such deposits shall be adjusted to give credit for any other available money then in such account or otherwise available and designated to be used for such purpose.

(b) There shall be credited to the Commonwealth Supported Obligations Account (i) any Authority Revenues received by the Authority from the Commonwealth of Puerto Rico on account of Commonwealth Supported Obligations and (ii) after the deposits required by paragraph (a) have been made in full, beginning on the first Business Day of the month and after making the deposits required by Section 5.02(i) through (ix) an amount of Authority Revenues sufficient to pay:

(i) the Interest Accrual on Commonwealth Supported Obligations in respect of the next Interest Payment Date; provided, however, that such deposits shall be adjusted to give credit for any other available money then in such account or otherwise available and designated to be used for such purpose; and

(ii) the Principal Accrual on Commonwealth Supported Obligations in respect of the next principal payment date; provided, however, that such deposits shall be adjusted to give credit for any other available money then in such account or otherwise available and designated to be used for such purpose.

(c) Amounts on deposit in the Commonwealth Guaranteed Indebtedness Account and Commonwealth Supported Obligations Account within the Commonwealth Payments Fund will be transferred by the Trustee to the respective Fiduciaries therefor not later than one (1) Business Day prior to the applicable interest or principal payment date; provided, however, to the extent that moneys on deposit in the Commonwealth Guaranteed Indebtedness Account are insufficient to make the required interest and principal payments on Commonwealth Guaranteed Indebtedness, moneys in the Commonwealth Supported Obligations Account (other than amounts received from the Commonwealth of Puerto Rico to pay principal or interest on Commonwealth Supported Obligations) shall be used to satisfy any such deficiency.

(d) (1) Amounts on deposit in the Commonwealth Payments Fund, excluding Authority Revenues received from Commonwealth to pay bonds, shall be available to replenish any deficiencies in the Operating Reserve Fund, including any payments with respect to any Operating Reserve Facility or to pay any amounts due under any other operating line of credit of the Authority.

(2) Subject to the provisions of Sections 5.03(f), 5.05(f) and 5.07(f), to the extent that moneys on deposit in the Senior Bond Fund, the Senior Subordinate Bond Fund or the Subordinate Bond Fund are insufficient to make the required interest and principal payments on Bonds, moneys in the Commonwealth Supported Obligations Account (other than Authority Revenues received from the Commonwealth of Puerto Rico to pay principal or interest on Commonwealth Supported Obligations) and in the Commonwealth Guaranteed Indebtedness Account (other than Authority Revenues received from the Commonwealth of Puerto Rico to pay principal or interest on Commonwealth Guaranteed Indebtedness) shall be used, in that order of priority, prior to any withdrawal from the Senior Debt Service Reserve Fund, the Senior Subordinate Debt Service Reserve Fund or the Subordinate Debt Service Reserve Fund, to satisfy any such deficiencies.

(e) Authority Revenues received by the Authority from the Commonwealth of Puerto Rico to pay principal or interest when due on Commonwealth Guaranteed Indebtedness or Commonwealth Supported Obligations shall be used only for such purpose. Any Authority Revenues received from the Commonwealth of Puerto Rico by the Authority which represents a reimbursement for principal or interest previously paid by the Authority on Commonwealth Guaranteed Indebtedness or Commonwealth Supported Obligations shall be transferred to the Surplus Fund for application in accordance with Section 5.12.

(f) If the amounts so deposited on or before any Deposit Date to the credit of the foregoing Accounts in the Commonwealth Payment Fund shall be less than the respective required amounts for such month, the Trustee shall provide notice of such insufficiency to the 1995 Resolution Trustee, the Consulting Engineer, other Consultants, if any, and to Government Development Bank for Puerto Rico.

(g) On each September 15 and February 15 and at any other time requested by the 1995 Resolution Trustee, the Trustee shall provide the 1995 Resolution Trustee with information as to the respective amounts on deposit in each of the accounts within the Commonwealth Payments Fund.

(h) At the request of the Fiduciary for any Commonwealth Supported Obligations, the Trustee shall provide such trustee with information as to the amount on deposit in the Commonwealth Supported Obligations Account.

Section 5.13 Surplus Fund.

(a) After all the deposits required by Section 5.02(b)(i) through (x) have been made in accordance with the provisions of this Article, any remaining moneys shall be deposited to the credit of the Surplus Fund.

(b) From the amounts deposited in the Surplus Fund, there shall be credited to the Rate Stabilization Account, an amount equal to one twelfth (1/12) of the amount, if any, necessary to fund the Rate Stabilization Account at the amount set forth in the applicable Annual Budget.

(c) At any time the Authority may direct the Trustee to withdraw amounts on deposit in the Rate Stabilization Account and (i) transfer such amounts to any other Fund or Account established under this Agreement, (ii) use such amounts to purchase or redeem Indebtedness, or (iii) use such amounts to otherwise provide for the payment of Indebtedness or interest thereon. Subject to the provisions of Sections 5.03(f), 5.05(f) and 5.07(f), to the extent that moneys on deposit in the Senior Bond Fund, the Senior Subordinate Bond Fund or the Subordinate Bond Fund are insufficient to make the required interest and principal payments on Bonds, moneys in the Rate Stabilization Account shall be used prior to any withdrawal from the Senior Debt Service Reserve Fund, the Senior Subordinate Debt Service Reserve Fund or the Subordinate Debt Service Reserve Fund, to satisfy any such deficiencies. To the extent that any amounts are withdrawn from the Rate Stabilization Account for the purposes of this Section 5.13(c) and deposited in an account outside this Agreement for the purpose of providing for the payment of Indebtedness or interest thereon, the balance of such amounts, if any, that remain after the payment of such Indebtedness or interest shall be redeposited in the Rate Stabilization Account for future application in accordance with this Section 5.13 and for all other purposes of this Agreement.

(d) Subject to the provisions of Sections 5.03(f), 5.05(f) and 5.07(f), to the extent that moneys on deposit in the Senior Bond Fund, the Senior Subordinate Bond Fund or the Subordinate Bond Fund are insufficient to make the required interest and principal payments on Bonds, moneys in the Surplus Fund shall be used prior to any withdrawal from the Senior Debt Service Reserve Fund, the Senior Subordinate Debt Service Reserve Fund or the Subordinate Debt Service Reserve Fund, to satisfy any such deficiencies.

(e) At such time as all purposes described in paragraphs (a) through (d) above of this Section 512 are satisfied, amounts remaining to the credit of the Surplus Fund may be applied by the Authority to any lawful purpose of the Authority, including the payment of principal of and interest on any Operating Reserve Facility issued by Government Development Bank for Puerto Rico.

(f) On each September 15 and February 15 and at any other such time requested by the 1995 Resolution Trustee, the Trustee shall provide the 1995 Resolution Trustee with information as to the respective amounts on deposit in each of the accounts within the Surplus Fund.

(g) At the request of the Fiduciary for any Commonwealth Supported Obligations, the Trustee shall provide such trustee with information as to the amount on deposit in the Surplus Fund.

Section 5.14 Other Funds and Accounts.

In each Supplemental Agreement the Authority may establish such other funds and Accounts within funds as the Authority may determine.

Section 5.15 Disposition of Balances in Funds after Payment of Indebtedness.

After the principal of and premium, if any, and interest on all of the Indebtedness, any amounts required to be paid pursuant to the terms of this Agreement or any Supplemental Agreement and all expenses and charges herein required have been paid or defeased in accordance with Article XI hereof or, if such Indebtedness was not incurred hereunder, in accordance with similar provisions of the controlling document, the Trustee shall pay to the Authority any balance remaining in any fund then held by it.

ARTICLE VI

INVESTMENT OF FUNDS

Section 6.01 Investment of Funds.

(a) Any moneys held to the credit of the Construction Fund shall be invested or reinvested by the Trustee as directed by the Authority in Investment Obligations that shall mature, or that shall be subject to redemption by the holder thereof at the option of such holder, not later than the respective dates when moneys held for the credit of said Account will be required for the purposes intended. The Authority shall give written directions to the Trustee, specifying the maturity date, interest rate, principal amount and the nature of such investments. Prior to the filing of a certificate of completion related to Improvements, all earnings on moneys held in the Construction Fund related to such Improvements shall be retained therein. Subsequent to the filing of such certificate of completion, the Trustee shall (i) deposit any remaining proceeds of Senior Bonds or investment earnings thereon to the related subaccount of the Senior Interest Account of the Senior Bond Fund, (ii) deposit any remaining proceeds of Senior Subordinate Bonds or investment earnings thereon to the related subaccount of the Senior Subordinate Interest Account of the Senior Subordinate Bond Fund, and (iii) deposit any remaining proceeds of Subordinate Bonds or investment earnings thereon to the related subaccount of the Subordinated Interest Account of the Subordinate Bond Fund. The Authority shall direct the investment of amounts held in the Construction Account, and such investments shall have maturities consonant with the need for funds as estimated by the Authority.

(b) Any moneys held to the credit of the Senior Bond Fund, Senior Subordinate Bond Fund, the Subordinate Bond Fund or the Commonwealth Payments Fund, shall be invested or reinvested by the Trustee as directed by the Authority in Investment Obligations that shall mature, or that shall be subject to redemption by the holder thereof at the option of such holder, not later than the respective dates when moneys held for the credit of said Accounts will be required for the purposes intended. The Authority shall give written directions to the Trustee, specifying the maturity date, interest rate, principal amount and nature of such investments. Earnings on moneys held in any Account in a Bond Fund shall be transferred when

received to the related subaccount of the Interest Account of such Bond Fund and earnings on moneys held in the Commonwealth Payments Fund shall be retained therein.

(c) Any moneys held as part of the Operating Revenue Fund, the Operating Reserve Fund, the Capital Improvement Fund and the Surplus Fund, shall be invested and reinvested by the Trustee as directed by the Authority in Investment Obligations that shall mature, or that shall be subject to redemption by the holder thereof at the option of such holder, not later than the respective dates when moneys held for the credit of said Accounts will be required for the purposes intended.

(d) Any moneys held as part of the Current Expense Fund shall be invested or reinvested by the Authority in Investment Obligations that shall mature, or that shall be subject to redemption by the holder thereof at the option of such holder, not later than the respective dates when moneys held for the credit of said Fund will be required for the purposes intended. Earnings on moneys held in the Current Expense Fund shall be retained therein.

(e) Any moneys held as part of the Senior Debt Service Reserve Fund, the Senior Subordinate Debt Service Reserve Fund or the Subordinate Debt Service Reserve Fund shall be invested or reinvested by the Trustee as directed by the Authority in Investment Obligations that shall mature, or that shall be subject to redemption by the holder thereof at the option of such holder, not later than the respective dates when moneys held for the credit of said Accounts will be required for the purposes intended. Earnings on moneys held in any Account in a Debt Service Reserve Account shall be retained therein.

(f) In computing the amount in any Fund or Account created by this Agreement, except for the Senior Debt Service Reserve Fund, the Senior Subordinate Debt Service Reserve Fund and the Subordinate Debt Service Reserve Fund, obligations purchased as an investment of moneys therein shall be valued at the lower of market value and the amortized value thereof. Amortized value, when used with respect to an obligation purchased at par, means the par amount thereof, and, when used with respect to an obligation purchased at a premium above or a discount below par, means the value as of any given time obtained by dividing the total premium or discount at which such obligation was purchased by the number of interest payments remaining on such obligation after such purchase and deducting the amount thus calculated for each Interest Payment Date after such purchase from the purchase price in the case of an obligation purchased at a premium and adding the amount thus calculated for each Interest Payment Date after such purchase to the purchase price in the case of an obligation purchased at a discount. Except as set forth in the following sentence, valuations shall be made by the party holding each such Fund or Account at least annually not later than the end of each Fiscal Year and at such other times as the Authority may deem appropriate. Investments in the Senior Debt Service Reserve Fund, the Senior Subordinate Debt Service Reserve Fund and the Subordinate Debt Service Reserve Fund shall be valued by the Trustee at least semiannually at the fair market value thereof, plus accrued interest. In computing the value of the assets of any Fund or Account established hereunder, investments and accrued interest thereon shall be deemed a part thereof.

(g) For the purposes of this Section, each investment agreement shall be valued at par if amounts thereunder may be withdrawn without penalty in accordance with the terms thereof.

(h) The Trustee may sell or redeem any obligation in which moneys shall have been invested as provided in this Article to the extent necessary to provide cash in the respective funds or accounts, to make any payments required to be made therefrom or to facilitate the transfers of money between various funds and accounts as may be required or permitted from time to time pursuant to the provisions of this Agreement.

(i) Notwithstanding provisions herein for transfer to or holding in particular funds and accounts amounts received or held by the Trustee hereunder, investments in any and all funds and accounts created by this Agreement may be commingled (except amounts held in any arbitrage rebate fund), provided that, notwithstanding any such commingling, the Trustee shall at all times account for such investments in the funds and accounts to which they are credited and otherwise as provided in this Agreement.

(j) The Authority, each Qualified Depository and the Trustee shall not be liable for any depreciation in the value of any investments held in the funds or accounts created by this Agreement, or for any loss arising from any investment permitted hereby. The investments authorized by this Article shall at all times be subject to the provisions of applicable law, as amended from time to time. In the event that the Authority, upon the written opinion of Bond Counsel, addressed to the Trustee and the Authority, is of the opinion that it is necessary to restrict or limit the yield on the investment of any money or securities held in any fund in order to avoid the Bonds being considered “arbitrage bonds” within the meaning of Section 148 of the Code, the Authority may direct the Trustee in writing to take whatever action is necessary to properly restrict or limit the yield on such investment in accordance with such instructions, in which event the Trustee shall follow such directions. If the Trustee has not received directions from the Authority on how to invest any of the Funds and Accounts established hereunder, the Trustee shall invest the moneys in such Funds and Accounts in Government Obligations.

ARTICLE VII

PARTICULAR COVENANTS

Section 7.01 Rate Covenant.

(a) The Authority shall fix, charge and collect such rates, fees, rentals and other charges for the use of and the services furnished by the Systems and shall, from time to time and as often as shall appear necessary, revise such rates, fees and other charges so as to meet the following four independent requirements (which will be calculated annually no later than six (6) months after the end of each Fiscal Year based upon the Operating Revenues and Authority Revenues set forth in the Authority’s most recent audited financial statements):

(i) Operating Revenues shall be sufficient to be at least equal to 250% of Annual Debt Service with respect to the Senior Indebtedness for the current Fiscal Year;

(ii) Operating Revenues shall be sufficient to be at least equal to 200% of Annual Debt Service with respect to the Senior Indebtedness and the Senior Subordinate Indebtedness for the current Fiscal Year;

(iii) Operating Revenues shall be sufficient to be at least equal to 150% of Annual Debt Service with respect to all Bonds and Other System Indebtedness for the current Fiscal Year; and

(iv) Authority Revenues, shall be sufficient to be at least equal to 100% of (A) Annual Debt Service on Indebtedness, (B) Current Expenses, (C) the amounts, if any, necessary to be deposited in any Senior Debt Service Reserve Account, Senior Subordinate Debt Service Reserve Account or Subordinate Debt Service Reserve Account to restore the amount on deposit therein to the amount of the applicable Debt Service Reserve Requirement (provided that such Accounts will be deemed to be funded at the applicable Debt Service Reserve Requirement for so long as the deposits required by Sections 5.02(c)(ii), (iv) and (vi) are being made), (D) the amount, if any, necessary to be deposited in the Operating Reserve Fund to maintain the balance therein at the Operating Reserve Fund Requirement and, (E) the amount, if any, necessary to be deposited in the Capital Improvement Fund and the Rate Stabilization Account of the Surplus Fund in accordance with the Annual Budget for the current Fiscal Year.

(b) The Authority shall immediately retain a Consultant to submit a written report and recommendations with respect to increases in the Authority's rates, fees and other charges and improvements in the operations of and the services rendered by the Systems and the Authority's accounting and billing procedures necessary to bring the Authority into compliance with the Rate Covenant if (i) at the end of any Fiscal Year the Authority is not in compliance with the Rate Covenant, (ii) the Authority fails for three consecutive months to make the deposits required by Section 5.02 to the Senior Bond Fund, the Senior Subordinate Bond Fund and the Subordinate Bond Fund, (iii) there is a deficiency in a Senior Debt Service Reserve Account, a Senior Subordinate Debt Service Reserve Account or a Subordinate Debt Service Reserve Account for longer than three consecutive months (provided no such deficiency shall be deemed to exist so long as the deposits required by Section 5.02(c)(ii), (iv) and (vi) are being made), or (iv) there is a deficiency in the Operating Reserve Fund for longer than six consecutive months. The report and recommendations shall be filed with the Trustee and the Authority within 120 days from the date the Consultant is retained. The Authority shall promptly revise its rates, fees and charges, and alter its operations and services to conform with the report and recommendations of the Consultant to the extent permitted by law.

(c) If the Authority promptly revises its rates, fees, charges, operations, services and procedures in conformity with the report and recommendations of the Consultant and otherwise follows such recommendations to the extent permitted by law so that the Authority is expected to be, when its actions become fully effective, in compliance with the Rate Covenant, then any failure to meet the Rate Covenant will not constitute an Event of Default under this Agreement. Upon the adoption of any revision of rates, fees and charges, the Authority shall cause a certified copy thereof to be filed with the Trustee.

In the event that the Authority shall fail to diligently pursue an adjustment of the schedule of rates, fees and charges in accordance with the provisions of this Section, the Trustee, without regard to whether an Event of Default shall have occurred, shall, upon the request of the Holders of not less than ten per centum (10%) in principal amount of all Senior Bonds then Outstanding and upon being indemnified to its satisfaction, institute and prosecute in a court of competent jurisdiction an appropriate suit, action or proceeding to compel the Authority to adjust such

schedule in accordance with the requirements of this Section, and the Authority covenants that it will adopt and charge rates and charges in compliance with any judgment, order or decree entered in any such suit, action or proceeding.

Section 7.02 Annual Budget and Disbursement Schedule.

(a) Before the beginning of each Fiscal Year, (i) the Authority shall adopt a budget for the operation of the Systems for the ensuing Fiscal Year, which budget shall be called the Annual Budget and (ii) the chief financial officer of the Authority shall prepare a certified Disbursement Schedule for the payment of Current Expenses for the ensuing Fiscal Year..

(b) The Authority covenants that on or before April 15 of each year, it will cause a preliminary Annual Budget and a preliminary Disbursement Schedule to be prepared and delivered to the Consulting Engineer and the Government Development Bank for Puerto Rico. Within forty-five (45) days of receipt of the preliminary budget and Disbursement Schedule, the Consulting Engineer shall deliver to the Authority and the Government Development Bank for Puerto Rico any comments thereon.

(c) The Authority covenants that on or before June 30th of each year it will cause to be adopted a final Annual Budget and prepared a final Disbursement Schedule for the ensuing Fiscal Year and that it will file such budget and schedule with the Trustee, the Government Development Bank for Puerto Rico and the Consulting Engineer.

(d) Each Annual Budget shall be prepared in such manner as to show in reasonable detail (1) Authority Revenues estimated to be received during such Fiscal Year, (2) the amount of Annual Debt Service that will become due during such Fiscal Year, (3) the amount, if any, required to be deposited in the Senior Debt Service Reserve Fund, the Senior Subordinate Debt Service Reserve Fund and the Subordinate Debt Service Reserve Fund to make the amount on deposit in each respective Account therein equal to the applicable Debt Service Reserve Requirement (provided that such Accounts will be deemed to be funded at the applicable Debt Service Reserve Requirement so long as the deposits required by Section 5.02(c)(ii), (iv) and (vi) are being made), (4) the Current Expenses expected to be incurred during such Fiscal Year (calculated on an accrual basis), (5) the amount, if any, required to be deposited in the Operating Reserve Fund to make the amount on deposit therein equal to the amount of the Operating Reserve Requirement, (6) the amount, if any, required to be deposited in the Capital Improvement Fund, (7) the amount, if any, required to be deposited in the Rate Stabilization Account of the Surplus Fund, and (8) the amount of Operating Revenues and Authority Revenues that will be sufficient to meet the Rate Covenant required pursuant to Section 7.01 for such Fiscal Year. The Annual Budget shall be prepared in sufficient detail to show also the amounts to be deposited in the various funds, accounts and subaccounts created by or under this Agreement or funds and accounts otherwise required to be maintained on behalf of the Systems.

(e) Each annual Disbursement Schedule shall be prepared in such manner as to show in reasonable detail, the Current Expenses expected to be incurred during such Fiscal Year (calculated on a cash basis), including (i) all cash disbursements contained in the Annual Budget for the Fiscal Year, (ii) expenses that may have accrued in prior years and are expected to

be paid in the current Fiscal Year, (iii) amounts that are necessary to pay for or result from an emergency condition, (iv) amounts that are necessary to pay judgments or otherwise result from the settlement of litigation, (v) project expenditures that the Authority has determined to capitalize, (vi) amounts that are necessary to be advanced for Costs of Improvements and (vii) other similar disbursements.

(f) On or before each Deposit Date, the chief financial officer shall revise the Disbursement Schedule and deliver a certified copy of such revised Disbursement Schedule to the Trustee and the Government Development Bank for Puerto Rico, which schedule shall include the information required by Section 7.11(b).

(g) The Authority may amend the Annual Budget at any time during the Fiscal Year and any amendment which decreases Operating Revenues by 5% or more in the aggregate for such Fiscal Year shall be accompanied by a report of the Consulting Engineer. A copy of each amendment to the Annual Budget shall be filed promptly with the Trustee and the Consulting Engineer.

(h) If for any reason an Annual Budget is not adopted by the time required by subsection (c) of this Section, the last previously adopted Annual Budget shall be deemed to provide for and regulate and control expenditures during each subsequent Fiscal Year until an Annual Budget for such Fiscal Year has been adopted.

(i) If for any reason a Disbursement Schedule is not delivered by the time required by subsection (c) or (f) of this Section, the last previously certified Disbursement Schedule shall be deemed to provide for cash expenditures during the current and subsequent months until certified revised Disbursement Schedule has been delivered.

(j) Upon the occurrence and continuance of an Event of Default (other than an Event of Default specified in 8.01(f)) and until delivery of the documents set forth in Section 8.05(b), the Authority shall prepare and deliver to the Trustee a Disbursement Schedule which sets forth on a monthly cash basis the operating and maintenance expenses of the Systems, which Disbursement Schedule must be approved by the Consulting Engineer.

Section 7.03 Payment of Principal, Interest and Premium; Pledge of Authority Revenues.

The Authority covenants that it will promptly pay the principal of and the interest on every Bond issued hereunder and secured hereby 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. Except as in this Agreement otherwise provided, such principal, interest and premium, if any, are payable solely from the Authority Revenues, which Authority Revenues are hereby pledged to the payment thereof in the manner and to the extent hereinabove particularly specified; provided, however, that any Authority Revenues received from the Commonwealth of Puerto Rico on account of Commonwealth Guaranteed Indebtedness or Commonwealth Supported Obligations are not subject to the lien hereof and shall only be used for the purposes set forth in Section 5.12 hereof. Nothing in the Bonds or in this Agreement shall be deemed to constitute the Bonds a debt or

obligation of the Commonwealth of Puerto Rico or any of its municipalities or other political subdivisions, other than the Authority, and neither the Commonwealth of Puerto Rico nor any such municipality or other political subdivision, other than the Authority, shall be liable for the payment of the principal of any premium, if any, or the interest on the Bonds.

Section 7.04 Construction of Improvements.

The Authority covenants that it will construct or cause the construction of Improvements reasonable and desirable for the operation of the Systems in a safe and efficient manner, and that upon the completion of any Improvements, the Authority will operate and maintain or cause the operation and maintenance of the Improvements as part of the Systems. If deemed advisable by the Authority, the Consulting Engineer shall review any plans and specifications for the Improvements and such construction shall proceed only after the Consulting Engineer approves the plans and specifications.

Section 7.05 Maintenance of the Systems.

The Authority further covenants that it will establish and enforce reasonable rules and regulations governing the use of the Systems and the operation thereof, that all compensation, salaries, fees and wages paid by it in connection with the maintenance, repair and operation of said Systems will be reasonable, that no more persons will be employed by it than are necessary, that it will operate said Systems or cause the Systems to be operated in a reasonable, efficient and economical manner, that it will at all times maintain said Systems or cause said Systems to be maintained in good repair and in sound operating condition and will make or cause to be made all necessary repairs, renewals and replacements, and that it will comply and cause compliance with all valid acts, rules, regulations, orders and directions of any legislative, executive, administrative or judicial body applicable to said Systems, except to the extent that such non-compliance does not result in a material adverse effect or has not otherwise been provided for as an operational contingency and the Authority is exercising commercially reasonable efforts to comply therewith. The Authority may transfer, to the extent permitted by law and Section 7.12, the day-to-day operations of the Systems or any program that would be carried out by the Authority to another entity; as long as the Authority shall cause such other entity to undertake such operations or programs so that the Authority does not violate the terms of this Agreement and so that the Authority is not rendered unable to observe its covenants under this Agreement.

Section 7.06 Payment of Lawful Charges.

The Authority further covenants that, from the Authority Revenues, it will pay all municipal or other governmental charges lawfully levied or assessed upon the Systems or any part thereof or upon any Authority Revenues when the same shall become due, that it will not create or suffer to be created any lien or charge upon the Systems or any part thereof or upon the Authority Revenues ranking equally with or prior to the Indebtedness, except to the extent and in the manner otherwise permitted in this Agreement, and that, from the Authority Revenues, it will pay or cause to be discharged, or will make adequate provision to satisfy and discharge, within sixty (60) days after the same shall accrue, all lawful claims and demands for labor, materials, supplies or other objects which, if unpaid might by law become a lien upon the Systems or any

part thereof or the Authority Revenues; provided, however, that nothing contained in this Section shall require (i) the Authority to pay or cause to be discharged, or make provision for, any such lien or charge so long as the validity thereof shall be contested in good faith and by appropriate legal proceedings or (ii) Authority Revenues received from the Commonwealth of Puerto Rico on account of Commonwealth Guaranteed Indebtedness or Commonwealth Supported Obligations to be used for any purpose other than those specified in Section 5.12 hereof.

Section 7.07 Retention of Consulting Engineer and Other Consultants.

Unless the Senior Bonds shall have been rated investment grade by at least two Rating Agencies for twenty-four (24) consecutive months, the Authority covenants and agrees that it will, for the purpose of performing and carrying out the duties imposed on the Consulting Engineer and other Consultants by this Section 7.07, retain the Consulting Engineer and other Consultants. Except for fees and expenses incurred in connection with the issuance of Indebtedness or the construction of Improvements, the cost of retaining the Consulting Engineer and other Consultants shall be treated as a part of Current Expenses.

It shall be the duty of the Consulting Engineer to prepare and file reports with the Authority and the Trustee, no later than thirty (30) days after receipt of the Annual Budget, setting forth the following:

(a) the recommendations of the Consulting Engineer as to the proper maintenance, repair and operation of the Systems during the ensuing Fiscal Year, and an estimate of the amounts of money necessary for such purposes;

(b) the recommendations of the Consulting Engineer as to the amount that should be deposited in each month during the ensuing Fiscal Year to the credit of the Capital Improvement Fund;

(c) the recommendations of the Consulting Engineer as to the Improvements which should be made during the ensuing Fiscal Year, and an estimate of the amounts of money necessary for such purposes, showing separately (i) the amount to be expended during such Fiscal Year from moneys to the credit of the Capital Improvement Fund and the Surplus Fund and (ii) the amount to be expended during such Fiscal Year from the proceeds of Bonds and other Indebtedness;

(d) the recommendations of other Consultants retained by or relied upon by the Consulting Engineer as to the insurance to be carried under the provisions of Section 7.08 of this Article;

(e) a statement by the Consulting Engineer of the cost of all additions made to the Systems and of the cost (if the cost cannot be accurately determined, the estimated cost) of all retirements of property made in such Fiscal Year;

(f) a report of the Consulting Engineer (which may retain other Consultants as necessary) as to the adequacy of existing rates and charges for purposes of the Rate Covenant contained in Section 7.01 hereof for the then current Fiscal Year to date and recommendations as

to any necessary or advisable revisions of rates and charges and such other advices and recommendations as they may deem desirable; and

(g) the findings of the Consulting Engineer whether the properties of the Systems have been maintained in good repair and sound operating condition, and their estimate of the amount, if any, required to be expended to place such properties in such condition and the details of such expenditures and the approximate time required therefor.

The Authority further covenants that the Consulting Engineer and other Consultants shall at all times have free access to all properties of the Systems and every part thereof for the purposes of inspection and examination, and that its books, records and accounts may be examined by the Consulting Engineer and other Consultants at all reasonable times.

Section 7.08 Insurance.

The Authority covenants that it will at all times carry or cause to be carried insurance, with a responsible insurance company or companies, approved by an Insurance Consultant, authorized and qualified under the laws of the Commonwealth of Puerto Rico to assume the risk thereof, covering such properties belonging to the Systems as are customarily insured, and against loss or damage from such causes as are customarily insured against, by the Authority in its insurance program. The Authority shall employ an Insurance Consultant to review the insurance program of the Authority from time to time (but not less frequently than biennially). If the Insurance Consultant makes recommendations for the increase of any coverage, the Authority shall increase or cause to be increased such coverage in accordance with such recommendations, subject to a good faith determination of the Authority that such recommendations, in whole or in part, are in the best interests of the Authority. Notwithstanding anything in this Section to the contrary, the Authority shall have the right, without giving rise to an Event of Default, solely on such account, (i) to maintain insurance coverage below that most recently recommended by Insurance Consultant, if the Authority furnishes to the Trustee a report of the Insurance Consultant to the effect that the issuance so provided, affords either the greatest amount of coverage available for the risk being insured against at rates which in the judgment of the Insurance Consultant are reasonable in connection with reasonable and appropriate risk management.

All insurance policies shall be to the extent practicable for the benefit of the Authority, the Trustee and other interested parties, as their interests may appear, shall be made payable to the Authority or other owners of portions of the Systems, and shall be deposited with the Authority or other officer of the Board designated for said purpose. The proceeds of any and all such insurance shall be deposited by the Authority in the name of the Authority with a Qualified Depository.

The Authority covenants that, immediately after any loss or damage to any properties of the Systems resulting from any cause, whether or not such loss or damage shall be covered by insurance, it will cause its engineers to prepare plans and specifications for repairing, replacing or reconstructing (either in accordance with the original or a different design) the damaged or destroyed property, and that it will forthwith commence or cause to be commenced and diligently prosecute or cause to be diligently prosecuted the repair, replacement or reconstruction

of the damaged or destroyed property unless it shall determine that the repair, replacement or reconstruction of such property is not essential to the efficient operation of the Systems, in which case the proceeds of insurance shall be deposited in the Capital Improvement Fund.

Except as provided in the foregoing paragraph, the proceeds of all insurance referred to in this Section shall be available for, and shall to the extent necessary be applied to, the repair, replacement or reconstruction of the damaged or destroyed property, and shall be paid out in such 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 Capital Improvement Fund. If such proceeds shall be insufficient for such purpose, the deficiency may be supplied out of moneys in the Capital Improvement Fund.

Notwithstanding the foregoing provisions of this Section, the Authority may institute a self-insurance program with regard to such risks as shall be consistent with the practices of utilities operating in a manner similar to the Systems as shall be approved by a Consultant.

Section 7.09 Insurance Policies.

Within the first ninety (90) days of each Fiscal Year the Authority shall mail to the Trustee and the Consulting Engineer a schedule of all insurance policies referred to in Section 7.08 of this Article which are then in effect, stating with respect to each policy the name of the insurer, the amount, number and expiration date, and the hazards and risks covered thereby. All insurance policies shall be open to the inspection of the Holders of Bonds and their representatives at all reasonable times. The Authority is hereby authorized to demand, collect, sue and receipt for any insurance money which may become due and payable under any policies payable to the Authority.

Section 7.10 Protection of Security; No Impairment.

(a) The Authority Revenues and other moneys, securities and funds pledged hereunder are and will be free and clear of any pledge, lien, charge or encumbrance thereon or with respect thereto prior to, or of equal rank with, the pledge created by this Agreement, except as otherwise expressly provided herein, and all action on the part of the Authority to that end has been duly and validly taken. The Bonds are and will be valid and legally enforceable obligations of the Authority in accordance with their terms and the terms of this Agreement. The Authority shall at all times, to the extent permitted by law, defend, preserve and protect the pledge of the Authority Revenues and other moneys, securities and funds pledged under this Agreement and each Supplemental Agreement and all the rights of the holders of Indebtedness hereto against all claims and demands of all persons whomsoever. In no event shall Authority Revenues received from the Commonwealth of Puerto Rico on account of Commonwealth Guaranteed Indebtedness or Commonwealth Supported Obligations be subject to the lien hereof or be used for any purpose other than those specified in Section 5.12 hereof

(b) The Authority further covenants and agrees that, so long as any Indebtedness shall be Outstanding, none of the Authority Revenues will be used for any purpose other than as provided in this Agreement, and that no contract or contracts will be entered into or any action taken by which the rights of the Trustee or of the Holders might be impaired or

diminished. Any resolution adopted by the Board authorizing the issuance of a Series of Bonds or any Supplemental Agreement executed by the Authority for such purpose shall, for all purposes, be deemed part of this Agreement and shall constitute a contract for the benefit of the Holders of said Series. This Agreement and any such resolution may be supplemented and amended only in accordance with Article IX hereof, except for supplements and amendments adopted prior to the issuance of the applicable Series of Bonds, which may be adopted without restriction.

Section 7.11 Accounts and Records.

(a) The Authority further covenants that its accounts will be kept according to standard practices for public utility systems similar to the properties and business of the Authority and applicable in such circumstances, and in such manner as appropriate to segregate, insofar as advisable, the accounts in respect of the different classes of its operations, projects, undertakings and activities, that it will keep accurate records and accounts of all items of cost and expenditures relating to the Systems and to each integral unit of said Systems, the Authority Revenues and the application of such Authority Revenues, and the number of consumers, and that it will keep such records and accounts with respect to the physical properties comprising part of the Systems in such manner that it will be possible at all times to identify both the amounts and the items of all additions and retirements.

(b) The Authority further covenants that on or before each Deposit Date, it shall provide to the Trustee, the Consulting Engineer, other Consultants, if any, and Government Development Bank for Puerto Rico as part of the Disbursement Schedule required to be delivered pursuant to Section 7.02(f) (i) for the period commencing on the prior Deposit Date to the Business Day prior to such current Deposit Date a statement of (x) Authority Revenues, (y) cash payments for operating and maintenance expenses, and proceeds from the sale of property or other extraordinary revenue items (to the extent not included in Authority Revenues) and (ii) a reconciliation of Authority Revenues and cash payments for operating and maintenance expenses to Current Expenses and Operating Revenues for the monthly period ending on the preceding Deposit Date and Fiscal Year-to-date period through such preceding Deposit Date.

(c) The Authority further covenants that in the first month of each Fiscal Year it will cause an audit to be made of its books and accounts relating to the Systems by an independent firm of certified public accountants of suitable experience and responsibility to be chosen by the Executive President. Before the first day of the sixth month following the making of such audit, reports of such audits shall be filed with the Trustee and the Authority, and copies of such reports shall be mailed to the Consulting Engineer and the other Consultants. Such audit reports shall set forth in respect of the preceding Fiscal Year the same matters as are hereinabove required for the monthly reports, the findings of such public accountants as to whether the moneys received by the Authority under the provisions of this Agreement during such Fiscal Year or portion of such Fiscal Year for which Bonds have been issued and Outstanding under this Agreement have been applied in accordance with the provisions of this Agreement, whether any obligations for Current Expenses were incurred in the preceding Fiscal Year or portion of such Fiscal Year for which Bonds have been issued and Outstanding under this Agreement, whether the Authority Revenues for the preceding Fiscal Year or portion of such Fiscal Year for which Bonds have been issued and Outstanding under this Agreement have exceeded or were

less than the amount for such Fiscal Year or such portion thereof required pursuant to Section 7.01 of this Agreement and whether the Authority is in default in the performance of any of the other covenants contained in this Article VII.

(d) The Authority further covenants that it will cause any additional reports or audits relating to the Systems to be made as required by law and by any applicable rules or regulations of any governmental authority or of any securities exchange on which the Bonds may be listed or traded, and that, as often as may be requested, it will furnish to the Trustee such other information concerning said Systems or the operation thereof as any of them may reasonably request.

(e) The cost of such audits shall be treated as a part of Current Expenses.

Section 7.12 No Sale, Lease, or Encumbrances; Exceptions.

Except as expressly permitted in this Agreement, the Authority irrevocably covenants, binds, and obligates itself not to sell, lease, encumber, or in any manner dispose of the Systems as a whole or in part until all of the Indebtedness and all interest thereon shall have been paid in full or provision for such payment has been duly made in accordance with Article XI. The Authority shall have and hereby reserves the right, however, to sell, lease, or otherwise dispose of any of the property comprising a part of the Systems in the following manner, if any one of the following conditions exists: (i) such property is not necessary for the operation of the Systems; (ii) such property is not useful in the operation of the Systems; (iii) such property is not profitable in the operation of the Systems; or (iv) the disposition of such property will be advantageous to the Systems and will not adversely affect the security for the Bondholders. All proceeds of any such sale shall be deposited in the Capital Improvement Fund.

Prior to the sale or lease of assets constituting in excess of 3% of the net assets on the Authority's most recent audited balance sheet to an entity other than a political subdivision, authority or agency of the Commonwealth of Puerto Rico the Authority shall:

(i) obtain a written report of the Consultant, describing the financial impact of any such sale or lease on the Authority Revenues, Operating Revenues, and balance sheet of the Authority;

(ii) obtain a written report of the Consultant, setting forth alternatives to the proposed sale or lease of such assets and comparing such alternatives to the proposal;

(iii) obtain an opinion of the Consultant to the effect that such sale or lease will not, in the current or any future Fiscal Year, result in the Authority not meeting the Rate Covenant required by Section 7.01 after such sale or lease. In reaching its conclusion, the Consultant shall take into consideration such factors affecting the Authority Revenues of the Authority as the Consultant may deem significant, including (A) anticipated diminution of Operating Revenues or Authority Revenues, (B) anticipated increases or decreases in Current Expenses whether or not attributable to such sale or lease, and (C) the reduction in the Annual Debt Service attributable to the application of the sale proceeds to the provision for payment of Indebtedness theretofore Outstanding; and

(iv) make a written determination, approved by the Board that the proposed sale or lease is more beneficial than (a) not entering into such sale or lease and (b) entering into one of the alternatives reviewed and presented by the Consultant.

The Authority reserves the right to sell any portion of the Systems to any political subdivision or authority or agency of one or more political subdivisions of the Commonwealth of Puerto Rico, provided that there shall be first filed with the Authority: (i) an opinion of Bond Counsel to the effect that such sale will not adversely affect the extent to which interest on any tax-exempt bonds is excluded from gross income for federal income tax purposes; and (ii) an opinion of a Consultant to the effect that such sale will not, in the current or any future Fiscal Year, result in Operating Revenues or Authority Revenues not meeting the required Rate Covenant required by Section 7.01 after such sale. In reaching its conclusion, the Consultant shall take into consideration such factors as the Consultant may deem significant, including (i) anticipated diminution of Operating Revenues or Authority Revenues, (ii) anticipated increases or decreases in Current Expenses whether or not attributable to such sale, and (iii) reduction in the Annual Debt Service attributable to the application of the sale proceeds to the provision for payment of Indebtedness theretofore Outstanding. Such sale may include a partial interest in a water or sewer facility owned or to be owned in whole or in part by the Authority. All proceeds of any such sale shall be deposited in the Capital Improvement Fund.

The Authority reserves the right to transfer the Systems as a whole to any political subdivision or authority or agency of one or more political subdivisions of the Commonwealth of Puerto Rico to which may be delegated the legal authority to own and operate the Systems, or any portion thereof, on behalf of the public, and which undertakes in writing, filed with the Authority, the Authority's obligations under this Agreement, provided that there shall be first filed with the Authority: (i) an opinion of Bond Counsel to the effect that such transfer will not adversely affect the extent to which interest on any tax-exempt bonds is excluded from gross income for federal income tax purposes; and (ii) an opinion of a Consultant expressing the view that such transfer will not result in any diminution of Operating Revenues or Authority Revenues to the extent that the Authority could not meet the Rate Covenant required by Section 7.01 after such transfer, in the then current or any succeeding Fiscal Year. In reaching this conclusion, the Consultant shall take into consideration such factors as the Consultant may deem significant, including any rate schedule to be imposed by the transferee political subdivision, authority, or agency.

Section 7.13 Authority Not to Furnish Free Service; Enforcement of Accounts Due.

So long as any Bonds issued pursuant to this Agreement are Outstanding, the Authority will not furnish or supply water or any other commodity, service or facility furnished by it or in connection with the operation of the Systems, free of charge to any person, firm or corporation, public or private, and the Authority will promptly enforce the payment of any and all accounts owing to the Authority by reason of the ownership and operation of the Systems.

Section 7.14 [Reserved]

Section 7.15 Tax Covenants.

The Authority covenants and agrees that so long as any Bonds remain Outstanding hereunder, to the extent permitted by the Constitution and the laws of the Commonwealth of Puerto Rico, it shall comply with the requirements of the Code, including any arbitrage rebate covenants contained on any agreement entered into by and between the Authority and the Trustee in connection with the issuance of any Series of Bonds, except to the extent failure to so comply would not, in the opinion of Bond Counsel, result in the interest payable on such Bonds being included in gross income for federal income tax purposes to the Holders thereof under the Code. Notwithstanding anything to the contrary contained herein or otherwise, the Authority shall not be required to comply with the covenants herein contained in respect of a Series of Bonds to the extent that interest on such Series of Bonds shall be intended by the Authority, on the date of issuance of such Bonds, to be included in gross income for federal income tax purposes to the Holders thereof under the Code.

ARTICLE VIII

DEFAULTS AND REMEDIES

Section 8.01 Events of Default.

Each of the following events shall be an Event of Default:

(a) default in the due and punctual payment of the principal of or premium, if any, on any Bonds or Other System Indebtedness whether at maturity, upon termination or call for redemption or otherwise; or

(b) default in the due and punctual payment of the interest on any Bonds or Other System Indebtedness; or

(c) the Authority shall for any reason be determined to be incapable by a court, governmental entity or agency of competent jurisdiction of fulfilling or shall not have full power and authority to fulfill its obligations hereunder; or

(d) an order or decree shall be entered, with the consent or acquiescence of the Authority, appointing a receiver or receivers of the Systems or any part thereof or of the Authority Revenues, or if such order or decree, having been entered without the consent or acquiescence of the Authority, shall not have been vacated, discharged or stayed on appeal within ninety (90) days after the entry thereof; or

(e) any proceeding shall be instituted, with the consent or acquiescence of the Authority, for the purpose of effecting a composition between the Authority and its creditors or for the purpose of adjusting the claims of such creditors, pursuant to any Federal or Commonwealth of Puerto Rico statute now or hereafter enacted, if the claims of such creditors are under any circumstances payable out of the Authority Revenues and if said proceeding shall not have been discharged within ninety (90) days after the institution thereof, or if any such

proceeding, having been instituted without the consent or acquiescence of the Authority, shall not be contested in good faith; or

(f) the Authority shall default in the due and punctual performance of any other of the covenants, conditions, agreements and provisions contained in the Bonds or in this Agreement on the part of the Authority to be performed, and such default shall continue for thirty (30) days after written notice specifying such default and requiring same to be remedied shall have been given to the Authority by the Trustee, which may give such notice in its discretion and shall give such notice at the written request of the Holders of not less than ten per cent (10%) in principal amount of the Senior Bonds then Outstanding; provided, however, if the default specified in this clause (f) shall be of a type that cannot be remedied within thirty (30) days, it shall not constitute an event of default if the Authority shall begin diligently to remedy such default within such thirty-day period.

In no event shall the failure to pay principal of or interest on Commonwealth Guaranteed Indebtedness or Commonwealth Supported Obligations be an Event of Default hereunder.

Section 8.02 [Reserved]

Section 8.03 Extended Interest Payments.

In case the time for the payment of the interest on any Bond shall be extended, whether or not such extension be by or with the consent of the Authority, such interest so extended shall not be entitled in case of default hereunder to the benefit or security of this Agreement except subject to the prior payment in full of the principal of all Indebtedness then Outstanding and of all interest the time for the payment of which shall not have been extended.

Section 8.04 Acceleration.

Upon the occurrence and continuation of an Event of Default, except for an Event of Default described in clause (f) of Section 8.01, the Trustee may (and if requested by the Holders of not less than a majority in aggregate principal amount of Senior Indebtedness (or if no Senior Indebtedness is then Outstanding, of Senior Subordinate Indebtedness) then Outstanding shall) by written notice to the Authority, declare the entire unpaid principal of the Bonds due and payable and, thereupon, the entire unpaid principal of the Bonds shall forthwith become due and payable. Upon any such declaration, on the first Business Day of each month, the Trustee (i) shall pay to the Authority, an amount of Authority Revenues equal to the amount set forth in the applicable Annual Budget prepared in accordance with Section 7.02(g) to pay Current Expenses of the Systems for such month and (ii) shall pay to the Holders of the Bonds and Other System Indebtedness, but only from the remaining Authority Revenues and other moneys herein specifically pledged for payments of Bondholders, the entire unpaid principal of and premium, if any, and accrued interest on the Bonds and Other System Indebtedness. If at any time after such a declaration and before the entry of a final judgment or decree in any suit, action or proceeding instituted on account of such default or before the completion of the enforcement of any other remedy under this Agreement, the principal of all Bonds and Other System Indebtedness that have matured or been called for redemption pursuant to any sinking fund provision and all arrears of interest have been paid and any other Events of Default which may have occurred have

been remedied, then the Trustee may, by written notice to the Authority, rescind or annul such declaration and its consequences. No such rescission or annulment shall extend to or affect any subsequent default or impair any right consequent thereon. Senior Subordinate Indebtedness may not be accelerated if any Senior Indebtedness is Outstanding. Subordinate Indebtedness may not be accelerated if any Senior Indebtedness or Senior Subordinate Indebtedness is Outstanding.

Section 8.05 Other Remedies; Rights of Bondholders.

(a) Upon the occurrence of an Event of Default (other than an Event of Default specified in Section 8.01(f)) and until delivery of the documents set forth in paragraph (b) below, amounts on deposit in the Operating Revenue Fund shall be applied in accordance with Section 8.06 hereof.

(b) Amounts on deposit in the Operating Revenue Fund shall continue to be applied in accordance with Section 8.06 until there shall have been filed with the Trustee (i) a certificate signed by the Executive President and approved by the Consulting Engineer that (x) the Authority complied with the Rate Covenant set forth in Section 7.01 for the most recent complete Fiscal Year and (y) no Event of Default (other than an Event of Default under Section 8.01(f)) is continuing hereunder and (ii) a report of the Consulting Engineer as to the adequacy of existing rates and charges of the Rate Covenant set forth in Section 7.01 for the then current Fiscal Year and the following Fiscal Year.

(c) Upon the occurrence and continuance of an Event of Default, the Trustee may (and if requested by the holders of not less than 25% in aggregate principal amount of Outstanding Senior Bonds then Outstanding (or if no Senior Bonds are then Outstanding, of Senior Subordinate Bonds) shall proceed to protect and enforce the rights of the Holders by mandamus or other suit, action or proceeding at law or in equity, including an action for specific performance of any covenant or agreement herein contained.

(d) No remedy conferred by this Agreement upon or reserved to the Trustee and Bondholders is intended to be exclusive of any other remedy, but each such remedy shall be cumulative and shall be in addition to any other remedy given to the Trustee and Bondholders hereunder or now or hereafter existing at law, in equity or by statute.

(e) The Holders of a majority in aggregate principal amount of the Senior Bonds then Outstanding hereunder shall have the right, subject to the provisions of Section 10.01(l) hereof, by an instrument or concurrent instruments in writing executed and delivered to the Trustee, to direct the time, method and place of conducting all remedial proceedings to be taken by the Trustee hereunder or exercising any trust or power conferred upon the Trustee, provided that (i) such direction shall not be otherwise than in accordance with law and the provisions of this Agreement, (ii) subject to the provisions of Section 10.01(l) hereof, that the Trustee may take any other action deemed proper by the Trustee which is not inconsistent with such direction and (iii) the Trustee shall have the right not to follow such direction if the Trustee in good faith shall determine that such direction would be prejudicial to Holders not giving such direction or would involve the Trustee in personal liability.

Notwithstanding any other provision in this Agreement, the owner of any Bond shall have the right which is absolute and unconditional to receive payment of the principal of and premium, if any, and interest on such Bond when due (whether at maturity, upon redemption or otherwise) and to institute suit for the enforcement of any such payment, and such right shall not be impaired without the consent of such owner.

Section 8.06 Application of Moneys.

(a) Unless the principal of all Bonds shall have become due or shall have been declared due and payable, all amounts on deposit in the Operating Revenue Fund, after payment of the cost and expenses of the proceedings resulting in the collection of such moneys, the expenses, liabilities and advances incurred or made by the Trustee and its fees and the expenses in carrying out this Agreement, shall be applied beginning on the first Business Day of each month in the following order of priority:

First - To the subaccounts established for each issue of Senior Indebtedness in the Senior Interest Account, (i) an amount of Authority Revenues equal to the Interest Accrual on all the Outstanding Senior Indebtedness to and including the first day of the next calendar month; (ii) the amount of any payments or reimbursements due in the next ensuing month to each Enhancement Facility Provider to the extent such payment or reimbursement obligation constitutes Senior Indebtedness hereunder; and (iii) the amount of any payments due in the next ensuing month under any Hedge Agreement or Qualified Swap secured on a parity with Senior Indebtedness, and all such deposits shall be adjusted to give credit for any other available money then in such interest account or subaccount or otherwise available and designated to be used for such purpose;

Second - To the subaccounts established for each issue of Senior Indebtedness in the Senior Principal Account and Senior Sinking Fund Account, an amount of Authority Revenues equal to the Principal Accrual on the Outstanding Senior Indebtedness to and including the first day of the next calendar month, and all such deposits shall be adjusted to give credit for any other available money then in the principal or sinking fund account or subaccount or otherwise available and designated to be used for such purpose;

Third - To each Account in the Senior Debt Service Reserve Fund, (i) an amount of Authority Revenues equal to (x) 1/60 of the amount (or such greater amount specified in the Supplemental Agreement authorizing any Senior Bonds), if any, necessary to restore the amount on deposit therein to the related Debt Service Reserve Requirement in the event of an increase in the applicable Debt Service Reserve Requirement upon the issuance of additional Senior Bonds, and (y) except as provided in Section 5.04(c), 1/12 of the amount, if any, necessary to restore the amount on deposit therein to the related Debt Service Reserve Requirement in the event of any other deficiency and (ii) the amount of proceeds of any Senior Bonds as required by the applicable Supplemental Agreement;

Fourth - To the subaccounts established for each issue of Senior Subordinate Indebtedness in the Senior Subordinate Interest Account, (i) an amount of Authority Revenues equal to the Interest Accrual on all the Outstanding Senior Subordinate

Indebtedness to and including the first day of the next calendar month; (ii) the amount of any payments or reimbursements due in the next ensuing month to each Enhancement Facility Provider to the extent such payment or reimbursement obligation constitutes Senior Subordinate Indebtedness hereunder; (iii) the amount of any payments due in the next ensuing month under any Hedge Agreement or Qualified Swap secured on a parity with Senior Subordinate Indebtedness, and all such deposits shall be adjusted to give credit for any other available money then in such interest account or subaccount or otherwise available and designated to be used for such purpose;

Fifth - To the subaccounts established for each issue of Senior Subordinate Indebtedness in the Senior Subordinate Principal Account and Senior Subordinate Sinking Fund Account, an amount of Authority Revenues equal to the Principal Accrual on the outstanding Senior Subordinate Indebtedness to and including the first day of the next calendar month, and all such deposits shall be adjusted to give credit for any other available money then in the principal or sinking fund account or subaccount or otherwise available and designated to be used for such purpose;

Sixth - To each Account in the Senior Subordinate Debt Service Reserve Fund (i) an amount of Authority Revenues equal to (x) 1/60 of the amount (or such greater amount specified in the Supplemental Agreement authorizing any Senior Subordinate Bonds), if any, necessary to restore the amount on deposit therein to the related Debt Service Reserve Requirement in the event of an increase in the applicable Debt Service Reserve Requirement upon the issuance of additional Senior Subordinate Bonds, and (y) except as provided in Section 5.06(c), 1/12 of the amount, if any, necessary to restore the amount on deposit therein to the related Debt Service Reserve Requirement in the event of any other deficiency and (ii) the amount of proceeds of any Senior Subordinate Bonds as required by the applicable Supplemental Agreement;

Seventh - To the subaccounts established for each issue of Subordinate Indebtedness in the Subordinate Interest Account, (i) an amount of Authority Revenues equal to the Interest Accrual on all the Outstanding Subordinate Indebtedness to and including the first day of the next calendar month; (ii) the amount of any payments or reimbursements due in the next ensuing month to each Enhancement Facility Provider to the extent such payment or reimbursement obligation constitutes Subordinate Indebtedness hereunder; and (iii) the amount of any payments due in the next ensuing month under any Hedge Agreement or Qualified Swap secured on a parity with Subordinate Indebtedness, and all such deposits shall be adjusted to give credit for any other available money then in such interest account or subaccount or otherwise available and designated to be used for such purpose;

Eighth - To the subaccounts established for each issue of Subordinate Indebtedness in the Subordinate Principal Account and Subordinate Sinking Fund Account, an amount of Authority Revenues equal to the Principal Accrual on the Outstanding Subordinate Indebtedness to and including the first day of the next calendar month, and all such deposits shall be adjusted to give credit for any other available money then in the principal or sinking fund account or subaccount or otherwise available and designated to be used for such purpose;

Ninth – To each Account in the Subordinate Debt Service Reserve Fund (i) an amount of Authority Revenues equal to (x) 1/60 of the amount (or such greater amount specified in the Supplemental Agreement authorizing such additional Subordinate Bonds), if any, necessary to restore the amount on deposit therein to the related Debt Service Reserve Requirement in the event of an increase in the applicable Debt Service Reserve Requirement upon the issuance of additional Subordinate Bonds, and (y) except as provided in Section 5.08(c), 1/12 of the amount, if any, necessary to restore the amount on deposit therein to the related Debt Service Reserve Requirement in the event of any other deficiency and (ii) the amount of proceeds of any Subordinate Bonds as required by the applicable Supplemental Agreement;

Tenth - To the credit of the Current Expense Fund, an amount of Authority Revenues equal to the amount set forth in the most recent Disbursement Schedule prepared in accordance with Section 7.02(j) to pay Current Expenses of the Systems for the current and next two succeeding months;

Eleventh – To the credit of the Operating Reserve Fund, an amount of Authority Revenues equal to that which is necessary to make the balance on deposit therein equal to the Operating Reserve Requirement;

Twelfth - To the Capital Improvement Fund (i) an amount of Authority Revenues equal to that which is necessary to make the balance on deposit therein equal to the Capital Improvement Fund Requirement for the Fiscal Year as set forth in the applicable Annual Budget in equal monthly deposits over such Fiscal Year;

Thirteenth - To the Commonwealth Payments Fund (i) (A) any Authority Revenues received by the Authority from the Commonwealth of Puerto Rico on account of Outstanding Commonwealth Guaranteed Indebtedness and (B) an amount of Operating Revenues sufficient to pay (x) the Interest Accrual on Commonwealth Guaranteed Indebtedness in respect of the next Interest Payment Date and (y) the Principal Accrual on Commonwealth Guaranteed Indebtedness in respect of the next principal payment date, and all such deposits in this paragraph shall be adjusted to give credit for any other available money then in such account or otherwise available and designated to be used for such purpose and (ii) (A) any Authority Revenues received by the Authority from the Commonwealth of Puerto Rico on account of Outstanding Commonwealth Supported Obligations and (B) an amount of Operating Revenues sufficient to pay (x) the Interest Accrual on Commonwealth Supported Obligations in respect of the next Interest Payment Date and (y) the Principal Accrual on Commonwealth Supported Obligations in respect of the next principal payment date, and all such deposits in this paragraph shall be adjusted to give credit for any other available money then in such account or otherwise available and designated to be used for such purpose; and

Fourteenth - To the Surplus Fund, any remaining balance.

(b) If the principal of all the Bonds shall have become due or shall have been declared due and payable, all such moneys shall be applied to the payment of the principal and interest then due and unpaid on the Senior Indebtedness, including, to the extent permitted by

law, interest on overdue installments of interest, without preference or priority of principal over interest or of interest over principal, or of any installment of interest over any other installment of interest, or of any Senior Indebtedness over any other Senior Indebtedness, ratably, according to the amounts due respectively for principal and interest, to the persons entitled thereto, without any discrimination or preference except as to any difference in the respective rates of interest specified in the Senior Indebtedness.

(c) If the principal of all the Bonds shall have become due or shall have been declared due and payable and there is no Senior Indebtedness Outstanding hereunder, all such moneys shall be applied to the payment of the principal and interest then due and unpaid on the Senior Subordinate Indebtedness, including, to the extent permitted by law, interest on overdue installments of interest, without preference or priority of principal over interest or of interest over principal, or of any installment of interest over any other installment of interest, or of any Senior Subordinate Indebtedness over any other Senior Subordinate Indebtedness, ratably, according to the amounts due respectively for principal and interest, to the persons entitled thereto, without any discrimination or preference except as to any difference in the respective rates of interest specified in the Senior Subordinate Indebtedness.

(d) If the principal of all the Bonds shall have become due or shall have been declared due and payable and there is no Senior Indebtedness or Senior Subordinate Indebtedness Outstanding hereunder, all such moneys shall be applied to the payment of the principal and interest then due and unpaid on the Subordinate Indebtedness, including, to the extent permitted by law, interest on overdue installments of interest, without preference or priority of principal over interest or of interest over principal, or of any installment of interest over any other installment of interest, or of any Subordinate Indebtedness over any other Subordinate Indebtedness, ratably, according to the amounts due respectively for principal and interest, to the persons entitled thereto, without any discrimination or preference except as to any difference in the respective rates of interest specified in the Subordinate Indebtedness.

(e) If the principal of all the Bonds shall have become due or shall have been declared due and payable and there is no Senior Indebtedness, Senior Subordinate Indebtedness or Subordinate Indebtedness Outstanding hereunder, all such moneys shall be applied to the payment of the principal and interest then due and unpaid on the Commonwealth Guaranteed Indebtedness, including, to the extent permitted by law, interest on overdue installments of interest, without preference or priority of principal over interest or of interest over principal, or of any installment of interest over any other installment of interest, or of any Commonwealth Guaranteed Indebtedness over any other Commonwealth Guaranteed Indebtedness, ratably, according to the amounts due respectively for principal and interest, to the persons entitled thereto, without any discrimination or preference except as to any difference in the respective rates of interest specified in the Commonwealth Guaranteed Indebtedness.

(f) If the principal of all the Bonds shall have become due or shall have been declared due and payable and there is no Senior Indebtedness, Senior Subordinate Indebtedness, Subordinate Indebtedness or Commonwealth Guaranteed Indebtedness Outstanding hereunder, all such moneys shall be applied to the payment of the principal and interest then due and unpaid on the Commonwealth Supported Obligations, including, to the extent permitted by law, interest on overdue installments of interest, without preference or priority of principal over interest or of

interest over principal, or of any installment of interest over any other installment of interest, or of any Commonwealth Supported Obligations over any other Commonwealth Supported Obligations, ratably, according to the amounts due respectively for principal and interest, to the persons entitled thereto, without any discrimination or preference except as to any difference in the respective rates of interest specified in the Commonwealth Supported Obligations.

(g) Whenever moneys are to be applied pursuant to the provisions of this Section, such moneys shall be applied at such times and from time to time as the Trustee 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. Whenever the Trustee shall apply such moneys, it shall fix the date (which shall be an Interest Payment Date unless it shall deem another date more suitable) on which such application is to be made and on such date interest on the amounts of principal to be paid and shall cease to accrue. The Trustee shall give such notice as it may deem appropriate of the deposit with it of any such moneys and of the fixing of any such date.

Whenever the principal of and premium, if any, and interest on all Indebtedness have been paid under the provisions of this Section, all payments required by the terms of any Supplemental Agreement have been paid and all expenses and charges of the Trustee have been paid, any balance remaining in the several funds created by this Agreement shall be paid to the Authority as provided in Section 5.15.

Section 8.07 Remedies Vested in Trustee.

All rights of action (including the right to file proof of claims) under this Agreement or under any of the Bonds may be enforced by the Trustee without the possession of any of the Bonds or the production thereof in any trial or other proceeding relating thereto and any such suit or proceeding instituted by the Trustee may be brought in its name as Trustee without the necessity of joining as plaintiffs or defendants any Bondholders, and, subject to the provisions of Section 8.06 hereof, any recovery of judgment shall be for the equal benefit of the Bondholders.

Section 8.08 Limitation on Suits.

Except to enforce the rights given under Sections 8.04 and 8.05, no Bondholder shall have the right to institute any action, suit or proceeding at law or in equity for the enforcement of this Agreement or for the execution of any trust thereof or any other remedy hereunder, unless (a) a default has occurred and is continuing of which the Trustee has been notified as provided in Section 10.01(h), or of which by such Section it is deemed to have notice, (b) such default has become an Event of Default and the holders of 25% in aggregate principal amount of Senior Bonds (or if no Senior Bonds are then Outstanding, of Senior Subordinate Bonds) then Outstanding have made written request to the Trustee and offered it reasonable opportunity either to proceed to exercise the powers hereinbefore granted or to institute such action, suit or proceeding in its own name, (c) such requesting Bondholders have offered to the Trustee indemnity as provided in Section 10.05, (d) the Trustee has thereafter failed or refused to exercise the powers hereinbefore granted, or to institute such action, suit or proceeding in its own name, (e) no direction inconsistent with such written request has been given to the Trustee by the holders of a majority in aggregate principal amount of Senior Bonds (or if no Senior

Bonds is then Outstanding, of Senior Subordinate Bonds) then Outstanding, and (f) notice of such action, suit or proceeding is given to the Trustee; it being understood and intended that no one or more holders of the Bonds shall have any right in any manner whatsoever to affect, disturb or prejudice this Agreement by its or their action or to enforce any rights hereunder except in the manner herein provided, and that all proceedings at law or in equity shall be instituted and maintained in the manner herein provided and for the equal benefit of the holders of all Bonds then Outstanding. The notification, request and offer of indemnity set forth above, at the option of the Trustee, shall be conditions precedent to the execution of the powers and trusts of this Agreement and to any action or cause of action for the enforcement of this Agreement or for any other remedy hereunder.

Section 8.09 Termination of Proceedings.

In case the Trustee shall have proceeded to enforce any right under this Agreement and such proceedings shall have been discontinued or abandoned for any reason or shall have been determined adversely to the Trustee, then and in every such case the Authority and the Trustee shall be restored to their former positions and rights hereunder, and all rights, remedies and powers of the Trustee shall continue as if no such proceedings had been taken.

Section 8.10 Waivers of Events of Default.

The Trustee may in its discretion waive any Event of Default hereunder or any action taken pursuant to any Event of Default and rescind any acceleration of maturity of principal and interest on the Bonds, and shall do so at the request of the Holders of (a) a majority in aggregate principal amount of Senior Bonds then Outstanding in respect of which default in the payment of principal and/or premium, if any, and/or interest exists, or (b) a majority in aggregate principal amount of Senior Bonds then Outstanding in the case of any other default; provided, however, that there shall not be waived without the consent of the Holders of all Senior Bonds then Outstanding (A) any Event of Default in the payment of the principal of any Outstanding Bonds (whether at maturity or by sinking fund redemption), or (B) any default in the payment when due of the interest on any such Bonds unless, prior to such waiver or rescission,

(1) there shall have been paid or provided for all arrears of interest with interest, to the extent permitted by law, at the rate borne by the Bonds on overdue installments of interest, all arrears of principal and premium, if any, and all expenses of the Trustee in connection with such default, and

(2) in case of any such waiver or rescission or in the case of any discontinuance, abandonment or adverse determination of any proceeding taken by the Trustee on account of any such default, the Authority, the Trustee, and the Holders of Bonds shall be restored to their former positions and rights hereunder respectively.

No such waiver or rescission relating to the Bonds shall extend to any subsequent or other default or impair any right consequent thereon.

Section 8.11 No Delay or Omission Construed to be a Waiver.

No delay or omission of the Trustee or of any Holder of the Bonds to exercise any right or power accruing upon any default shall impair any such right or power or shall be construed to be a waiver of any such default or any acquiescence therein; and every power and remedy given by this Agreement to the Trustee and to the Bondholders, respectively, may be exercised from time to time and as often as may be deemed expedient.

Before the entry of final judgment or decree in any suit, action or proceeding instituted by it under the provisions of this Agreement or before the completion of the enforcement of any other remedy under this Agreement, the Trustee shall be permitted to discontinue such suit, action, proceeding or enforcement of any remedy if in its opinion any default forming the basis of such suit, action, proceeding or enforcement of any remedy shall have been remedied; provided, however, that no such discontinuance shall extend to or affect any subsequent or other default, or impair any right or remedy consequent thereon.

The Trustee may also, and upon written request of the Holders of not less than a majority in aggregate principal amount of the Senior Bonds then Outstanding shall, waive any default which shall have been remedied before the entry of final judgment or decree in any suit, action or proceeding instituted by it or the Holders under the provisions of this Agreement or before the completion of the enforcement of any other remedy under this Agreement in respect of such default, but no such waiver shall extend to or affect any other existing or any subsequent default or defaults or impair any rights or remedies consequent thereon.

Section 8.12 Notice of Default.

The Trustee shall mail to all owners of Bonds and the Fiduciaries for any Other System Indebtedness at their addresses as they appear on the registration books written notice of the occurrence of any Event of Default set forth in Section 8.01 within thirty (30) days after the Trustee shall have notice, pursuant to the provisions of Section 10.01 of this Agreement, that any such Event of Default shall have occurred. The Trustee shall not, however, be subject to any liability to any Bondholder by reason of its failure to mail any such notice.

Section 8.13 Unconditional Right to Receive Principal, Premium and Interest.

Nothing in this Agreement shall, however, affect or impair the right of the Trustee or any Bondholder to enforce, by action at law, payment of the principal of and premium, if any, or interest on any Bond at and after the maturity thereof, or on the date fixed for redemption or upon the same being declared due prior to maturity as herein provided, or the obligation of the Authority to pay the principal of and premium, if any, and interest on each of the Bonds issued hereunder to the respective holders thereof at the time and place, from the source and in the manner herein and in the Bonds expressed.

ARTICLE IX

SUPPLEMENTAL AGREEMENTS

Section 9.01 Supplemental Agreements Not Requiring Consent of Holders of Bonds.

The Authority and the Trustee may, without the consent of, or notice to, any of the Bondholders, enter into such Supplemental Agreements as shall not be inconsistent with the intent of the terms and provisions hereof for any one or more of the following purposes:

- (a) To cure any ambiguity, formal defect or omission in this Agreement;
- (b) To grant to or confer upon the Bondholders any additional rights, remedies, powers or authority that may lawfully be granted to or conferred on the Bondholders;
- (c) To add to the covenants and agreements of the Authority in this Agreement other covenants and agreements to be observed by the Authority;
- (d) To modify, amend or supplement this Agreement in such manner as required to permit the Authority to comply with the provisions of the Code relating to the rebate to the United States of America of earnings derived from the investment of the proceeds of any Bonds, provided that such modification, amendment or supplement does not materially adversely affect the holders of all Outstanding Bonds;
- (e) To modify, amend or supplement this Agreement in such manner as may be required by a Rating Agency to maintain or enhance its rating on the Senior Bonds, provided that such modification, amendment or supplement does not materially adversely affect the Holders of all Outstanding Bonds;
- (f) To modify, amend or supplement this Agreement to make any change to the role of the Consulting Engineer as set forth in Section 7.07;
- (g) To authorize the issuance of and to secure one or more issues of Bonds pursuant to Article II;
- (h) To notify, amend or supplement this Agreement in such manner as required to implement any agreement with a securities depository relating to a book-entry system to be maintained with respect to any Bonds; and
- (i) To modify, amend or supplement this Agreement in any manner that the Trustee concludes is not materially adverse to the Holders of all Outstanding Bonds.

For purposes of this Section, any modification, amendment or supplement to this Agreement shall not be deemed to be materially adverse to the Holders of all Outstanding Bonds unless such modification, amendment or supplement results in a downgrade or withdrawal of any then existing rating on Outstanding Bonds.

Section 9.02 Supplemental Agreements Requiring Consent of Bondholders.

(a) Exclusive of Supplemental Agreements authorized by Section 9.01 and subject to the terms and provisions contained in this Section, the Holders of not less than a majority in aggregate principal amount of Outstanding Bonds shall have the right from time to time, notwithstanding anything in this Agreement to the contrary, to consent to the execution by the Authority and the Trustee of such other Agreements supplemental hereto as shall be deemed necessary or desirable by the Authority for the purpose of modifying, altering, amending, adding to or rescinding, in any particular, any of the terms or provisions contained in this Agreement and any Supplemental Agreement; provided, however, that nothing in this Agreement shall permit, or be construed as permitting, (i) an extension of the time for payment of the principal of or the interest on any Bonds, (ii) a preference or priority of any Senior Bonds over any other Senior Bonds, (iii) a preference or priority of any Senior Subordinate Bonds over any other Senior Subordinate Bonds, (iv) a preference or priority of any Subordinate Bonds over any other Subordinate Bonds, (v) a reduction in the aggregate principal amount of Bonds required for consent to such Supplemental Agreement, (vi) a reduction in the principal amount of or premium, if any, on any Bonds or the rate of interest thereon, (vii) the creation of any lien or pledge upon the Authority Revenues and the moneys and securities in the funds and accounts hereunder other than the lien and pledge permitted by this Agreement or (viii) an extension of time or a reduction in amount of any payment required by any sinking fund that may be applicable to any Bonds, without the consent of the Holders so affected.

(b) If at any time the Authority shall request the Trustee to enter into any such Supplemental Agreement, the Trustee shall cause notice of the proposed execution of such Supplemental Agreement to be sent by registered or certified mail to the registered owner of each Bond at his address as it appears on the registration books. Such notice shall briefly set forth the nature of the proposed Supplemental Agreement and shall state that a copy thereof is on file at the corporate trust office of the Trustee for inspection by all Bondholders. If, within ninety (90) days or such longer period as shall be prescribed by the Authority following the giving of such notice, the Holders of not less than a majority in aggregate principal amount of Outstanding Bonds, or in the case of (i) through (viii) above, the holders of all affected Bonds, shall have consented to and approved the execution thereof as herein provided, no Holder of any Bond shall have any right to object to any of the terms and provisions contained therein, or the operation hereof, or in any manner to question the propriety thereof, or to enjoin or restrain the Trustee or the Authority from executing such Supplemental Agreement or from taking any action pursuant to the provisions thereof. Upon the execution of any such Supplemental Agreement as in this Section permitted and provided, this Agreement shall be and be deemed to be modified and amended in accordance therewith.

(c) Bonds owned or held by or for the account of the Authority shall not be deemed Outstanding for the purpose of consent or any calculation of Outstanding Bonds provided for in this Agreement. At the time of any such calculation, the Authority shall furnish the Trustee a certificate of an Authorized Representative of the Authority upon which the Trustee may rely, describing all Bonds so to be excluded.

(d) It shall not be necessary for the consent of the Holders of Bonds under this Section 9.02 to approve the particular form of any proposed supplement or amendment, but it shall be sufficient if such consent shall approve the substance thereof.

(e) For the purposes of this Article IX, the purchasers of the Bonds of a Series, whether purchasing as underwriters, for resale or otherwise, upon such purchase, may consent to a modification or amendment permitted by this Section 9.02 in the manner provided herein, except that no proof of ownership shall be required, and with the same effect as a consent given by the Holder of such Bonds; provided, however, that, if such consent is given by a purchaser who is purchasing as an underwriter or for resale, the nature of the modification or amendment and the provisions for the purchaser consenting thereto shall be described in the official statement, prospectus, offering memorandum or other offering document prepared in connection with the primary offering or remarketing of the Bonds of such Series by the Authority.

(f) A Supplemental Agreement may provide that an Enhancement Facility Provider shall have the right to vote in lieu of the holders of the Bonds authorized thereunder.

Section 9.03 Discretion of Trustee in Entering into Supplements and Amendments.

In each and every case provided for in this Article, the Trustee shall not be obligated to execute any proposed supplement or amendment if the rights, obligations and interests of the Trustee would be thereby affected, and the Trustee shall not be under any responsibility or liability to the Authority, or to any Bondholder or to anyone whomsoever, for its refusal in good faith to enter into any such supplement or amendment if such supplement or amendment is deemed by it to be contrary to the provisions of this Article.

The Trustee shall be entitled to receive, and shall be fully protected in relying upon, an opinion of any counsel approved by it, who may be counsel for the Authority, as conclusive evidence that any such proposed supplement or amendment does or does not comply with the provisions of this Agreement, and that it is or is not proper for it, under the provisions of this Article, to join in the execution of such supplement or amendment.

ARTICLE X

TRUSTEE

Section 10.01 Acceptance of Trusts and Obligations.

The Trustee hereby accepts the trusts and obligations imposed upon it by this Agreement and agrees to perform such trusts and obligations, but only upon and subject to the following express terms and conditions and no implied covenants or obligations shall be read into this Agreement against the Trustee:

(a) The Trustee, prior to the occurrence of an Event of Default and after the curing of all Events of Default which may have occurred, undertakes to perform such duties and only such duties as are specifically set forth in this Agreement and no implied covenants or

obligations shall be read into this agreement against the Trustee. Upon the occurrence and continuation of an Event of Default (which has not been cured or waived), the Trustee shall exercise such of the rights and powers vested in it by this Agreement and use the same degree of care and skill in its exercise as a prudent man ordinarily would exercise and use under the circumstances in the conduct of his own affairs.

(b) The Trustee may execute any of the trusts or powers hereof and perform any of its duties by or through attorneys or agents and shall not be liable for the misconduct of any attorney or agent selected by it with due care, and shall be entitled to consult with counsel and to act upon the opinion or advice of its counsel concerning all matters of trust hereof and the duties hereunder, and may in all cases pay reasonable compensation to all such attorneys, agents, receivers and employees as may reasonably be employed in connection with the trust hereof. The Trustee may act in reliance on an Opinion of Counsel and shall not be responsible for any loss or damage resulting from any action or nonaction by it taken or omitted to be taken in good faith and in reliance on such Opinion of Counsel.

(c) The Trustee shall not be responsible for any recital herein or in the Bonds (except in respect to the certificate of the Trustee endorsed on the Bonds) or for the recording, re-recording, filing or re-filing of any financing or continuation statement or any other document or instrument, or for insuring the Systems, collecting any insurance moneys, or for the validity of the execution by the Authority of this Agreement or for any supplements thereto or instruments of further assurance, or for the sufficiency of the security for the Bonds issued hereunder or intended to be secured hereby, and the Trustee shall not be bound to ascertain or inquire as to the observance or performance of any covenants, conditions or agreements on the part of the Authority except as hereinafter set forth. The Trustee shall not be responsible or liable for any loss suffered in connection with any investment of moneys made by it in accordance with Section 6.02.

(d) The Trustee shall not be accountable for the use of any Bonds authenticated or delivered hereunder. The bank or trust company acting as Trustee and its directors, officers, employees or agents may in good faith buy, sell, own, hold and deal in the Bonds and may join in any action which any holder of Bonds may be entitled to take with like effect as if such bank or trust company were not the Trustee. To the extent permitted by law, such bank or trust company may also receive tenders and purchase in good faith Bonds for itself, including any department, affiliate or subsidiary, with like effect as if it were not the Trustee.

(e) The Trustee shall be protected in acting on any notice, request, consent, certificate, order, affidavit, letter, telegram or other paper or document reasonably believed by it to be genuine and correct and to have been signed or sent by the proper person or persons. Any action taken by the Trustee pursuant to this Agreement on the request or authority or consent of any person who at the time of making such request or giving such authority or consent is the owner of any Bonds shall be conclusive and binding upon all future owners of the same Bonds and upon Bonds issued in exchange therefor or in place thereof.

(f) As to the existence or non-existence of any fact or as to the sufficiency or validity of any instrument, paper or proceeding, the Trustee shall be entitled to rely on a certificate signed on behalf of the Authority by its Chairman, its Executive President or any

Executive or Senior Vice President and attested by the Secretary of the Authority under its seal, or such other person or persons as may be designated for such purposes by resolution of the Authority, as sufficient evidence of the facts therein contained, and prior to the occurrence of a default of which the Trustee has been notified as provided in subsection (h) of this Section, or of which by said subsection it is deemed to have notice, may also accept a similar certificate to the effect that any particular dealing, transaction or action is necessary or expedient, but may at its discretion secure such further evidence deemed necessary or advisable, but shall in no case be bound to secure the same. The Trustee may accept a certificate of the Secretary of the Authority under its seal to the effect that a resolution in the form therein set forth has been adopted by the Authority as conclusive evidence that such resolution has been duly adopted and is in full force and effect.

(g) The permissive right of the Trustee to do things enumerated in this Agreement shall not be construed as a duty, and the Trustee shall not be answerable for other than its negligence or willful default.

(h) The Trustee shall not be required to take notice or be deemed to have notice of any default hereunder, except failure by the Authority to cause to be made any of the payments to the Trustee required to be made by Article VI or failure by the Authority to file with the Trustee any document required by this Agreement to be so filed, unless the Trustee shall be notified of such default by the Authority or by the Holders of 25% in aggregate principal amount of Senior Bonds (or if no Senior Bonds are then Outstanding, Senior Subordinate Bonds) then Outstanding.

(i) At any and all reasonable times the Trustee and its duly authorized agents, attorneys, experts, engineers, accountants and representatives shall have the right, but shall not be required, to inspect the Systems and all books, papers and records of the Authority pertaining to the Systems and the Bonds, and to make such memoranda from and in regard thereto as may be desired.

(j) The Trustee shall not be required to give any bond or surety with respect to the exercise of its rights and obligations hereunder.

(k) Notwithstanding any other provision of this Agreement, the Trustee shall have the right, but shall not be required, to demand, as a condition of any action by the Trustee in respect of the authentication of any Bonds, the withdrawal of any cash, the release of any property, or any action whatsoever within the purview of this Agreement, any showings, certificates, opinions, appraisals or other information, or corporate action or evidence thereof, in addition to that required by the terms hereof.

(l) Before taking any action under this Agreement the Trustee may require that satisfactory indemnity be furnished to it for the reimbursement of all expenses to which it may be put and to protect it against all liability by reason of any action so taken, except liability which is adjudicated to have resulted from its negligence or willful default.

(m) All moneys received by the Trustee shall, until used or applied or invested as herein provided, be held in trust in the manner and for the purposes for which they were

received but need not be segregated from other moneys except to the extent required by this Agreement or law. The Trustee shall not be under any liability for interest on any moneys received hereunder except such as may be agreed upon.

(n) In the absence of gross negligence or bad faith on its part, the Trustee may conclusively rely, as to the truth of the statements and the correctness of the opinions expressed therein, upon certificates or opinions furnished to the Trustee and conforming to the requirements of this Agreement, if any; but in the case of any such certificates or opinions which by any provision hereof are specifically required to be furnished to the Trustee, the Trustee shall be under a duty to examine the same to determine whether or not they conform to the requirements of this Agreement.

(o) The Trustee shall not be liable with respect to any action taken or omitted to be taken by it in good faith in accordance with the direction of the holders of a majority in principal amount of the Senior Bonds (or, if there are no Senior Bonds outstanding, Senior Subordinated Bonds, or if there are no Senior Subordinated Bonds Outstanding, Subordinated Bonds) relating to the time, method and place of conducting any proceeding for any remedy available to the Trustee, or exercising any trust or power conferred upon the Trustee, under the provisions of this Agreement.

(p) No provision of this Agreement shall require the Trustee to expend or risk its own funds or otherwise incur any financial liability in the performance of any of its duties hereunder, or in the exercise of any of its rights or powers, if it shall have reasonable grounds for believing that repayment of such funds or adequate indemnity against such risk or liability is not reasonably assured to it.

(q) Whenever in the administration of this Agreement, prior to the occurrence of an Event of Default, the Trustee shall deem it desirable that a matter be proved or established prior to taking or suffering any action hereunder, such matters (unless other evidence in respect thereof be herein specifically prescribed) may be deemed to be conclusively proved and established by a certificate of the Authority and such certificate, in the absence of bad faith on the part of the Trustee, shall be full warrant to the Trustee for any action taken or suffered by it under the provisions of this Agreement upon the faith thereof.

(r) The Trustee shall not be bound to make any investigation into the facts or matters stated in any resolution, certificate, statement, instrument, opinion, report, notice, request, direction, consent, order, note, or other paper or document but the Trustee, in its discretion, may make such further inquiry or investigation into such facts or matters as it may see fit.

Section 10.02 Monthly Statements of Funds on Deposit.

(a) If such statements are not already filed on a monthly basis, it shall be the duty of the Trustee, to file with the Authority, the Consulting Engineer and any other Consultants identified by the Authority, a statement setting forth in respect of the preceding calendar month:

(i) the amount withdrawn or transferred by it and the amount deposited with it on account of each fund and account held by it under the provisions of this Agreement; and

(ii) the Authority's Outstanding Indebtedness by category.

(b) If on or before any Deposit Date, the amount transferred from the Operating Revenue Fund is insufficient to make the total required deposit to the Commonwealth Payments Fund for such month, the Trustee will notify the Authority, the Consulting Engineer, any other Consultants identified by the Authority, and Government Development Bank for Puerto Rico of such insufficiency.

(c) The Trustee shall notify the Authority, the Consulting Engineer, any other Consultants identified by the Authority, and Government Development Bank for Puerto Rico, of the amount transferred from the Operating Reserve Fund to the Senior Bond Fund, the Senior Subordinate Bond Fund and the Subordinate Bond Fund to fund deficiencies therein.

(d) The Trustee shall notify the Authority, the Consulting Engineer, any other Consultants identified by the Authority, and Government Development Bank for Puerto Rico, of the amount transferred from the Current Expense Fund to the Senior Bond Fund, the Senior Subordinate Bond Fund and the Subordinate Bond Fund to fund deficiencies therein.

(e) If any amount is required to be transferred from the Senior Debt Service Reserve Fund, Senior Subordinate Debt Service Reserve Fund or Subordinate Reserve Fund, pursuant to Article V herein, the Trustee shall notify the Authority, the Consulting Engineer, any other Consultants identified by the Authority, and Government Development Bank for Puerto Rico of such transfers.

(f) All records and files pertaining to the trusts hereunder in the custody of the Trustee shall be open at all reasonable times to the inspection of the Authority and its agents and representatives.

Section 10.03 Trustee May be Bondholder.

The bank, national banking association or trust company acting as Trustee under this Agreement, and its directors, officers, employees or agents, may in good faith buy, sell, own, hold and deal in any of the Bonds, and may join in the capacity of a Bondholder in any action which any Bondholder may be entitled to take with like effect as if such bank, national banking association or trust company were not the Trustee under this Agreement, may engage, as principal or agent, or be interested in any financial or other transaction with the Authority and may maintain any and all other general banking and business relations with the Authority, all with like effect and in the same manner as if the Trustee were not a party to this Agreement, and may act as depository, trustee or agent for any committee or body of Holders of the Bonds issued under and secured by this Agreement or other obligations of the Authority with like effect and in the same manner as if the Trustee were not a party to this Agreement; and no implied covenant shall be read into this Agreement against the Trustee in respect of such matters.

Section 10.04 Trustee not Responsible for Recitals.

The recitals, statements and representations contained herein and in the Bonds (excluding the Trustee's certificate of authentication on the Bonds) shall be taken and construed as made by and on the part of the Authority and not by the Trustee, and the Trustee shall not be under any responsibility for the correctness of the same. The Trustee makes no representations as to the validity or sufficiency of this Agreement or of the Bonds. The Trustee shall not be accountable for the use or application, other than those required to be made by the Trustee as herein provided, of any of the proceeds of the Bonds.

Section 10.05 Trustee not Responsible for Recording.

The Trustee shall not be under any obligation to see to the recording or filing of this Agreement or any other agreement or instrument or otherwise to the giving to any person of notice of the provisions hereof or thereof.

Section 10.06 Appointment of Co-Trustee.

(a) Notwithstanding any other provisions of this Agreement, at any time, for the purpose of meeting any legal requirement of any jurisdiction with respect to this Agreement, including any jurisdiction in which any part of the assets pledged hereunder may at the time be located, the Trustee shall have the power and may execute and deliver all instruments necessary to appoint one or more persons or entities to act as a co-trustee or co-trustees, or separate trustee or separate trustees with respect to this Agreement, including with respect to all or any part of such assets, and to vest in such person or entity, in such capacity and for the benefit of the Bondholders, such title to the collateral, or any part hereof, and subject to the other provisions of this Section, such powers, duties, obligations, rights and trusts as the Trustee may consider necessary or desirable. No co-trustee or separate trustee hereunder shall be required to meet the terms of eligibility as a successor trustee under Section 10.14 and no notice to Bondholders of the appointment of any co-trustee or separate trustee shall be required.

(b) Every separate trustee and co-trustee shall, to the extent permitted by law, be appointed and act subject to the following provisions and conditions:

(i) all rights, powers, duties and obligations conferred or imposed upon the Trustee shall be conferred or imposed upon and exercised or performed by the Trustee and such separate trustee or co-trustee jointly (it being understood that such separate trustee or co-trustee is not authorized to act separately without the Trustee joining in such act), except to the extent that under any law of any jurisdiction in which any particular act or acts are to be performed the Trustee shall be incompetent or unqualified to perform such act or acts, in which event such rights, powers, duties and obligations (including the holding of title to the assets pledged hereunder or any portion thereof in any such jurisdiction) shall be exercised and performed singly by such separate trustee or co-trustee, but solely at the direction of the Trustee;

(ii) no trustee hereunder shall be personally liable by reason of any act or omission of any other trustee hereunder; and

(iii) the Trustee may at any time accept the resignation of or remove any separate trustee or co-trustee.

(c) Any notice, request or other writing given to the Trustee shall be deemed to have been given to each of the then separate trustees and co-trustees, as effectively as if given to each of them. Every instrument appointing any separate trustee or co-trustee shall refer to this Agreement and the conditions of this Article X. Each separate trustee and co-trustee, upon its acceptance of the trusts conferred, shall be vested with the estates or property specified in its instrument of appointment, either jointly with the Trustee or separately, as may be provided therein, subject to all the provisions of this Agreement, specifically including every provision of this Agreement relating to the conduct of, affecting the liability of, or affording protection or rights (including the rights to compensation, reimbursement and indemnification hereunder) to, the Trustee. Every such instrument shall be filed with the Trustee.

(d) Any separate trustee or co-trustee may at any time constitute the Trustee its agent or attorney-in-fact with full power and authority, to the extent not prohibited by law, to do any lawful act under or in respect of this Agreement on its behalf and in its name.

Section 10.07 Fees, Charges and Expenses of Trustee.

The Trustee shall be entitled to payment of and reimbursement for reasonable fees for its services and all expenses reasonably incurred by it hereunder, including the reasonable fees and disbursements of its counsel.

Section 10.08 Notice Required of Trustee.

If the Authority shall fail to transfer amounts to the Operating Revenue Fund as provided in Article V, the Trustee shall give notice thereof by telephone or telegram to the Authority on the next succeeding Business Day and shall confirm such notice in writing by first class registered or certified mail. In the event of (a) the continuance for thirty (30) days of any such failure to make payment, or (b) notification to the Trustee by the holders of 25% in aggregate principal amount of the Senior Bonds (or if no Senior Bonds are then Outstanding, Senior Subordinate Bonds) then Outstanding of any default hereunder, then the Trustee shall give notice thereof to the Bondholders.

Section 10.09 Intervention by Trustee.

In any judicial proceeding to which the Authority is a party and which in the opinion of the Trustee has a substantial bearing on the interests of the Bondholders, the Trustee may intervene on behalf of the Bondholders and, subject to Section 10.01(l), shall do so if requested by the holders of 25% in aggregate principal amount of Senior Bonds (or if no Senior Bonds are then Outstanding, Senior Subordinate Bonds) then Outstanding.

Section 10.10 Merger or Consolidation of Trustee.

Any corporation or association into which the Trustee may be converted or merged, or with which it may be consolidated, or to which it may sell or transfer its corporate trust business and assets as a whole or substantially as a whole, or any corporation or association resulting from

any such conversion, sale, merger, consolidation or transfer to which it is a party shall be and become successor Trustee hereunder and vested with all the trusts, powers, discretion, immunities, privileges and all other matters as was its predecessor, without the execution or filing of any instrument or any further act, deed or conveyance on the part of any of the parties hereto, provided, however, that so long as no Event of Default has occurred and is continuing, the Authority shall have the right to appoint a successor Trustee other than corporation or association that results from such conversion, sale, merger, consolidation or transfer.

Section 10.11 Resignation by Trustee.

The Trustee may at any time resign from the trusts hereby created by giving thirty (30) days' notice to the Authority, provided that such resignation shall not take effect until the appointment of a successor or temporary Trustee by the Bondholders, the Authority or a court of competent jurisdiction.

Section 10.12 Removal of Trustee.

The Trustee may be removed at any time (a) by an instrument or concurrent instruments in writing delivered to the Trustee and the Authority, and signed by the owners of a majority in aggregate principal amount of Senior Bonds (or if no Senior Bonds are then Outstanding, Senior Subordinate Bonds) then Outstanding, or (b) by the Authority by notice in writing given by an Authorized Representative of the Authority to the Trustee thirty (30) days before the removal date; provided, however, that the Authority shall have no right to remove the Trustee during any time when an Event of Default has occurred or is continuing or when an event has occurred and is continuing or condition exists that with the giving of notice or the passage of time, or both, would be an Event of Default. The removed Trustee shall return to the Authority the amount of the Trustee's annual fee allocable to the portion of the current year remaining after the removal date. Notwithstanding the foregoing, nothing contained in this Agreement shall relieve the Authority of its obligation to pay the Trustee's fees and expenses incurred to the date of such removal. Such removal shall take effect upon the appointment of a successor Trustee or the earlier appointment of a temporary Trustee by the Bondholders, the Authority or a court of competent jurisdiction.

Section 10.13 Appointment of Successor Trustee by Bondholders; Temporary Trustee.

In case the Trustee hereunder shall resign, be removed, be dissolved, be in course of dissolution or liquidation or otherwise become incapable of acting hereunder, or in case it shall be taken under the control of any public officer or officers or of a receiver appointed by a court, a successor may be appointed by the owners of a majority in aggregate principal amount of Senior Bonds (or if no Senior Bonds are then Outstanding, Senior Subordinate) then Outstanding, by an instrument or concurrent instruments in writing signed by such owners; provided, however, that in case of such vacancy the Authority, by an instrument signed by its Executive President and attested by the Secretary of the Authority under its seal, may appoint a temporary Trustee to fill such vacancy until a successor Trustee shall be appointed by the bondholders in the manner provided above; and any such temporary Trustee so appointed by the Authority shall immediately and without further act be superseded by the Trustee so appointed by such

bondholders. Every such Trustee appointed pursuant to this Section shall be, if there be such an institution willing, qualified and able to accept the trust upon reasonable or customary terms, a bank or trust company having a combined capital, surplus and undivided profits of not less than \$50,000,000 (or whose obligations hereunder are guaranteed by a bank or trust company duly authorized to exercise corporate trust powers and subject to examination by federal or state authority, of good standing, and having at the time of the appointment of such Trustee, a combined capital and surplus of at least such amount).

Section 10.14 Concerning any Successor Trustee.

Every successor Trustee appointed hereunder shall execute, acknowledge and deliver to its predecessor and also to the Authority an instrument in writing accepting such appointment hereunder, and thereupon such successor, without any further act or deed of conveyance, shall become fully vested with all the properties, rights, powers, trusts, duties and obligations of its predecessor; but such predecessor shall, nevertheless, on the request of the Authority, execute and deliver an instrument transferring to such successor Trustee all the properties, rights, powers and trusts of such predecessor hereunder; and every predecessor Trustee shall deliver all securities and moneys held by it as Trustee hereunder to its successor. Should any instrument in writing from the Authority be required by any successor Trustee for more fully and certainly vesting in such successor the properties, rights, powers and duties hereby vested or intended to be vested in the predecessor, any and all such instruments in writing shall, on request, be executed, acknowledged and delivered by the Authority.

Section 10.15 Trustee Protected in Relying on Agreements, Etc.

The resolutions, opinions, certificates and other instruments provided for in this Agreement may be accepted by the Trustee as conclusive evidence of the facts and conclusions stated therein and shall be full warrant, protection and authority to the Trustee for the release of property and the withdrawal of cash hereunder or the taking of any other action by the Trustee as provided hereunder.

Section 10.16 Successor Trustee as Paying Agent, Registrar and Custodian of Funds.

In the event of a change in the office of Trustee, the predecessor Trustee which has resigned or been removed shall cease to be paying agent and registrar for the Bonds and custodian of the funds created hereunder, and the successor Trustee shall become such paying agent, registrar and custodian.

Section 10.17 Limitation of Liability.

The Trustee is entering into this Agreement solely in its capacity as trustee and not in its individual capacity (except as expressly stated herein), and in no case shall the Trustee (or any person acting as successor trustee under this Agreement) be personally liable for or on account of any of the statements, representations, warranties, covenants or obligations stated to be those of any other person or entity hereunder, all such liability, if any, being expressly waived by the parties hereto and any person claiming by, through or under such party; provided, however, that the Trustee (or any such successor trustee) shall be personally liable hereunder for its own gross

negligence or willful misconduct. The provisions of this Section shall survive the termination of this Agreement.

ARTICLE XI

DISCHARGE OF AGREEMENT

Section 11.01 Discharge of Agreement.

If (a) (1) all Bonds issued hereunder shall have become due and payable in accordance with their terms or otherwise as provided in this Agreement or have been duly called for redemption or irrevocable instructions to call the Bonds issued hereunder for redemption have been given by the Authority to the Trustee, and (2) the Trustee holds for such purpose cash or Defeasance Obligations, the principal of and the interest on which, as verified by a licensed independent certified public accountant (that carries errors and omissions insurance) reasonably acceptable to the Trustee and the Authority, at maturity will be sufficient (without reinvestment) (A) to redeem all Bonds issued hereunder that have been called for redemption, or for which such irrevocable instructions have been given, on the date set for such redemption, (B) to pay at maturity all Bonds issued hereunder not irrevocably called for redemption, (C) to pay interest accruing on all Bonds issued hereunder prior to their redemption or payment at maturity, (D) to make all payments required by the terms of any Supplemental Agreement, and (E) to pay the Trustee's fees and expenses and any other fees and expenses for which the Authority is responsible under this Agreement, including the costs and expenses of canceling and discharging this Agreement, and (b) the Trustee shall have received notification from the Holders of all other Indebtedness that such Indebtedness has been paid, or payment has been provided for such Indebtedness, in accordance with the documents related thereto, then the Trustee shall, at the expense of the Authority, cancel and discharge this Agreement and execute and deliver to the Authority such instruments in writing as shall be necessary to cancel the lien hereof, and assign and deliver to the Authority any property at the time subject to this Agreement that may then be in its possession, except moneys or securities in which such moneys are invested which are held by the Trustee for the payment of principal, or premium, if any, or interest on the Bonds issued hereunder;

Any Outstanding Bond, or portion thereof in any denomination authorized by this Agreement, shall be deemed to have been paid within the meaning and with the effect expressed in this Section 11.01 when the whole amount of the principal of and interest on such Bond or such portion shall have been paid or duly provided for and the conditions set forth in clause (c) below have been satisfied or when (a) in the event such Bond or such portion shall have been duly called for redemption or irrevocable instructions to call such Bond or such portion for redemption shall have been given to the Trustee by the Authority, (b) whether or not such Bond or portion thereof has been so called for redemption, there shall have been deposited with the Trustee either moneys in an amount which shall be sufficient, or Defeasance Obligations, which shall not contain provisions permitting the redemption thereof at the option of the issuer, the principal of and the interest on which when due, and without any reinvestment thereof, will provide moneys which, together with the moneys, if any, deposited with or held by the Trustee available therefor, shall be sufficient, to pay when due the principal of and premium, if any, and interest due and to become due on such Bond or such portion on or prior to the maturity or

redemption date thereof, and (c) in the event such Bond or such portion does not mature and is not to be redeemed within the next succeeding 60 days, the Authority shall have given the Trustee irrevocable instructions to give, as soon as practicable, a notice to the Holder of such Bond or such portion by first-class mail, postage prepaid, stating that the deposit of moneys or Defeasance Obligations required by clause (b) of this paragraph has been made with the Trustee and that such Bond or such portion is deemed to have been paid in accordance with this Section and stating the maturity or redemption date upon which moneys are to be available for the payment of the principal of and premium, if any, and interest on such Bond or such portion.

The moneys and Defeasance Obligations deposited with the Trustee pursuant to this Section and all payments of principal of or interest on any such Obligations shall not be withdrawn or used for any purpose other than, and shall be held in trust for, the payment of the principal of and premium, if any, and interest on said Bonds, or portions thereof, deemed to have been paid in accordance with this Section. If Bonds, or portions thereof, are deemed to have been paid in accordance with the provisions of this Article by reason of the deposit with the Trustee of moneys or Defeasance Obligations and the Trustee has received an opinion of counsel satisfactory to it as to such deemed payment, no amendment to the provisions of this Section which would adversely affect the Holders of such Bonds, or portions thereof, shall be made without the consent of each Holder affected thereby.

For purposes of determining whether any Outstanding Variable Rate Indebtedness is deemed paid and discharged pursuant to this Article XI, such Variable Rate Indebtedness shall be deemed to bear interest at the maximum rate of interest such Variable Rate Indebtedness may bear pursuant to the applicable Supplemental Agreement.

ARTICLE XII

SUBORDINATION

Section 12.01 Subordination

(a) Senior Subordinated Indebtedness, Subordinated Indebtedness, Commonwealth Guaranteed Indebtedness and Commonwealth Supported Obligations (collectively, the "Subordinated Obligations") shall to the extent provided in this Article be subordinate and subject in right of payment to the prior payment in full of the Senior Indebtedness, and the Holder of any Subordinated Obligation, whether upon original issue or upon transfer or assignment thereof, accepts and agrees to be bound by such provision. The Indebtedness evidenced by Subordinated Indebtedness shall to the extent provided in this Article be subordinate and subject in right of payment to the prior payment in full first of Senior Indebtedness and then of the Senior Subordinated Indebtedness, and the Holder of any Subordinate Indebtedness, whether upon original issue or upon transfer or assignment thereof, accepts and agrees to be bound by such provision.

(b) Upon any payment or distribution of assets of the Authority upon any dissolution or winding up or total or partial liquidation of the Authority whether in bankruptcy, insolvency or receivership proceedings, or otherwise,

(1) all Senior Indebtedness shall first be paid or duly provided for to the extent of such payment or distribution before any payment is made upon the indebtedness evidenced by the Subordinated Obligations;

(2) any payment or distribution of assets of the Authority of any kind or character, whether in cash, property or securities, to which the Holders of the Subordinated Obligations or the Trustee would be entitled except for the provisions of this Article XII, including any such payment or distribution which may be payable or deliverable by reason of the payment of any other indebtedness of the Authority being subordinated to the payment of the Subordinated Obligations, shall be paid by the liquidating trustee or agent or other person making such payment or distribution, whether a trustee in bankruptcy, a receiver or liquidating trustee or otherwise, directly to the Holders of Senior Indebtedness, to the extent necessary to pay or provide for the payment of all Senior Indebtedness in full before any payment is made upon the indebtedness evidenced by the Subordinated Obligations; and

(3) in the event that, notwithstanding the foregoing, upon any such dissolution or winding up or liquidation any payment or distribution of assets of the Authority of any kind or character, whether in cash, property or securities, including any such payment or distribution which may be payable or deliverable by reason of the payment of any other indebtedness of the Authority being subordinated to the payment of the Subordinated Obligations, shall be received by the Trustee or by the Holders of the Subordinated Obligations before all Senior Indebtedness are paid or duly provided for in full, such payment or distribution shall be paid over to the Holders of such Senior Indebtedness for application to the payment thereof until such Senior Indebtedness shall have been paid or provision for such payment shall have been made in full.

Upon any payment or distribution of assets of the Authority referred to in this Section 12.01, the Trustee and the Holders of the Subordinated Obligations shall be entitled to rely upon a certificate of the liquidating trustee or agent or other person making any payment or distribution to the Trustee or the Holders of the Subordinated Obligations for the purpose of ascertaining the persons entitled to participate in such payment or distribution, the Holders of Senior Indebtedness and other indebtedness of the Authority, the amount thereof or payable thereon, the amount or amounts paid or distributed thereon and all other facts pertinent thereto, or to this Article.

(c) (1) In the event that any Subordinated Obligation is declared due and payable before its expressed maturity because of the occurrence of an event of default (under circumstances when the provisions of subsection (b) above shall not be applicable), the owners of all Senior Indebtedness outstanding at the time such Subordinated Obligation becomes due and payable because of the occurrence of such an Event of Default shall be entitled to receive payment in full of all principal of and interest on all such Indebtedness then due and payable before the Holder of such Subordinated Obligation is entitled to receive any accelerated payment from the Authority Revenues and other moneys pledged to Senior Indebtedness under this Agreement of principal (and premium, if any) or interest upon such Subordinated Obligation; provided, however, that any Authority Revenues received from the Commonwealth of Puerto Rico on account of Commonwealth Guaranteed Indebtedness or Commonwealth Supported

Obligations are not subject to the lien hereof and shall only be used for the purposes set forth in Section 5.12 hereof.

(2) If any Event of Default specified in Section 8.01 hereof with respect to the Senior Indebtedness shall have occurred and be continuing (under circumstances when the provisions of subsection (b) above shall not be applicable), the owners of all Senior Indebtedness then Outstanding shall be entitled to receive payment in full of all principal of and interest on all such Indebtedness as the same become due and payable before the Holders of the Subordinated Obligations are entitled to receive, subject to the provisions of (3) below, any payment from the Authority Revenues or other moneys pledged to Senior Indebtedness under this Agreement of principal (and premium, if any) or interest upon the Subordinate Obligations; provided, however, that any Authority Revenues received from the Commonwealth of Puerto Rico on account of Commonwealth Guaranteed Indebtedness or Commonwealth Supported Obligations are not subject to the lien hereof and shall only be used for the purposes set forth in Section 5.12 hereof.

(3) The Subordinated Obligations may provide that the provisions of subsection (b) and (c) are solely for the purpose of defining the relative rights of the owners of Senior Indebtedness on the one hand, and the Holders of Subordinated Obligations on the other hand, and that nothing therein shall impair, as between the Authority and the Holders of the Subordinated Obligations, the obligation of the Authority, which is unconditional and absolute, to pay to the Holders thereof the principal thereof and premium, if any, and interest thereon in accordance with their terms, nor shall anything therein prevent the Holders of the Subordinated Obligations from exercising all remedies otherwise permitted by applicable law or thereunder upon default thereunder, subject to the rights under subsections (b) and (c) of the owners of Senior Indebtedness to receive cash, property or securities from the funds pledged to Senior Indebtedness under this Agreement otherwise payable or deliverable to the Holders of the Subordinated Obligations; and the Subordinated Obligations may provide that, insofar as a trustee or paying agent for such Subordinated Obligations is concerned, the foregoing provisions shall not prevent the application by such trustee or paying agent of any moneys deposited with such trustee or paying agent for the purpose of the payment of or on account of the principal (and premium, if any) and interest on such Subordinated Obligations if such trustee or paying agent did not have knowledge at the time of such application that such payment was prohibited by the foregoing provisions.

(d) No owner of Senior Indebtedness shall be prejudiced in this right to enforce subordination of the Subordinated Obligations by any act or failure to act on the part of the Authority.

(e) Any issue of Subordinated Obligations may have such rank or priority with respect to any other issue of Subordinated Obligations as may be provided herein, in the applicable Supplemental Agreement or in the resolution, trust Agreement or other instrument securing such issue of Subordinated Obligations and may contain such other provisions as are not in conflict with the provisions of this Agreement.

Section 12.02 Liability of Trustee and Qualified Depository in respect of Subordination.

Neither the Trustee nor any Qualified Depository shall be deemed to owe any fiduciary duty to the Holders of Subordinated Obligations and shall not be liable to such Holders if it shall mistakenly pay over or transfer to owners of Senior Indebtedness, the Authority or any other person, moneys to which any Holders of Subordinated Obligations shall be entitled by virtue of this Section 12.02 or otherwise; provided, however, that neither the Trustee nor any Qualified Depository shall be relieved from liability for its own negligent action, its own negligent failure to act, or its own willful misconduct. Notwithstanding any of the provisions of this Section 12.02 or any other provision of this Agreement, neither the Trustee nor any such Qualified Depository shall at any time be charged with knowledge of the existence of any facts that would prohibit the making of any payment of moneys to or by the Trustee or any such Qualified Depository in respect of Subordinated Obligations or of any default in the payment of the principal of or premium, if any, or interest on any Subordinated Obligations, unless and until the Trustee or such Qualified Depository shall have received written notice thereof from the Authority or the Holders of a majority in principal amount of any class or category of any Subordinated Obligations or from any trustee or other fiduciary therefor and any financial institution that provides credit or security for any Subordinated Obligations.

Section 12.03 When Payment of Subordinated Obligations Allowed.

Nothing contained in this Agreement or in any Senior Indebtedness or Subordinated Obligations shall (a) affect the obligation of the Authority to make, or prevent the Authority from making, at any time, except as provided in Section 12.01, payments of principal of or premium, if any, or interest on Senior Indebtedness or the Subordinated Obligations, or (b) prevent the application by the Trustee of any moneys deposited with it hereunder for such purpose to the payment of or on account of the principal of or premium, if any, or interest on Senior Indebtedness or the Subordinated Obligations, if, at the time of such payment or deposit, the Trustee did not have written notice or actual knowledge of any event prohibiting the making of such deposit by the Authority.

Section 12.04 Subrogation of Holders of Subordinated Obligations.

Subject to the payment in full of all Senior Indebtedness as provided in Section 12.01, the Holders of the Subordinated Obligations shall be subrogated to the rights of the Holders of Senior Indebtedness to receive payments or distributions of assets of the Authority made on Senior Indebtedness until the Subordinated Obligations shall be paid in full, and no payments or distributions to the Holders of Senior Indebtedness by the Authority or by the Holders of the Subordinated Obligations shall, as between the Authority and the Holders of the Subordinated Obligations, be deemed to be a payment by the Authority to or on account of the Subordinated Obligations, it being understood that the provisions of this Article are and are intended solely for the purpose of defining the relative rights of the Holders of the Subordinated Obligations and of Senior Indebtedness and nothing in this Article shall or is intended to, as between the Authority and the Holders of the Subordinated Obligations, impair the obligation of the Authority, which is unconditional and absolute, to pay from the sources herein provided to the Holders of the Subordinated Obligations the principal of and premium, if any, and interest on the Subordinated

Obligations in accordance with their terms, nor shall anything in this Article XII prevent the Trustee or the Holder of any Subordinated Obligation from exercising all remedies otherwise permitted by applicable law upon default hereunder, subject to the rights, if any, under this Article XII of the Holders of Senior Indebtedness in respect of cash, property or securities of the Authority received upon the exercise of any such remedy.

Section 12.05 Treatment of Enhancement Facilities.

Any payment made under an Enhancement Facility, to the Holders of the Subordinated Obligations having the benefit of such Enhancement Facility, by the appropriate obligor thereof shall be retained by such Holders for their own account, and no Holder of Senior Indebtedness is to have any right with respect to any such payment so made.

As between the obligor whose Enhancement Facility secures any Subordinated Obligation and the Holder of such Subordinated Obligations, any payment made on such Subordinated Obligation by the Authority which, under the subordination provisions of this Article, is required to be paid over to the Holders of the Senior Indebtedness, shall not constitute a payment on such Subordinated Obligation but, instead, shall be treated for all purposes of such Enhancement Facility, as though such payment had not been made by the Authority. Until the Holder of the Subordinated Obligation so guaranteed has received from the Authority, or from such obligor, moneys which such Holder is entitled to retain for its own account, equal in the aggregate to the principal amount of his Subordinated Obligation and any accrued and unpaid interest thereon, such obligor shall remain liable on its Enhancement Facility, and, unless otherwise provided in such Enhancement Facility, shall not be subrogated to any of the rights of the Holder of such Subordinated Obligation.

Section 12.06 Amendments to Senior Indebtedness not Requiring Consent of Holders of Subordinate Obligations.

Unless otherwise provided therefor in the Senior Indebtedness, the Holders of the Senior Indebtedness may extend, renew, modify or amend the terms of Senior Indebtedness or any security therefor and release, sell or exchange such security and otherwise deal freely with the Authority, all without notice to or consent of the Holders of the Subordinated Obligations and without affecting the liabilities and obligations of the Authority or the Holders of the Subordinated Obligations.

ARTICLE XIII

MISCELLANEOUS

Section 13.01 Consents, Etc., of Bondholders.

(a) Any consent, request, direction, approval, objection or other instrument (collectively, a "Consent") required by this Agreement to be executed by the Bondholders may be in any number of concurrent writings of similar tenor and may be executed by such Bondholders in person or by agent appointed in writing. Proof of the execution of a Consent or of the writing appointing any such agent shall be sufficient for any of the purposes of this Agreement and shall be conclusive in favor of the Authority with regard to any action taken

under the Consent if the fact and date of the execution by any person of any such writing is proved by a certificate of any officer in any jurisdiction who by law has power to take acknowledgments within such jurisdiction that the person signing such writing acknowledged before him the execution thereof, or by affidavit of any witness to such execution.

(b) Nothing contained in this Section shall be construed as limiting the Trustee to such proof, it being intended that the Trustee may accept any other evidence of the matters herein stated which may be sufficient.

(c) If the Authority shall solicit from the Holders any request, direction, consent or other instrument in writing required or permitted by this Agreement to be signed or executed by Bondholders, the Authority may, at its option, fix in advance a record date for the determination of Holders entitled to give such request, direction, consent or other instrument, but the Authority shall have no obligation to do so. If such a record date is fixed, such request, direction, consent or other instrument may be given before or after such record date, but only the Holders of record at the close of business on such record date shall be deemed to be Holders for the purposes of determining whether Holders of the requisite proportion of Bonds have authorized or agreed or consented to such request, direction, consent or other instrument, and for that purpose the Bonds shall be computed as of such record date; provided that no such consent by the Holders on such record date shall be deemed effective unless it shall become effective pursuant to the provisions of this Agreement no later than twelve (12) months after the record date.

(d) Any request or consent of the Holder of any Bond shall bind every future Holder of the same Bond or any Bond issued in place thereof in respect of anything done by the Trustee in pursuance of such request or consent.

Section 13.02 Limitation of Rights.

With the exception of rights herein expressly conferred, nothing expressed or mentioned in or to be implied from this Agreement or the Bonds is intended or shall be construed to give to any person other than the parties hereto and the holders of the Bonds any legal or equitable right, remedy or claim under or in respect to this Agreement or any covenants, conditions and agreements herein contained since this Agreement and all of the covenants, conditions and agreements hereof are intended to be and is for the sole and exclusive benefit of the parties hereto and the Holders of the Bonds as herein provided.

Section 13.03 Limitation of Liability of Board of Directors of the Authority, Etc.

No covenant, agreement or obligation contained herein shall be deemed to be a covenant, agreement or obligation of any present or future member of the Board of Directors of the Authority or officer, employee or agent of the Authority in his or her individual capacity, and neither the members of the Board of Directors of the Authority nor any officer of the Authority executing the Bonds shall be liable personally on the Bonds or be subject to any personal liability or accountability by reason of the issuance thereof. No member of the Board of Directors of the Authority or officer, employee, agent or advisor of the Authority shall incur any personal liability with respect to any other action taken by him pursuant to this Agreement, provided such

member, officer, employee, agent or advisor acts in good faith. All covenants, stipulations, obligations and agreements of the Authority contained in this Agreement shall be deemed to be covenants, stipulations, obligations and agreements of the Authority to the full extent permitted by the Constitution and laws of the Commonwealth of Puerto Rico.

Section 13.04 Severability.

If any provision of this Agreement shall be held invalid by any court of competent jurisdiction, such holding shall not invalidate any other provision hereof, and this Agreement shall be construed and enforced as if such illegal provision had not been contained herein. In case any covenant, stipulation, obligation, stipulation, obligation or agreement contained in the Bonds or in this Agreement shall for any reason be held to be in violation of law, then such covenant, stipulation, obligation or agreement of the Authority to the full extent permitted by law.

Section 13.05 Notices.

Unless otherwise provided herein, all demands, notices, approvals, consents, requests, opinions and other communications hereunder shall be in writing and shall be deemed to have been given when delivered in person or mailed by first class registered or certified mail, postage prepaid, addressed (a) if to the Authority, at 604 Barbosa Avenue, Barrio Obrero, San Juan, Puerto Rico 00916 (Attention: Executive President) or (b) if to the Trustee, at 153 Ponce de Leon Avenue, Suite 800, San Juan, Puerto Rico 00918 (Attention: Corporate Trust Department). The Authority and the Trustee may, by notice given hereunder, designate any further or different addresses to which subsequent demands, notices, approvals, consents, requests, opinions or other communications shall be sent or persons to whose attention the same shall be directed.

Section 13.06 Substitute Mailing.

In case, by reason of the suspension of regular mail service as a result of a strike, work stoppage or similar activity, it shall be impractical to mail notice of any event to Bondholders when such notice is required to be given pursuant to any provision of this Agreement, any manner of giving notice as shall be satisfactory to the Trustee and the Authority shall be deemed to be a sufficient giving of such notice.

Section 13.07 Successors and Assigns.

This Agreement shall be binding upon, inure to the benefit of and be enforceable by the parties and their respective successors and assigns.

Section 13.08 Payments Due on Saturdays, Sundays and Holidays.

In any case where the maturity or redemption date or date on which the payment of interest on or principal of the Bonds is due shall be a Saturday, Sunday or other day on which banking institutions in the Commonwealth of Puerto Rico are authorized or required by law to close, then payment of such interest, principal or premium, if any, need not be made on such date but may be made on the next succeeding Business Day with the same force and effect as if made

on the date of maturity or the date fixed for redemption, and no interest on such payment shall accrue for the period after such date.

Section 13.09 Headings not Part of Agreement.

Any headings preceding the text of the several articles hereof, and any table of contents appended to copies hereof, shall be solely for convenience of reference and shall not constitute a part of this Agreement, and they shall not affect its meaning, construction or effect.

Section 13.10 Applicable Law.

This Agreement shall be governed by the applicable laws of the Commonwealth of Puerto Rico.

Section 13.11 Counterparts.

This Agreement may be executed in several counterparts, each of which shall be an original and all of which together shall constitute but one and the same instrument.

IN WITNESS WHEREOF, the Authority and the Trustee have caused this Agreement to be executed in their respective corporate names as of the date first above written.

**PUERTO RICO AQUEDUCT AND SEWER
AUTHORITY**

By: _____
Executive President

**BANCO POPULAR DE PUERTO RICO,
as Trustee**

By: _____
Vice President

[Signature Page to the Master Agreement of Trust]

EIGHTH SUPPLEMENTAL AGREEMENT OF TRUST

between

**PUERTO RICO
AQUEDUCT AND SEWER AUTHORITY**

and

**BANCO POPULAR DE PUERTO RICO
as Trustee**

Dated as of December 9, 2020

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EIGHTH SUPPLEMENTAL AGREEMENT OF TRUST

This **EIGHTH SUPPLEMENTAL AGREEMENT OF TRUST** (this “Eighth Supplemental Agreement”) made and entered into as of the 9th day of December, 2020, by and between **PUERTO RICO AQUEDUCT AND SEWER AUTHORITY** (the “Authority”), a public corporation and an autonomous governmental instrumentality of the Commonwealth of Puerto Rico (the “Commonwealth”), exercising essential governmental functions and created by the Act hereinafter mentioned, and **BANCO POPULAR DE PUERTO RICO**, as trustee (together with any successor in such capacity, the “Trustee”) a Puerto Rico banking corporation with trust powers and having a corporate trust office in San Juan, Puerto Rico, and supplements that certain Master Agreement of Trust, dated as of March 1, 2008, as amended and restated as of February 15, 2012, and as further amended and supplemented, by and between the Authority and the Trustee (the “Master Agreement of Trust” and together with this Eighth Supplemental Agreement, the “Trust Agreement”).

WITNESSETH

WHEREAS, in order to furnish the inhabitants of Puerto Rico an adequate water and sewerage service, the Legislature of Puerto Rico duly adopted Act No. 40, approved May 1, 1945 (“Act No. 40”), and by said Act created a governmental instrumentality of the Commonwealth by the name of “Puerto Rico Aqueduct and Sewer Service”; and

WHEREAS, the Legislature of Puerto Rico duly adopted Act No. 163, approved May 3, 1949, known as the “Aqueduct and Sewer Act of Puerto Rico”, amending and reenacting Act No. 40 and changing the name of Puerto Rico Aqueduct and Sewer Service to “Puerto Rico Aqueduct and Sewer Authority” (said Act No. 163, as amended, hereinafter called the “Act”); and

WHEREAS, by the Act, the Authority is fully authorized and empowered:

(a) to have complete control and supervision of its properties and activities, including the power to make and enforce rules and regulations for the maintenance and operation thereof;

(b) to improve and extend the water and sewer facilities under its jurisdiction and to provide additional facilities of the same character;

(c) to borrow money and to issue its revenue bonds for any of its corporate purposes, including the following:

(i) to pay all or any part of the cost, as defined in the Act, of improvements to the Commonwealth Water System and to the Commonwealth Sewer System, as said systems are defined in the Act, as separate systems or as a single system for operating and financing purposes;

(ii) to fund, refund, purchase, pay or discharge any outstanding revenue bonds; and

(iii) to pay all proper costs of the Authority in connection with the issuance of the revenue bonds;

(d) to determine, fix, alter, charge or collect reasonable rates, fees, rentals, and other charges for the use of the facilities of the Authority, or for the water and sewerage services or other products or services sold, rendered or furnished by it; and

(e) to pledge all or any part of the revenues of the Authority to secure the payment of such revenue bonds; and

WHEREAS, the Authority has heretofore entered into the Master Agreement of Trust authorizing the issuance of bonds of the Authority for any of its corporate purposes; and

WHEREAS, the Authority has previously issued certain Revenue Bonds, Series A (Senior Lien) and Revenue Bonds, Series B (Senior Lien) (collectively, the "2008 Bonds") pursuant to the Master Agreement of Trust; and

WHEREAS, the Authority has previously issued certain Revenue Refunding Bonds, 2008 Series A (Commonwealth Guaranteed) and Revenue Refunding Bonds, 2008 Series B (Commonwealth Guaranteed) pursuant to Resolution No. 1583, duly adopted by the Authority on December 7, 1995, and as amended and restated by the Authority as of March 7, 2008 (the "2008 Commonwealth Guaranteed Bonds", and together with the 2008 Bonds, the "Prior Bonds"); and

WHEREAS, the Authority has determined that it is desirable at this time to issue (i) \$1,351,300,000 aggregate principal amount of its Revenue Refunding Bonds, Series 2020A (Senior Lien) (the "Series 2020A Bonds") and (ii) \$18,775,000 aggregate principal amount of its Federally Taxable Revenue Refunding Bonds, Series 2020B (Senior Lien) (the "Series 2020B Bonds" and, together with the Series 2020A Bonds, the "Series 2020 Bonds") pursuant to the Master Agreement of Trust and use the proceeds of the Series 2020 Bonds, together with other available moneys of the Authority, to redeem a portion of the Prior Bonds, and for the other purposes set forth herein;

NOW, THEREFORE, in consideration of the foregoing and of the mutual covenants herein set forth, the Authority and the Trustee agree as follows:

ARTICLE I.

DEFINITIONS AND AUTHORITY

Section 101. Definitions.

(a) Capitalized terms used herein and not otherwise defined shall have the respective meanings accorded such terms in the Master Agreement of Trust.

(b) The following terms shall have the following meanings herein unless the context otherwise requires:

"Debt Service Reserve Requirement" means \$0.

“Direct Participant” means a participant in the book-entry system of recording ownership interests in the Series 2020 Bonds.

“DTC” means The Depository Trust Company, New York, New York, a limited purpose trust company organized under the laws of the State of New York, in its capacity as securities depository for the Series 2020 Bonds.

“Eighth Supplemental Agreement” means this Eighth Supplemental Agreement of Trust authorizing the issuance of the Series 2020 Bonds.

“Prior Bonds” has the meaning provided in the sixth WHEREAS clause.

“Senior Lien Escrow Fund” means the Escrow Fund established under the Escrow Agreement, dated as of December 17, 2020, by and between the Authority and Banco Popular de Puerto Rico, as escrow agent, for the repayment of the 2008 Bonds to be refunded.

“Series 2020A Bonds” means the \$1,351,300,000 Revenue Refunding Bonds, Series 2020A (Senior Lien) of the Authority authorized by this Eighth Supplemental Agreement.

“Series 2020B Bonds” means the \$18,775,000 Federally Taxable Revenue Refunding Bonds, Series 2020B (Senior Lien) of the Authority authorized by this Eighth Supplemental Agreement.

“Series 2020A Term Bonds” means, collectively, the Series 2020A Bonds maturing on July 1, 2030, July 1, 2035 and July 1, 2047 authorized by this Eighth Supplemental Agreement.

“Series 2020B Term Bonds” means the Series 2020B Bonds maturing on July 1, 2024 authorized by this Eighth Supplemental Agreement.

“2008 Bonds” has the meaning provided in the fifth WHEREAS clause.

“2008 Commonwealth Guaranteed Bonds” has the meaning provided in the sixth WHEREAS clause.

“2008 Commonwealth Guaranteed Bonds Escrow Fund” means the Escrow Fund established under the Escrow Agreement, dated as of December 17, 2020, by and between the Authority and Banco Popular de Puerto Rico, as escrow agent, for the repayment of the 2008 Commonwealth Guaranteed Bonds.

Section 102. Authority for this Supplemental Agreement. This Eighth Supplemental Agreement is executed pursuant to the provisions of the Master Agreement of Trust and the Act.

ARTICLE II.

THE SERIES 2020A BONDS

Section 201. Purposes. The purposes for which the Series 2020A Bonds are issued are to (i) repay a portion of the Prior Bonds and (ii) pay certain costs of issuance of the Series 2020A Bonds.

Section 202. Principal Amounts, Interest Rate, Designation and Series.

(a) Pursuant to the provisions of the Master Agreement of Trust, the Series 2020A Bonds are entitled to the benefit, protection and security of the Master Agreement of Trust and this Eighth Supplemental Agreement, are hereby authorized and shall be in an aggregate principal amount of \$1,351,300,000 and dated their date of delivery and shall mature on the dates and bear interest at the rates set forth in Schedule A hereto. Interest on the Series 2020A Bonds shall be payable on each January 1 and July 1, beginning July 1, 2021, and such interest will be computed on the basis of a 360-day year consisting of twelve 30-day months.

(b) The Series 2020A Bonds shall be designated as and distinguished from the Bonds of all other Series by the title, "Revenue Refunding Bonds, Series 2020A (Senior Lien)." The Series 2020A Bonds shall be issued as Senior Bonds, have a lien on Authority Revenues and other security pari passu with outstanding Senior Indebtedness and any future Senior Indebtedness issued under the Master Agreement of Trust, and be payable on a parity with outstanding Senior Indebtedness and with any future Senior Indebtedness issued under the Master Agreement of Trust.

Section 203. Form, Denominations, Numbers and Letters. The Series 2020A Bonds shall be issued in the form of fully registered Bonds in the denominations of \$250,000 principal amount or any integral multiple of \$5,000 in excess thereof.

The Series 2020A Bonds shall be numbered and lettered "RA-", followed by the number of the Bond. The Series 2020A Bonds shall be numbered consecutively from one upward.

Section 204. Place of Payment and Paying Agent. The Series 2020A Bonds shall be payable at the principal corporate trust office of Banco Popular de Puerto Rico, San Juan, Puerto Rico. Interest on the Series 2020A Bonds will be payable by the Trustee by check mailed to the registered holders, at their addresses as the same appear on the Record Date on the books of the Authority kept at the principal corporate trust office of the Trustee; **provided, however,** that, at the option of each registered holder of at least one million dollars (\$1,000,000) in aggregate principal amount of the Series 2020A Bonds, payment of interest on such Series 2020A Bonds shall be made by wire transfer upon written notice, received by the Trustee from such registered holder at least five days prior to the Record Date, containing the wire transfer address (which shall be in the continental United States) and account information to which such registered holder wishes to have such wire directed.

Section 205. Redemption Prices and Terms.

(a) Optional Redemption. The Series 2020A Bonds maturing after July 1, 2030, may be redeemed at the option of the Authority prior to maturity, upon not less than 30 days' prior notice, either in whole, or in part, in such order of maturity as directed by the Authority, from any available moneys, but not from moneys held by the Trustee in respect of a Sinking Fund Requirement, on any date not earlier than July 1, 2030, at the principal amount of the Series 2020A Bonds to be redeemed, plus accrued interest to the redemption date, without premium.

(b) Sinking Fund Requirements. The Series 2020A Bonds maturing July 1, 2030, July 1, 2035 and July 1, 2047, shall be redeemed in part commencing on July 1, 2026, July 1, 2031 and July 1, 2036, respectively, and each July 1 thereafter in the principal amounts equal to the respective Sinking Fund Requirements (less the principal amount of any Series 2020A Term Bonds retired by purchase) from moneys in the Senior Sinking Fund Account at par plus accrued interest in the years and amounts set forth below:

**Annual Sinking Fund Requirements for Series 2020A Bonds,
due July 1**

Year	2030	2035	2047
2026	\$44,935,000		
2027	47,170,000		
2028	49,545,000		
2029	51,990,000		
2030	54,935,000*		
2031		\$57,695,000	
2032		60,550,000	
2033		63,590,000	
2034		66,790,000	
2035		42,205,000*	
2036			\$44,310,000
2037			46,530,000
2038			49,060,000
2039			51,390,000
2040			53,960,000
2041			56,655,000
2042			59,495,000
2043			62,465,000
2044			65,585,000
2045			68,865,000
2046			72,310,000
2047			75,930,000*

* Final maturity.

(c) Partial Redemption. Series 2020A Bonds issued in denominations in excess of the minimum denomination authorized under Section 203 hereof and which are redeemable under this Section may be redeemed in part, from time to time, pro rata as set forth in clause (e) and, upon the surrender of such Series 2020A Bonds for redemption, there shall be issued to the registered owner thereof, without charge therefor, a new Series 2020A Bond or Bonds of like maturity in an aggregate principal amount equal to the unredeemed portion of such Series 2020A Bond, subject to the provisions of subsection (e) of this Section.

(d) Conditional Redemption. Notwithstanding any provision of the Master Agreement of Trust to the contrary, the redemption of Series 2020A Bonds pursuant to paragraph (a) of this Section may be subject to the condition that the redemption price will be due and payable on the redemption date only if moneys sufficient to accomplish such redemption are held by the Trustee on the scheduled redemption date; provided that the notice of redemption expressly so states.

(e) Selection of Series 2020A Bonds to Redeemed. In the event of redemption of less than all of the Outstanding Series 2020A Bonds of a single maturity, the particular Series 2020A Bonds or portions thereof to be redeemed shall be selected on the basis of a pro rata pass-through distribution of principal in accordance with DTC procedures and provided that, so long as the Series 2020A Bonds are held in book-entry form, the selection for redemption of such Series 2020A Bonds shall be made in accordance with the operational arrangements of DTC then in effect. If, however, the DTC operational arrangements do not allow for redemption on the basis of a pro rata pass-through distribution of principal, the Series 2020A Bonds will be selected for redemption, in accordance with DTC procedures, by lot. The portion of any Series 2020A Bond to be redeemed in part shall be in the principal amount of \$250,000 and any multiple of \$5,000 in excess thereof. In the event of redemption of less than all the Outstanding Series 2020A Bonds stated to mature on different dates, the principal amount of such Series 2020A Bonds to be redeemed shall be applied in any order of maturity of the Outstanding Series 2020A Bonds to be redeemed that the Authority may elect upon receipt of an opinion of Bond Counsel that such redemption would not result in the interest payable on such Series 2020A Bonds being included in gross income for federal income tax purposes to the Holders thereof under the Code.

It is the Authority's intent that allocations for maturities of Series 2020A Bonds redeemed in part and made by DTC be made on the basis of a pro rata pass-through distribution of principal as described above. If the DTC operational arrangements do not allow for the redemption of the Series 2020A Bonds on the basis of a pro rata pass-through distribution of principal as described above, then the Series 2020A Bonds will be selected for partial redemption, in accordance with DTC procedures, by lot.

If the Series 2020A Bonds are not registered in book-entry-only form, any redemption of less than all of a maturity of the Series 2020A Bonds shall be allocated among the registered owners of such Series 2020A Senior Bonds on a pro-rata basis.

(f) Notice of Redemption. At least thirty (30) days prior to any redemption, notice thereof will be sent by registered or certified mail or overnight express delivery to the Holder of each 2020A Senior Bond to be redeemed at the address as it appears on the registration

books kept by the Trustee and all organizations registered with the Securities and Exchange Commission (the “SEC”) as securities depositories and to the MSRB. Such notice shall contain the information required by Section 3.02 of the Master Agreement of Trust.

Section 206. Transfer Restrictions. The Series 2020A Bonds shall be transferred only to “Qualified Institutional Buyers” as defined in Rule 144A promulgated under the Securities Act of 1933, as amended, in authorized denominations. Each registered owner or beneficial owner of a Series 2020A Bond agrees by purchase of the bond to abide by these limitations. Each initial purchaser will execute and deliver an investor letter in substantially the form attached as Exhibit A hereto. Any actual transfer of a 2020A Senior Bond to any entity that is not a Qualified Institutional Buyer shall be deemed null and void and the purported transferor will remain the owner of record.

Section 207. Purchase of Series 2020A Bonds. The Authority may purchase or cause to be purchased any Series 2020A Bonds of any maturity in lieu of redemption of such Bonds (in which event any Series 2020A Bonds so purchased shall be cancelled and shall cease to bear interest pursuant to the provisions of the Master Agreement of Trust) or for any other purpose pursuant to written instructions given by the Authority to the Trustee. Such purchases shall be made in such manner as directed by the Authority. The Authority or the Trustee shall pay the purchase price of such Bonds together with accrued interest thereon from such funds as may be available therefor pursuant to the Master Agreement of Trust, this Eighth Supplemental Agreement, or as otherwise may be made available by the Authority.

Section 208. Form of Series 2020A Bonds and Trustee’s Certificate of Authentication. If and for so long as the Series 2020A Bonds are required to be registered in the name of Cede & Co., as nominee for DTC pursuant to Section 405 hereof, each Series 2020A Bond shall contain the following legend and the form of the Series 2020A Bonds and of the certificate of authentication endorsed therein shall be substantially as follows:

THIS BOND IS SUBJECT TO RESTRICTIONS ON TRANSFERABILITY AND RESALE AND MAY NOT BE REOFFERED, RESOLD, PLEDGED OR OTHERWISE TRANSFERRED EXCEPT TO A QUALIFIED INSTITUTIONAL BUYER AS DEFINED IN RULE 144A UNDER THE SECURITIES ACT OF 1933. THE PURCHASER HEREOF AGREES TO PROVIDE NOTICE TO ANY PROPOSED TRANSFEREE OF A BENEFICIAL OWNERSHIP INTEREST IN THE PURCHASED BONDS OF THE RESTRICTION ON TRANSFERS.

EACH TRANSFEREE OF THIS BOND, BY ITS PURCHASE HEREOF, IS DEEMED TO HAVE REPRESENTED THAT SUCH TRANSFEREE IS A QUALIFIED INSTITUTIONAL BUYER WITHIN THE MEANING OF RULE 144A UNDER THE SECURITIES ACT OF 1933 AND WILL ONLY TRANSFER, RESELL, REOFFER, PLEDGE OR OTHERWISE TRANSFER THIS BOND TO A SUBSEQUENT TRANSFEREE WHO IS A QUALIFIED INSTITUTIONAL BUYER WITHIN THE MEANING OF RULE 144A UNDER THE SECURITIES ACT OF 1933. A TRANSFER OF THIS BOND TO ANY PERSON OTHER THAN A QUALIFIED INSTITUTIONAL BUYER WITHIN THE MEANING OF RULE 144A UNDER THE SECURITIES ACT OF

1933 WILL BE VOID AND THE PURPORTED TRANSFEROR WILL REMAIN THE OWNER OF RECORD.

AS PROVIDED IN THE TRUST AGREEMENTS REFERRED TO HEREIN, UNTIL THE TERMINATION OF REGISTERED OWNERSHIP OF ALL OF THE SERIES 2020A BONDS THROUGH THE DEPOSITORY TRUST COMPANY (TOGETHER WITH ANY SUCCESSOR SECURITIES DEPOSITORY APPOINTED PURSUANT TO THE TRUST AGREEMENTS, "DTC"), AND NOTWITHSTANDING ANY OTHER PROVISION OF THE TRUST AGREEMENTS TO THE CONTRARY, THE PRINCIPAL AMOUNT OUTSTANDING UNDER THIS BOND MAY BE PAID OR REDEEMED WITHOUT SURRENDER HEREOF TO THE TRUSTEE. DTC OR A TRANSFEREE OR ASSIGNEE OF DTC OF THIS BOND MAY NOT RELY UPON THE PRINCIPAL AMOUNT INDICATED HEREON AS THE PRINCIPAL AMOUNT HEREOF OUTSTANDING AND TO BE PAID. THE PRINCIPAL AMOUNT OUTSTANDING AND TO BE PAID ON THIS BOND SHALL FOR ALL PURPOSES BE THE AMOUNT INDICATED ON THE BOOKS OF THE TRUSTEE.

UNLESS THIS BOND IS PRESENTED BY AN AUTHORIZED REPRESENTATIVE OF DTC TO THE TRUSTEE FOR REGISTRATION OF TRANSFER, EXCHANGE OR PAYMENT, ANY SERIES 2020A BOND ISSUED IS REGISTERED IN THE NAME OF CEDE & CO. OR SUCH OTHER NAME AS REQUESTED BY AN AUTHORIZED REPRESENTATIVE OF DTC AND ANY PAYMENT IS MADE TO CEDE & CO., ANY TRANSFER, PLEDGE OR OTHER USE HEREOF FOR VALUE OR OTHERWISE BY OR TO ANY PERSON IS WRONGFUL SINCE THE REGISTERED OWNER HEREOF, CEDE & CO., HAS AN INTEREST HEREIN.

Number RA-___ UNITED STATES OF AMERICA \$ _____

COMMONWEALTH OF PUERTO RICO

PUERTO RICO AQUEDUCT AND SEWER AUTHORITY
REVENUE REFUNDING BONDS, SERIES 2020A (SENIOR LIEN)

<u>INTEREST RATE</u>	<u>MATURITY DATE</u>	<u>DATED DATE</u>
%	July 1, 20__	

Registered Owner:

Principal Amount: DOLLARS

FOR VALUE RECEIVED, PUERTO RICO AQUEDUCT AND SEWER AUTHORITY (the "Authority"), a public corporation and an autonomous governmental instrumentality of the Commonwealth of Puerto Rico (the "Commonwealth"), exercising essential governmental functions and created by the Aqueduct and Sewer Act of Puerto Rico (as amended, the "Act"), hereby promises to pay, but solely in the manner and from the revenues and sources hereinafter provided, to the registered owner stated above, or registered assigns, on

the maturity date stated above (or earlier date of redemption), upon presentation and surrender hereof, the principal amount stated above, and to pay to the registered owner hereof interest on the balance of said principal amount from time to time remaining unpaid from the dated date stated above, at the interest rate stated above, payable on July 1, 2021, and thereafter on each January 1 and July 1 until payment in full of such principal. Principal of this Bond shall be payable at the principal corporate trust office of Banco Popular de Puerto Rico, San Juan, Puerto Rico (together with any successor in such capacity, the "Trustee"), in any coin or currency of the United States of America which at the time of payment is legal tender for the payment of public and private debts. Payment of interest hereon shall be payable in like coin or currency made to the registered owner hereof and shall be paid by check or draft mailed to the person who is the registered owner as determined pursuant to the Trust Agreements (hereinafter defined) (the "Record Date") at the address of such registered owner as it appears on the registration books of the Authority maintained at the principal corporate trust office of the Trustee.

THE TRUST AGREEMENTS PROVIDE THAT THE SERIES 2020 BONDS, INCLUDING THIS BOND, SHALL BE PAYABLE SOLELY FROM THE FUNDS PROVIDED FOR SUCH PAYMENT, AND SHALL NOT BE A GENERAL OBLIGATION OF THE AUTHORITY. THIS BOND IS A SPECIAL OBLIGATION OF THE AUTHORITY, PAYABLE SOLELY FROM AND SECURED EQUALLY AND RATABLY WITH ALL OTHER SENIOR INDEBTEDNESS ISSUED PURSUANT TO THE MASTER AGREEMENT OF TRUST (HEREINAFTER DEFINED) BY A PLEDGE OF AUTHORITY REVENUES UNDER THE MASTER AGREEMENT OF TRUST, OF AMOUNTS ON DEPOSIT IN CERTAIN ACCOUNTS OF THE AUTHORITY (OTHER THAN ANY FUND ESTABLISHED FOR THE PURPOSE OF SETTING ASIDE MONEYS TO BE PAID TO THE UNITED STATES TREASURY IN SATISFACTION OF ANY REBATE OBLIGATIONS IMPOSED BY FEDERAL LAW), INCLUDING THE EARNINGS THEREON, ANY AND ALL OTHER PROPERTY OF ANY KIND FROM TIME TO TIME DELIVERED OR BY WRITING OF ANY KIND SPECIFICALLY CONVEYED, PLEDGED, ASSIGNED OR TRANSFERRED, AS AND FOR ADDITIONAL SECURITY UNDER THE MASTER AGREEMENT OF TRUST. THE AUTHORITY HAS NO TAXING POWER. THIS BOND IS NOT A DEBT OF THE COMMONWEALTH OR ANY OTHER INSTRUMENTALITY OR POLITICAL SUBDIVISION OF THE COMMONWEALTH AND NEITHER THE COMMONWEALTH NOR ANY OTHER INSTRUMENTALITY OR POLITICAL SUBDIVISION OF THE COMMONWEALTH IS LIABLE ON THIS BOND.

This Bond is a special obligation of the Authority issued under and by virtue of the Act and under and pursuant to the Authority's Master Agreement of Trust, dated as of March 1, 2008, as amended and restated, as of February 15, 2012, between the Authority and the Trustee (the "Master Agreement of Trust", as the same from time to time may be amended or supplemented by further agreements of trust of the Authority, including the Eighth Supplemental Agreement of Trust, dated as of December 9, 2020, (the "Eighth Supplemental Agreement" and together with the Master Agreement of Trust, the "Trust Agreements"), for the purposes of (i) repaying a portion of (a) Revenue Bonds, Series A (Senior Lien) and Revenue Bonds, Series B (Senior Lien) (collectively, the "2008 Bonds") issued pursuant to the Master Agreement of Trust, and (b) the Revenue Refunding Bonds, 2008 Series A (Commonwealth Guaranteed) and Revenue Refunding Bonds, 2008 Series B (Commonwealth Guaranteed) (collectively, the "2008 Commonwealth Guaranteed Bonds", and together with the 2008 Bonds, the "Prior Bonds")

issued pursuant to Resolution No. 1583, duly adopted by the Authority on December 7, 1995, as amended and restated by the Authority as of March 7, 2008 and (ii) paying certain costs of issuance of the Series 2020 Bonds.

This Bond is one of a Series of Bonds designated as “Puerto Rico Aqueduct and Sewer Authority Revenue Refunding Bonds, Series 2020A (Senior Lien)” (herein called the “Series 2020 Bonds”), limited to the aggregate principal amount upon original issuance of \$1,351,300,000. The Series 2020 Bonds are duly issued under and by virtue of the Act and under and pursuant to the Trust Agreements. The Series 2020 Bonds are all of like tenor, except as to number, denominations, interest rate and maturity. Copies of the Trust Agreements are on file at the office of the Secretary of the Authority in San Juan, Puerto Rico, and at the principal corporate trust office of the Trustee, in San Juan, Puerto Rico, and reference to the Trust Agreements and to the Act is hereby made for a description of the pledge and covenants securing the Series 2020 Bonds and a statement of the rights, duties, immunities and obligations of the Authority and of the Trustee and a statement of the rights of the owner hereof. Such pledge and other obligations of the Authority under the Trust Agreements may be discharged at or prior to the maturity or redemption of the Series 2020 Bonds upon the making of provision for the payment thereof on the terms and conditions set forth in the Trust Agreements. Additional Bonds may be issued from time to time pursuant to the Master Agreement of Trust and additional supplemental agreements in one or more series and in various principal amounts. Except as provided in the Trust Agreements, the aggregate principal amount of bonds which may be issued under the Master Agreement of Trust (collectively, with the Series 2020 Bonds, the “Bonds”) is not limited, and all Bonds issued thereunder will be equally and ratably secured by the pledge and covenants made in the Master Agreement of Trust.

To the extent and as permitted by the Trust Agreements, the Trust Agreements may be modified or amended by action on behalf of the Authority taken in the manner and subject to the conditions and exceptions prescribed in the Trust Agreements. The owner of this Bond shall have no right to enforce the provisions of the Trust Agreements or to institute an action with respect to an event of default under the Trust Agreements (an “Event of Default”) or to institute, appear in, or defend any suit or other proceeding with respect thereto, except as provided in the Trust Agreements. Upon an Event of Default, the principal of this Bond may be declared due and payable in the manner and with the effect provided in the Trust Agreements.

The Authority and the Trustee have executed a Ninth Supplemental Agreement of Trust, dated as of December 9, 2020 (the “Ninth Supplemental Agreement”), pursuant to which the Authority has directed the Trustee to enter into a Second Amended and Restated Master Agreement of Trust (the “Second Amended and Restated MAT”) in the form and substance set forth in the Ninth Supplemental Agreement when consents to the execution of said Second Amended and Restated MAT have been obtained from the holders of all of the outstanding Bonds, among others. The Second Amended and Restated MAT to be executed upon obtaining the required consents will amend and restate the Master Agreement of Trust in its entirety and would, among other things, change the priority of payments with respect to Authority Revenues, such that Authority Revenues are used to pay Current Expenses of the Authority prior to payment of debt service on the Bonds and Other System Indebtedness. The first purchasers of the Series 2020 Bonds have signed a written instrument of consent to the execution of said Second Amended and Restated MAT, and the holder hereof by the acceptance of this Bond

adopts such instrument as his own and consents to the execution of said Second Amended and Restated MAT.

The transfer of this Bond is registerable as provided in the Trust Agreements, only upon the books of the Authority kept for that purpose at the principal corporate trust office of the Trustee, by the registered owner hereof in person or by his attorney duly authorized in writing, upon surrender hereof together with a written instrument of transfer satisfactory to the Trustee, duly executed by the registered owner or his duly authorized attorney. Upon such registration of transfer, there shall be issued in the name of the transferee a new registered Series 2020 Bond or Bonds of the same maturity, all as provided in the Trust Agreements and upon the payment of the charges therein prescribed. The Authority, the Trustee, and any paying agent may treat and consider the person in whose name this Bond is registered as the absolute owner hereof for the purpose of receiving payment of, or on account of, the principal or redemption price hereof and interest hereon and for all other purposes whatsoever, irrespective of any notice to the contrary.

The Series 2020 Bonds are subject to redemption prior to maturity, in whole or in part at such time or times, under such circumstances, at such redemption prices and in such manner as is set forth in the Trust Agreements.

Except as otherwise provided herein and unless the context clearly indicates otherwise, words and phrases used herein shall have the same meanings as accorded to such words and phrases in the Trust Agreements.

It is hereby certified, recited, and declared that all conditions, acts and things required by the Constitution or statutes of the Commonwealth and the Trust Agreements to exist, to have happened or to have been performed precedent to or in connection with the issuance of this Bond exist, have happened and have been performed and that the issuance of the Series 2020 Bonds, together with all other indebtedness of the Authority, is within every debt and other limit prescribed by said Constitution and statutes.

This Bond shall not be valid or become obligatory until the Certificate of Authentication hereon shall have been manually signed by the Trustee.

IN WITNESS WHEREOF, PUERTO RICO AQUEDUCT AND SEWER AUTHORITY has caused this Bond to be signed in its name and on its behalf by its Executive President and has caused its corporate seal to be affixed or reproduced hereon and attested by its Secretary (the signatures of said officers may be by facsimile), and said officials by the execution hereof do adopt as and for their own proper signatures the signatures appearing on each of the Series 2020 Bonds, all as of the Dated Date specified above.

PUERTO RICO AQUEDUCT AND
SEWER AUTHORITY

By: _____
Name:
Title: Executive President

ATTEST:

By: _____

Name:

Title: Secretary

[SEAL]

This Bond is one of the Series 2020 Bonds described in the within mentioned Trust Agreements and is one of the Revenue Refunding Bonds, Series 2020A (Senior Lien), of Puerto Rico Aqueduct and Sewer Authority.

BANCO POPULAR DE PUERTO RICO,
as Trustee

By: _____

Name:

Title:

Date of authentication:

ASSIGNMENT

FOR VALUE RECEIVED

(Please print or typewrite name of undersigned transferor)

hereby sells, assigns and transfers unto

PLEASE INSERT SOCIAL SECURITY
OR OTHER TAX IDENTIFYING NUMBER
OF TRANSFEREE

(Please print or typewrite name and address, including zip code of transferee)

the within-mentioned Bond and hereby irrevocably constitutes and appoints _____

_____,
attorney-in-fact, to register the transfer the same on the books of registry in the office of the Trustee, as registrar, with full power of substitution in the premises.

Dated:

NOTE: The signature to this assignment must correspond with the name as written on the within Bond in every particular, without alteration or enlargement or any change whatsoever.

Signature Guaranteed:

ARTICLE III.

THE SERIES 2020B BONDS

Section 301. Purposes. The purposes for which the Series 2020B Bonds are issued are to (i) repay a portion of the Prior Bonds and (ii) pay certain costs of issuance of the Series 2020B Bonds.

Section 302. Principal Amounts, Interest Rate, Designation and Series.

(a) Pursuant to the provisions of the Master Agreement of Trust, the Series 2020B Bonds are entitled to the benefit, protection and security of the Master Agreement of Trust and this Eighth Supplemental Agreement, are hereby authorized and shall be in an aggregate principal amount of \$18,775,000 and dated their date of delivery and shall mature on the dates and bear interest at the rates set forth in Schedule A hereto. Interest on the Series 2020B Bonds shall be payable on each January 1 and July 1, beginning July 1, 2021, and such interest will be computed on the basis of a 360-day year consisting of twelve 30-day months.

(b) The Series 2020B Bonds shall be designated as and distinguished from the Bonds of all other Series by the title, "Federally Taxable Revenue Refunding Bonds, Series 2020B (Senior Lien)." The Series 2020B Bonds shall be issued as Senior Bonds, have a lien on Authority Revenues and other security pari passu with outstanding Senior Indebtedness and any future Senior Indebtedness issued under the Master Agreement of Trust, and be payable on a parity with outstanding Senior Indebtedness and with any future Senior Indebtedness issued under the Master Agreement of Trust.

Section 303. Form, Denominations, Numbers and Letters. The Series 2020B Bonds shall be issued in the form of fully registered Bonds in the denominations of \$250,000 principal amount or any integral multiple of \$5,000 in excess thereof.

The Series 2020B Bonds shall be numbered and lettered “RB-”, followed by the number of the Bond. The Series 2020B Bonds shall be numbered consecutively from one upward.

Section 304. Place of Payment and Paying Agent. The Series 2020B Bonds shall be payable at the principal corporate trust office of Banco Popular de Puerto Rico, San Juan, Puerto Rico. Interest on the Series 2020B Bonds will be payable by the Trustee by check mailed to the registered holders, at their addresses as the same appear on the Record Date on the books of the Authority kept at the principal corporate trust office of the Trustee; **provided, however**, that, at the option of each registered holder of at least one million dollars (\$1,000,000) in aggregate principal amount of the Series 2020B Bonds, payment of interest on such Series 2020B Bonds shall be made by wire transfer upon written notice, received by the Trustee from such registered holder at least five days prior to the Record Date, containing the wire transfer address (which shall be in the continental United States) and account information to which such registered holder wishes to have such wire directed.

Section 305. Redemption Prices and Terms.

(a) Optional Redemption. The Series 2020B Bonds are not subject to optional redemption.

(b) Sinking Fund Requirements. The Series 2020B Bonds maturing July 1, 2024, shall be redeemed in part on July 1, 2021, and each July 1 thereafter in the principal amounts equal to the respective Sinking Fund Requirements (less the principal amount of any Series 2020B Term Bonds retired by purchase as provided in the Master Agreement of Trust) from moneys in the Senior Bond Account at par plus accrued interest in the years and amounts set forth below:

Series 2020B Term Bonds

Year	Amount
2021	\$725,000
2022	955,000
2023	1,025,000
2024*	16,070,000

* Final maturity.

(c) Partial Redemption. Series 2020B Bonds issued in denominations in excess of the minimum denomination authorized under Section 303 hereof and which are redeemable under this Section may be redeemed in part, from time to time, pro rata as set forth in clause (d) and, upon the surrender of such Series 2020B Bonds for redemption, there shall be

issued to the registered owner thereof, without charge therefor, a new Series 2020B Bond or Bonds of like maturity in an aggregate principal amount equal to the unredeemed portion of such Series 2020B Bond, subject to the provisions of subsection (e) of this Section.

(d) Selection of Series 2020B Bonds to Redeemed. In the event of redemption of less than all of the Outstanding Series 2020B Bonds of a single maturity, the particular Series 2020B Bonds or portions thereof to be redeemed shall be selected on the basis of a pro rata pass-through distribution of principal in accordance with DTC procedures and provided that, so long as the Series 2020B Bonds are held in book-entry form, the selection for redemption of such Series 2020B Bonds shall be made in accordance with the operational arrangements of DTC then in effect. If, however, the DTC operational arrangements do not allow for redemption on the basis of a pro rata pass-through distribution of principal, the Series 2020B Bonds will be selected for redemption, in accordance with DTC procedures, by lot. The portion of any Series 2020B Bond to be redeemed in part shall be in the principal amount of \$250,000 and any multiple of \$5,000 in excess thereof.

It is the Authority's intent that allocations for maturities of Series 2020B Bonds redeemed in part and made by DTC be made on the basis of a pro rata pass-through distribution of principal as described above. If the DTC operational arrangements do not allow for the redemption of the Series 2020B Bonds on the basis of a pro rata pass-through distribution of principal as described above, then the Series 2020B Bonds will be selected for partial redemption, in accordance with DTC procedures, by lot.

If the Series 2020B Bonds are not registered in book-entry-only form, any redemption of less than all of a maturity of the Series 2020B Bonds shall be allocated among the registered owners of such Series 2020B Senior Bonds on a pro-rata basis.

(e) Notice of Redemption. At least thirty (30) days prior to any redemption, notice thereof will be sent by registered or certified mail or overnight express delivery to the Holder of each 2020B Senior Bond to be redeemed at the address as it appears on the registration books kept by the Trustee and all organizations registered with the SEC as securities depositories and to the MSRB. Such notice shall contain the information required by Section 3.02 of the Master Agreement of Trust.

Section 306. Transfer Restrictions. The Series 2020B Bonds shall be transferred only to "Qualified Institutional Buyers" as defined in Rule 144A promulgated under the Securities Act of 1933, as amended, in authorized denominations. Each registered owner or beneficial owner of a Series 2020B Bond agrees by purchase of the bond to abide by these limitations. Each initial purchaser will execute and deliver an investor letter in substantially the form attached as Exhibit A hereto. Any actual transfer of a 2020B Senior Bond to any entity that is not a Qualified Institutional Buyer shall be deemed null and void and the purported transferor will remain the owner of record.

Section 307. Form of Series 2020B Bonds and Trustee's Certificate of Authentication. If and for so long as the Series 2020B Bonds are required to be registered in the name of Cede & Co., as nominee for DTC pursuant to Section 405 hereof, each Series 2020B

Bond shall contain the following legend and the form of the Series 2020B Bonds and of the certificate of authentication endorsed therein shall be substantially as follows:

THIS BOND IS SUBJECT TO RESTRICTIONS ON TRANSFERABILITY AND RESALE AND MAY NOT BE REOFFERED, RESOLD, PLEDGED OR OTHERWISE TRANSFERRED EXCEPT TO A QUALIFIED INSTITUTIONAL BUYER AS DEFINED IN RULE 144A UNDER THE SECURITIES ACT OF 1933. THE PURCHASER HEREOF AGREES TO PROVIDE NOTICE TO ANY PROPOSED TRANSFEREE OF A BENEFICIAL OWNERSHIP INTEREST IN THE PURCHASED BONDS OF THE RESTRICTION ON TRANSFERS.

EACH TRANSFEREE OF THIS BOND, BY ITS PURCHASE HEREOF, IS DEEMED TO HAVE REPRESENTED THAT SUCH TRANSFEREE IS A QUALIFIED INSTITUTIONAL BUYER WITHIN THE MEANING OF RULE 144A UNDER THE SECURITIES ACT OF 1933 AND WILL ONLY TRANSFER, RESELL, REOFFER, PLEDGE OR OTHERWISE TRANSFER THIS BOND TO A SUBSEQUENT TRANSFEREE WHO IS A QUALIFIED INSTITUTIONAL BUYER WITHIN THE MEANING OF RULE 144A UNDER THE SECURITIES ACT OF 1933. A TRANSFER OF THIS BOND TO ANY PERSON OTHER THAN A QUALIFIED INSTITUTIONAL BUYER WITHIN THE MEANING OF RULE 144A UNDER THE SECURITIES ACT OF 1933 WILL BE VOID AND THE PURPORTED TRANSFEROR WILL REMAIN THE OWNER OF RECORD.

AS PROVIDED IN THE TRUST AGREEMENTS REFERRED TO HEREIN, UNTIL THE TERMINATION OF REGISTERED OWNERSHIP OF ALL OF THE SERIES 2020B BONDS THROUGH THE DEPOSITORY TRUST COMPANY (TOGETHER WITH ANY SUCCESSOR SECURITIES DEPOSITORY APPOINTED PURSUANT TO THE TRUST AGREEMENTS, "DTC"), AND NOTWITHSTANDING ANY OTHER PROVISION OF THE TRUST AGREEMENTS TO THE CONTRARY, THE PRINCIPAL AMOUNT OUTSTANDING UNDER THIS BOND MAY BE PAID OR REDEEMED WITHOUT SURRENDER HEREOF TO THE TRUSTEE. DTC OR A TRANSFEREE OR ASSIGNEE OF DTC OF THIS BOND MAY NOT RELY UPON THE PRINCIPAL AMOUNT INDICATED HEREON AS THE PRINCIPAL AMOUNT HEREOF OUTSTANDING AND TO BE PAID. THE PRINCIPAL AMOUNT OUTSTANDING AND TO BE PAID ON THIS BOND SHALL FOR ALL PURPOSES BE THE AMOUNT INDICATED ON THE BOOKS OF THE TRUSTEE.

UNLESS THIS BOND IS PRESENTED BY AN AUTHORIZED REPRESENTATIVE OF DTC TO THE TRUSTEE FOR REGISTRATION OF TRANSFER, EXCHANGE OR PAYMENT, ANY SERIES 2020B BOND ISSUED IS REGISTERED IN THE NAME OF CEDE & CO. OR SUCH OTHER NAME AS REQUESTED BY AN AUTHORIZED REPRESENTATIVE OF DTC AND ANY PAYMENT IS MADE TO CEDE & CO., ANY TRANSFER, PLEDGE OR OTHER USE HEREOF FOR VALUE OR OTHERWISE BY OR TO ANY PERSON IS WRONGFUL SINCE THE REGISTERED OWNER HEREOF, CEDE & CO., HAS AN INTEREST HEREIN.

Number RB-__

UNITED STATES OF AMERICA

\$_____

COMMONWEALTH OF PUERTO RICO

PUERTO RICO AQUEDUCT AND SEWER AUTHORITY
FEDERALLY TAXABLE REVENUE REFUNDING BONDS, SERIES 2020B (SENIOR
LIEN)

INTEREST RATE

%

MATURITY DATE

July 1, 20__

DATED DATE

Registered Owner:

Principal Amount: DOLLARS

FOR VALUE RECEIVED, PUERTO RICO AQUEDUCT AND SEWER AUTHORITY (the "Authority"), a public corporation and an autonomous governmental instrumentality of the Commonwealth of Puerto Rico (the "Commonwealth"), exercising essential governmental functions and created by the Aqueduct and Sewer Act of Puerto Rico (as amended, the "Act"), hereby promises to pay, but solely in the manner and from the revenues and sources hereinafter provided, to the registered owner stated above, or registered assigns, on the maturity date stated above (or earlier date of redemption), upon presentation and surrender hereof, the principal amount stated above, and to pay to the registered owner hereof interest on the balance of said principal amount from time to time remaining unpaid from the dated date stated above, at the interest rate stated above, payable on July 1, 2021, and thereafter on each January 1 and July 1 until payment in full of such principal. Principal of this Bond shall be payable at the principal corporate trust office of Banco Popular de Puerto Rico, San Juan, Puerto Rico (together with any successor in such capacity, the "Trustee"), in any coin or currency of the United States of America which at the time of payment is legal tender for the payment of public and private debts. Payment of interest hereon shall be payable in like coin or currency made to the registered owner hereof and shall be paid by check or draft mailed to the person who is the registered owner as determined pursuant to the Trust Agreements (hereinafter defined) (the "Record Date") at the address of such registered owner as it appears on the registration books of the Authority maintained at the principal corporate trust office of the Trustee.

THE TRUST AGREEMENTS PROVIDE THAT THE SERIES 2020 BONDS, INCLUDING THIS BOND, SHALL BE PAYABLE SOLELY FROM THE FUNDS PROVIDED FOR SUCH PAYMENT, AND SHALL NOT BE A GENERAL OBLIGATION OF THE AUTHORITY. THIS BOND IS A SPECIAL OBLIGATION OF THE AUTHORITY, PAYABLE SOLELY FROM AND SECURED EQUALLY AND RATABLY WITH ALL OTHER SENIOR INDEBTEDNESS ISSUED PURSUANT TO THE MASTER AGREEMENT OF TRUST (HEREINAFTER DEFINED) BY A PLEDGE OF AUTHORITY REVENUES UNDER THE MASTER AGREEMENT OF TRUST, OF AMOUNTS ON DEPOSIT IN CERTAIN ACCOUNTS OF THE AUTHORITY (OTHER THAN ANY FUND ESTABLISHED FOR THE PURPOSE OF SETTING ASIDE MONEYS TO BE PAID TO THE UNITED STATES TREASURY IN SATISFACTION OF ANY REBATE OBLIGATIONS IMPOSED BY FEDERAL LAW), INCLUDING THE EARNINGS THEREON, ANY AND

ALL OTHER PROPERTY OF ANY KIND FROM TIME TO TIME DELIVERED OR BY WRITING OF ANY KIND SPECIFICALLY CONVEYED, PLEDGED, ASSIGNED OR TRANSFERRED, AS AND FOR ADDITIONAL SECURITY UNDER THE MASTER AGREEMENT OF TRUST. THE AUTHORITY HAS NO TAXING POWER. THIS BOND IS NOT A DEBT OF THE COMMONWEALTH OR ANY OTHER INSTRUMENTALITY OR POLITICAL SUBDIVISION OF THE COMMONWEALTH AND NEITHER THE COMMONWEALTH NOR ANY OTHER INSTRUMENTALITY OR POLITICAL SUBDIVISION OF THE COMMONWEALTH IS LIABLE ON THIS BOND.

This Bond is a special obligation of the Authority issued under and by virtue of the Act and under and pursuant to the Authority's Master Agreement of Trust, dated as of March 1, 2008, as amended and restated, as of February 15, 2012, between the Authority and the Trustee (the "Master Agreement of Trust", as the same from time to time may be amended or supplemented by further agreements of trust of the Authority, including the Eighth Supplemental Agreement of Trust, dated as of December 9, 2020, (the "Eighth Supplemental Agreement" and together with the Master Agreement of Trust, the "Trust Agreements"), for the purposes of (i) repaying a portion of the Revenue Refunding Bonds, 2008 Series A (Commonwealth Guaranteed) and Revenue Refunding Bonds, 2008 Series B (Commonwealth Guaranteed) (collectively, the "2008 Commonwealth Guaranteed Bonds") issued pursuant to Resolution No. 1583, duly adopted by the Authority on December 7, 1995, as amended and restated by the Authority as of March 7, 2008 and (ii) paying certain costs of issuance of the Series 2020 Bonds.

This Bond is one of a Series of Bonds designated as "Puerto Rico Aqueduct and Sewer Authority Federally Taxable Revenue Refunding Bonds, Series 2020B (Senior Lien)" (herein called the "Series 2020 Bonds"), limited to the aggregate principal amount upon original issuance of \$18,775,000. The Series 2020 Bonds are duly issued under and by virtue of the Act and under and pursuant to the Trust Agreements. The Series 2020 Bonds are all of like tenor, except as to number, denominations, interest rate and maturity. Copies of the Trust Agreements are on file at the office of the Secretary of the Authority in San Juan, Puerto Rico, and at the principal corporate trust office of the Trustee, in San Juan, Puerto Rico, and reference to the Trust Agreements and to the Act is hereby made for a description of the pledge and covenants securing the Series 2020 Bonds and a statement of the rights, duties, immunities and obligations of the Authority and of the Trustee and a statement of the rights of the owner hereof. Such pledge and other obligations of the Authority under the Trust Agreements may be discharged at or prior to the maturity or redemption of the Series 2020 Bonds upon the making of provision for the payment thereof on the terms and conditions set forth in the Trust Agreements. Additional Bonds may be issued from time to time pursuant to the Master Agreement of Trust and additional supplemental agreements in one or more series and in various principal amounts. Except as provided in the Trust Agreements, the aggregate principal amount of bonds which may be issued under the Master Agreement of Trust (collectively, with the Series 2020 Bonds, the "Bonds") is not limited, and all Bonds issued thereunder will be equally and ratably secured by the pledge and covenants made in the Master Agreement of Trust.

To the extent and as permitted by the Trust Agreements, the Trust Agreements may be modified or amended by action on behalf of the Authority taken in the manner and subject to the conditions and exceptions prescribed in the Trust Agreements. The owner of this Bond shall have no right to enforce the provisions of the Trust Agreements or to institute an

action with respect to an event of default under the Trust Agreements (an “Event of Default”) or to institute, appear in, or defend any suit or other proceeding with respect thereto, except as provided in the Trust Agreements. Upon an Event of Default, the principal of this Bond may be declared due and payable in the manner and with the effect provided in the Trust Agreements.

The Authority and the Trustee have executed a Ninth Supplemental Agreement of Trust, dated as of December 9, 2020 (the “Ninth Supplemental Agreement”), pursuant to which the Authority has directed the Trustee to enter into a Second Amended and Restated Master Agreement of Trust (the “Second Amended and Restated MAT”) in the form and substance set forth in the Ninth Supplemental Agreement when consents to the execution of said Second Amended and Restated MAT have been obtained from the holders of all of the outstanding Bonds, among others. The Second Amended and Restated MAT to be executed upon obtaining the required consents will amend and restate the Master Agreement of Trust in its entirety and would, among other things, change the priority of payments with respect to Authority Revenues, such that Authority Revenues are used to pay Current Expenses of the Authority prior to payment of debt service on the Bonds and Other System Indebtedness. The first purchasers of the Series 2020 Bonds have signed a written instrument of consent to the execution of said Second Amended and Restated MAT, and the holder hereof by the acceptance of this Bond adopts such instrument as his own and consents to the execution of said Second Amended and Restated MAT.

The transfer of this Bond is registerable as provided in the Trust Agreements, only upon the books of the Authority kept for that purpose at the principal corporate trust office of the Trustee, by the registered owner hereof in person or by his attorney duly authorized in writing, upon surrender hereof together with a written instrument of transfer satisfactory to the Trustee, duly executed by the registered owner or his duly authorized attorney. Upon such registration of transfer, there shall be issued in the name of the transferee a new registered Series 2020 Bond or Bonds of the same maturity, all as provided in the Trust Agreements and upon the payment of the charges therein prescribed. The Authority, the Trustee, and any paying agent may treat and consider the person in whose name this Bond is registered as the absolute owner hereof for the purpose of receiving payment of, or on account of, the principal or redemption price hereof and interest hereon and for all other purposes whatsoever, irrespective of any notice to the contrary.

The Series 2020 Bonds are subject to redemption prior to maturity, at such time or times, under such circumstances, at such redemption prices and in such manner as is set forth in the Trust Agreements.

Except as otherwise provided herein and unless the context clearly indicates otherwise, words and phrases used herein shall have the same meanings as accorded to such words and phrases in the Trust Agreements.

It is hereby certified, recited, and declared that all conditions, acts and things required by the Constitution or statutes of the Commonwealth and the Trust Agreements to exist, to have happened or to have been performed precedent to or in connection with the issuance of this Bond exist, have happened and have been performed and that the issuance of the Series 2020 Bonds, together with all other indebtedness of the Authority, is within every debt and other limit prescribed by said Constitution and statutes.

This Bond shall not be valid or become obligatory until the Certificate of Authentication hereon shall have been manually signed by the Trustee.

IN WITNESS WHEREOF, PUERTO RICO AQUEDUCT AND SEWER AUTHORITY has caused this Bond to be signed in its name and on its behalf by its Executive President and has caused its corporate seal to be affixed or reproduced hereon and attested by its Secretary (the signatures of said officers may be by facsimile), and said officials by the execution hereof do adopt as and for their own proper signatures the signatures appearing on each of the Series 2020 Bonds, all as of the Dated Date specified above.

PUERTO RICO AQUEDUCT AND
SEWER AUTHORITY

By: _____
Name:
Title: Executive President

ATTEST:

By: _____
Name:
Title: Secretary

[SEAL]

This Bond is one of the Series 2020 Bonds described in the within mentioned Trust Agreements and is one of the Federally Taxable Revenue Refunding Bonds, Series 2020B (Senior Lien), of Puerto Rico Aqueduct and Sewer Authority.

BANCO POPULAR DE PUERTO RICO,
as Trustee

By: _____
Name:
Title:

Date of authentication:

ASSIGNMENT

FOR VALUE RECEIVED

(Please print or typewrite name of undersigned transferor)

hereby sells, assigns and transfers unto

PLEASE INSERT SOCIAL SECURITY
OR OTHER TAX IDENTIFYING NUMBER
OF TRANSFEREE

--

(Please print or typewrite name and address, including zip code of transferee)

the within-mentioned Bond and hereby irrevocably constitutes and appoints _____

_____,
attorney-in-fact, to register the transfer the same on the books of registry in the office of the
Trustee, as registrar, with full power of substitution in the premises.

Dated:

NOTE: The signature to this assignment
must correspond with the name as written on
the within Bond in every particular, without
alteration or enlargement or any change
whatsoever.

Signature Guaranteed:

<p>_____</p> <p>_____</p>

ARTICLE IV.

DETERMINATIONS PURSUANT TO THE MASTER AGREEMENT OF TRUST

Section 401. Debt Service Reserve Fund. In accordance with Section 5.01(a)(iv) of the Master Agreement of Trust, the Authority hereby determines that the Debt Service Reserve Requirement will be zero.

Section 402. Series Subaccounts; Recordkeeping. As provided in Section 5.01 of the Master Agreement of Trust, the Trustee shall establish separate Series subaccounts for bookkeeping purposes within any Fund or Account under the Master Agreement of Trust into which proceeds of the Series 2020 Bonds are at any time deposited. For this purpose, “proceeds” means the original and investment proceeds of the Series 2020 Bonds. Such Series subaccounts shall be designated the “Series 2020 Subaccounts” of the respective Fund or Account to which they appertain and an identifying letter (A) shall also be included for the Series 2020A Bonds and an identifying letter (B) shall also be included for the Series 2020B Bonds.

Section 403. Investment of Certain Funds. Amounts credited to a Series subaccount may be invested together with other amounts in the Fund or Account, provided that each such investment is an Investment Obligation and complies with the provisions of Article VI of the Master Agreement of Trust. In addition, the Trustee shall maintain accurate books and records setting forth the dates of purchase and sale of any such Investment Obligation, the purchase price of such Investment Obligation, and the proceeds received with respect to such Investment Obligation including any proceeds received upon a sale or other disposition thereof. Such books and records shall be retained by the Trustee until the sixth anniversary of the date on which the last of the Series 2020 Bonds is redeemed or otherwise retired.

Section 404. Book Entry Form.

(a) The Authority hereby determines that the Series 2020 Bonds shall be exclusively in “book entry” form and shall be registered in the name of Cede & Co., the nominee for DTC, which shall hold one or more immobilized certificates representing each maturity of the Series 2020 Bonds. All transfers of Series 2020 Bonds shall be effected as set forth in Section 2.04 of the Master Agreement of Trust; provided that the Authority understands and agrees that DTC shall establish procedures with its participants for recording and transferring the ownership of beneficial interests in the Series 2020 Bonds. The Authority and the Trustee may enter into a letter of representation and other documentation necessary or desirable to effectuate the issuance of the Series 2020 Bonds in book entry form. Neither the Authority nor any fiduciary will have any responsibility or liability for any aspect of the records relating to or payment made on account of beneficial ownership interests in any Series 2020 Bonds or for maintaining, supervising or reviewing any records relating to such beneficial ownership interests.

(b) For purposes of determining the consents of owners of the Series 2020 Bonds under Articles IX and XI of the Master Agreement of Trust, the Trustee shall establish a record date for determination of ownership of such Series 2020 Bonds, and shall give to DTC at least fifteen (15) calendar days’ notice of any record date so established.

(c) The Authority may hereafter amend this Eighth Supplemental Agreement without notice to or consent of the owners of any of the Series 2020 Bonds, or owners of beneficial interests in the Series 2020 Bonds, in order (i) to offer to owners the option of receiving definitive Series 2020 Bond or (ii) to require the owners of the Series 2020 Bonds to accept definitive Series 2020 Bonds (A) if DTC shall cease to serve as depository and no successor can be found to serve upon terms satisfactory to the Authority or (B) if the Authority determines to terminate use of book entry form for the Series 2020 Bonds.

ARTICLE V.

DEPOSITS TO FUNDS AND ACCOUNTS

Section 501. Deposits to Funds and Accounts.

(a) Proceeds of the sale of the Series 2020A Bonds in the amount of \$1,444,400,934.29 shall be applied as follows:

(i) A portion of the proceeds of the Series 2020A Bonds in the amount of \$1,173,195,527.96 shall be deposited in the Senior Lien Escrow Fund for repayment of the refunded 2008 Bonds;

(ii) A portion of the proceeds of the Series 2020A Bonds in the amount of \$268,864,133.36 shall be deposited in the 2008 Commonwealth Guaranteed Bonds Escrow Fund for the repayment of the 2008 Commonwealth Guaranteed Bonds; and

(iii) A portion of the proceeds of the Series 2020A Bonds in the amount of \$2,341,272.97 to be credited to the Costs of Issuance Account, Series 2020A within the Construction Fund.

(b) Proceeds of the sale of the Series 2020B Bonds in the amount of \$18,664,869.19 shall be applied as follows:

(i) A portion of the proceeds of the Series 2020B Bonds in the amount of \$1,359,455.63 shall be deposited in the Senior Lien Escrow Fund for repayment of the refunded 2008 Bonds;

(ii) A portion of the proceeds of the Series 2020B Bonds in the amount of \$17,268,154.31 shall be deposited in the 2008 Commonwealth Guaranteed Bonds Escrow Fund for the repayment of the 2008 Commonwealth Guaranteed Bonds; and

(iii) A portion of the proceeds of the Series 2020B Bonds in the amount of \$37,259.25 to be credited to the Costs of Issuance Account, Series 2020B within the Construction Fund.

(c) In lieu of making certain of these deposits, the Authority may pay certain items directly, and shall notify the Trustee promptly in writing of all such payments.

ARTICLE VI.

MISCELLANEOUS

Section 601. Headings not Part of Agreement. Any headings preceding the text of the several articles hereof, and any table of contents appended to copies hereof, shall be solely for convenience of reference and shall not constitute a part of this Eighth Supplemental Agreement, and they shall not affect its meaning, construction or effect.

Section 602. Applicable Law. This Eighth Supplemental Agreement shall be governed by the applicable laws of the Commonwealth of Puerto Rico.

Section 603. Counterparts. This Eighth Supplemental Agreement may be executed in several counterparts, each of which shall be an original and all of which together shall constitute but one and the same instrument. Each counterpart may be delivered by facsimile or e-mail transmission, which shall be effective for all purposes.

Section 604. Severability. If any section, paragraph or provision of this Eighth Supplemental Agreement shall be held to be invalid or unenforceable for any reason, the invalidity or unenforceability of such section, paragraph or provision shall not affect any of the remaining provisions of this Eighth Supplemental Agreement.

[Signature Page Follows.]

IN WITNESS WHEREOF, the Authority and the Trustee have caused this Eighth Supplemental Agreement to be executed in their respective corporate names as of the date first above written.

**PUERTO RICO AQUEDUCT AND SEWER
AUTHORITY**

By: _____
Executive President

[SEAL]

**BANCO POPULAR DE PUERTO RICO,
as Trustee**

By: _____
Name:
Title:

[Signature Page to Eighth Supplemental Agreement]

SCHEDULE A

Series 2020A Bonds Maturity Dates and Principal Amounts and Interest Rates

The Series 2020A Bonds shall mature on July 1 of the years and in the principal amounts and shall bear interest, payable on July 1, 2021 and semi-annually thereafter on each January 1 and July 1, at the rates per annum shown below:

<u>Year</u>	<u>Amount</u>	<u>Interest Rate</u>	<u>Yield</u>
2021	\$33,280,000	4.00%	2.50%
2022	12,475,000	4.00	2.70
2023	13,370,000	4.00	2.95
2024	3,425,000	5.00	3.10
2025	42,790,000	5.00	3.20

\$248,575,000 Series 2020A Term Bonds, 5.00% due July 1, 2030, Yield 3.70%

\$290,830,000 Series 2020A Term Bonds, 5.00% due July 1, 2035, Yield 3.95%[†]

\$706,555,000 Series 2020A Term Bonds, 5.00% due July 1, 2047, Yield 4.15%[†]

[†]Priced to first call date, July 1, 2030.

Series 2020B Bonds Maturity Date, Principal Amount and Interest Rate

The Series 2020B Bonds shall mature on July 1, 2024 in the principal amount of \$18,775,000 and shall bear interest, payable on July 1, 2021 and semi-annually thereafter on each January 1 and July 1, at the rate of 4.50% per annum.

EXHIBIT A

Form of Investor Letter

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Appendix III

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Puerto Rico Aqueduct and Sewer Authority
GOVERNMENT OF PUERTO RICO

2020 Fiscal Plan for the Puerto Rico Aqueduct and Sewer Authority (PRASA)

Transforming PR's Water and Wastewater System

Fiscal Years 2021 to 2025

As certified by the Financial Oversight and Management Board for Puerto Rico

June 29, 2020





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Acronyms

AMWA	Association of Metropolitan Water Agencies
ASES	Administración de Seguros de Salud de Puerto Rico
AWIA	America Water Infrastructure Act of 2018
AWWA	American Water Works Association
Authority	Puerto Rico Aqueduct and Sewer Authority
CGI	Commonwealth Guaranteed Indebtedness
CIP	Capital Improvement Program
GSO	Government Supported Obligations
CWSRF	Clean Water State Revolving Fund
DOH	Department of Health
DOJ	Department of Justice
DSA	Debt Sustainability Analysis
DWSRF	Drinking Water State Revolving Fund Programs
EQB	Environmental Quality Board
EPCs	Energy Performance Contracts
ERPs	Emergency Response Plans
ERS	Employee Retirement System
FTE	Full-Time Employee
FY	Fiscal Year
GAAP	Generally accepted accounting principles
GDB	Government Development Bank for Puerto Rico
GIS	Geographical information system
Government	Government of Puerto Rico
Governor	Governor of Puerto Rico
HIEPAAA	Hermanidad Independiente de Empleados Profesionales de la Autoridad de Acueductos y Alcantarillados
KPIs	Key Performance Indicators
kWh	Kilowatt-Hours
MAT	Master Agreement of Trust
MGD	Million Gallons per Day
MHI	Median Household Income
NRW	Non-Revenue Water



OH	Overhead
OMB	Puerto Rico Office of Management and Budget
O&M	Operations and Maintenance
ORF	Operating Reserve Fund
Oversight Board	Financial Oversight and Management Board for Puerto Rico
P3	Public-Private Partnership
P3 Authority	Puerto Rico Public-Private Partnership Authority
PAN	Programa de Asistencia Nutricional
PayGo	Pay-as-you-Go
PFC	Puerto Rico Public Finance Corporation
PMCs	Project Management Consortium
PPAs	Power Purchase Agreements
PPE	Personal Protection Equipment
P3 Project	Metering System and Customer Service Optimization Project
PRFAFAA	Puerto Rico Fiscal Agency and Financial Advisory Authority
PRASA	Puerto Rico Aqueduct and Sewer Authority
PRDOH	Puerto Rico Department of Health
PREB	Puerto Rico Energy Bureau
PREPA	Puerto Rico Electric Power Authority
PRIFA	Puerto Rico Infrastructure Finance Authority
PROMESA	Puerto Rico Oversight, Management, and Economic Stability Act
PSI	Pounds per Square Inch
PWSIDs	Potable Water System Identification
Regions	Operational Regions
RD	Rural Development
RFC	Raftelis Financial Consultants
RRAs	Risk and Resiliency Assessments
RSA	Rate Stabilization Account
R&R	Renewal and Replacement Projects
SCADA	Supervisory Control and Data Acquisition
System	Authority's Public Water Supply and Wastewater System
SOOMP	Sewer System Operation and Maintenance Program
SOP	Standard Operating Procedure
SRF	State Revolving Fund



TANF	Puerto Rico Temporary Assistant for Needy Families
STS	Sludge treatment system
UIA	Unión Independiente Auténtica
US	United States of America
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
WRF	Water Research Foundation
WRO	Water Recovery Office
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plants



Disclaimer

The Financial Oversight and Management Board for Puerto Rico (the “FOMB,” or “Oversight Board”) has formulated this 2020 Fiscal Plan based on, among other things, information obtained from the Commonwealth of Puerto Rico (the “Commonwealth,” or the “Government”).

This document does not constitute an audit conducted in accordance with generally accepted auditing standards, an examination of internal controls or other attestation or review services in accordance with standards established by the American Institute of Certified Public Accountants or any other organization. Accordingly, the Oversight Board cannot express an opinion or any other form of assurance on the financial statements or any financial or other information or the internal controls of the Government and the information contained herein.

This 2020 Fiscal Plan is directed to the Governor and Legislature of Puerto Rico based on underlying data obtained from the Government. No representations or warranties, express or implied, are made by the Oversight Board with respect to such information.

This 2020 Fiscal Plan is not a Title III plan of adjustment. It does not specify classes of claims and treatments. It neither discharges debts nor extinguishes liens.

This 2020 Fiscal Plan is based on what the Oversight Board believes is the best information currently available to it. To the extent the Oversight Board becomes aware of additional information after it certifies this 2020 Fiscal Plan that the Oversight Board determines warrants a revision of this 2020 Fiscal Plan, the Oversight Board will so revise it.

For the avoidance of doubt the Oversight Board does not consider and has not considered anything in the 2020 Fiscal Plan as a “recommendation” pursuant to Section 205(a). Nevertheless, to the extent that anything in the 2020 Fiscal Plan is ever deemed by the Governor or Legislature or determined by a court having subject matter jurisdiction to be a “recommendation” pursuant to Section 205(a), the Oversight Board hereby adopts it in the 2020 Fiscal Plan pursuant to PROMESA Section 201(b).

Any statements and assumptions contained in this document, whether forward-looking or historical, are not guarantees of future performance and involve certain risks, uncertainties, estimates and other assumptions made in this document. The economic and financial condition of the Government and its instrumentalities is affected by various legal, financial, social, economic, environmental, governmental and political factors. These factors can be very complex, may vary from one fiscal year to the next, and are frequently the result of actions taken or not taken, not only by the Government and the Oversight Board, but also by other third-party entities such as the government of the United States. Examples of these factors include, but are not limited to:

- *The amount and timing of receipt of any distributions from the Federal Emergency Management Agency and private insurance companies to repair damage caused by Hurricanes María and Irma, earthquakes, and the COVID-19 pandemic;*
- *The amount and timing of receipt of any amounts allocated to Puerto Rico and provided under the Community Disaster Loans Program;*
- *The amount and timing of any additional amounts appropriated by the United States government to address the impacts of the COVID-19 pandemic;*



- *The amount and timing of receipt of any additional amounts appropriated by the United States government to address the funding gap described herein;*
- *The impact of the COVID-19 pandemic on the financial, social, economic, and demographic condition of Puerto Rico;*
- *The impact of the measures described herein on outmigration; and*
- *The impact of the resolution of any pending litigation in the Title III cases*

Because of the uncertainty and unpredictability of these factors, their impact cannot be included in the assumptions contained in this document. Future events and actual results may differ materially from any estimates, projections, or statements contained herein. Nothing in this document should be considered as an express or implied warranty of facts or future events; provided, however, that the Government is required to implement the measures in this 2020 Fiscal Plan and the Oversight Board reserves all its rights to compel compliance. Nothing in this document shall be considered a solicitation, recommendation or advice to any person to participate, pursue or support a course of action or transaction, to purchase or sell any security, or to make any investment decision.

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Executive Summary

The Puerto Rico Aqueduct and Sewer Authority (“the Authority” or “PRASA”) is committed to providing reliable, affordable, and safe water and wastewater services to the people of Puerto Rico. However, PRASA’s current financial and operational state requires sustained improvement in order to keep this commitment. Between 2012 to 2014, major credit agencies downgraded PRASA to below investment grade, citing high operational deficiencies, historically poor financial performance, and high capital requirements to conduct critical and mandated upgrades. This is not the first time that PRASA has been downgraded below investment grade by credit agencies (i.e., 1994), suggesting that these are longstanding challenges and deficiencies that have gone unaddressed.

Despite efforts to improve operations and become financially sustainable, many of PRASA’s historical challenges persist, including:

- **Non-revenue water:** PRASA estimates that 55% of the water its produces is lost before reaching its customers due to water leaks, overflows, theft, and faulty metering. PRASA’s high levels of non-revenue water presents a significant challenge to its financial sustainability and water availability, increasing rates and making Puerto Rico’s residents and businesses particularly vulnerable to droughts. PRASA has not made progress on implementing a program for reducing non-revenue water despite committing to doing so in past fiscal plans.
- **Accurate metering and effective customer service:** PRASA continues to depend on old mechanical meters that have an estimated error margin of up to 15%, forcing it to estimate system-wide consumption rather than using actual readings.¹ Inaccurate readings, combined with the fact that PRASA does not measure its water production, precludes PRASA from sizing the impacts of non-revenue water and understanding customer consumption patterns.
- **System reliability and resiliency:** PRASA continues to underspend on its maintenance program. As of April 2020, its spending on maintenance was 20% less than what was budgeted year-to-date. Moreover, a majority of its program is focused on corrective maintenance instead of preventative maintenance, increasing costs and suggesting PRASA is reacting to faults and breaks after the fact as opposed to preemptively addressing them.
- **Water Quality:** PRASA has been operating under an Environmental Protection Agency (“EPA”) and Department of Justice (“DOJ”) water health, safety, and quality consent decree since 2015 and a Transactional Agreement with the Puerto Rico Department of Health (PRDOH) since 2006. Although Puerto Rico’s water is safe to drink, EPA water quality reports from the past five years indicate troubling trends regarding health-based violations, such as nitrates and chlorine-based disinfection byproducts.² PRASA continues to operate under the

¹ Professional Opinion Report: Puerto Rico Aqueduct and Sewer Authority, prepared by Raftelis Financial Consultants, 2016.

² Safe Drinking Water Information System (SWDIC) Federal Reporting Services, USEPA, Quarter 4 2019.



consent decree and transactional agreement because it has not yet completed all necessary health and safety projects and is not projected to do so in FY2021.³

- **Capital Improvements:** Delivering its Capital Improvement Program (“CIP”) has been a consistent challenge for PRASA. In FY2019, PRASA only delivered on ~30% of its CIP budget (\$43M). While the lockdown measures enacted in response to the COVID-19 pandemic required PRASA to temporarily suspend CIP work, PRASA had only delivered ~50% (~\$43M) of its FY2020 budget in the first nine months of the fiscal year.⁴
- **Rates:** In the past, PRASA failed to increase rates to fully recover its costs, consistent with standard utility practices. Recent rate increases under the current rate structure are still insufficient to cover annual operating expenses, debt service obligations, and capital requirements, while also nearing levels of unaffordability for low-income customers.

These financial and operational challenges have been exacerbated by trends and events outside of PRASA’s control. Ongoing economic contraction and population decline have caused revenues to decline over time, limiting the resources available to maintain and invest in its system. Moreover, PRASA’s infrastructure suffered extensive damages as a result of Hurricanes Irma and María and the 2020 earthquakes, while the COVID-19 pandemic caused a sharp decline in collections, interrupted capital project activities, and added unforeseen operational expenses at the end of FY2020.

When compared to its pre-2017 state, PRASA’s financial condition has improved. By implementing various revenue enhancing and expense reducing measures, including modest and gradual rate increases across all customer classes, improving collections from government accounts, reductions in electricity consumption, PRASA has been able to reduce, albeit not eliminate, its structural deficit. Moreover, by reducing its debt service cost through the federal debt reprogramming with its federal partners, PRASA has been able to achieve sustainable levels of debt service.

However, the majority of PRASA’s efforts in the past have focused on addressing fiscal challenges with little emphasis given to operational deficiencies. PRASA’s 2020 Fiscal Plan must address both aspects by:

- Implementing measures to improve operational efficiency and maintenance effectiveness
- Executing its CIP to maintain and upgrade water system safety, reliability and resilience
- Collecting revenues sufficient to maintain financial sustainability and regain access to short-term and long-term capital markets at reasonable interest rates to meet its borrowing needs.

PRASA’s 2020 Fiscal Plan provides a roadmap for its financial and operational transformation by addressing the structural deficiencies which have prevented PRASA from achieving long-term sustainability.

Without the implementation of aggressive operational reforms, PRASA is projected to generate a structural deficit of \$1.7 billion between FY2020-FY2025, driven by:

³ Fiscal Year 2016 & 2017 Consulting Engineer’s Report for PRASA, performed by Arcadis and published in December of 2017

⁴ Excludes Emergency/Permanent Works projects, which are projected to be funded with FEMA funds



- Falling revenues from a shrinking customer base and economy
- Rising operating expenses in line with inflation
- A large capital program that needs to be self-funded due to a lack of access to short-term and long-term capital markets at reasonable rates

PRASA and The Financial Oversight and Management Board for Puerto Rico (“FOMB” or the “Oversight Board”) have identified several measures that, if successfully implemented, would improve PRASA’s financial and operational performance. The 2020 Fiscal Plan includes the following 11 measures⁵ related to revenue enhancement, cost reduction, and federal funding. These must be executed by PRASA’s Project Management Office and could potentially result in a ~\$1.6 billion positive impact⁶:

1. **Rate Adjustments (\$908 million between FY2020-FY2025)**⁷: continue with the scheduled implementation of modest rate increases in both FY2021 and FY2022—consistent with past Fiscal Plans and standard utility practice—and conduct a review of the current rate structure with the aim of ensuring simplicity, affordability, and adequate cost recovery in FY2023 and beyond.
2. **Metering and customer service optimization (\$33 million)**: reduce commercial water losses and improve customer experience and satisfaction either independently or through a P3 agreement.
3. **Chemical expense reduction (\$3 million)**: reduce chemical usage and costs through improved inventorying, contracts negotiation, and installed technology improvements at Carraizo Dam.
4. **Pension reform (\$21 million)**: improve the financial stability of public employees through reforms that maintain enough funds for employee pension plans and create a defined contribution plan for employees; consistent with the Commonwealth of Puerto Rico’s pension reform measure.
5. **Christmas bonus elimination (\$16 million)**: remove the annual bonus starting in FY2021.
6. **Uniform healthcare (\$12 million)**: implement a newly negotiated medical health plan by July 1, 2020.
7. **Headcount cap (\$16 million)**: limit PRASA’s workforce size to 4,600 while a comprehensive productivity and rightsizing assessment is conducted.
8. **Electricity cost reduction (\$13.2 million)**: reduce electricity costs through increased efficiency and distributed generation.
9. **Physical water loss reduction (\$11 million)**: reduce physical water losses through master meter installation, leaks reduction, and pressure management.

⁵ Unless provided otherwise, measure projections cover FY2021 through FY2025

⁶ In addition to 11 new measures, the post-measures financial results includes ~\$80 million in completed measures; these are discussed in Section 3.1: Recently Implemented Measures

⁷ Estimate also includes rate adjustments enacted in FY2018-FY2020 and estimates additional rate adjustments that would occur in FY2023-FY2025 after a rate redesign is implemented



10. **Capital delivery optimization (\$54 million):** achieve a more cost-effective way to deliver its CIP. The Oversight Board urges PRASA to onboard a Project Management Consortium (PMC); PRASA also must establish a prioritization criteria for all projects, set up a CIP tracking tool, and monitor KPIs.
11. **New Federal Funds (\$421 million):** obtain new financing from two federal loan programs: State Revolving Funds (USEPA) and the Rural Development Program (USDA).

However, implementing these measures will not be enough to eliminate PRASA's structural deficit, thus forcing PRASA to draw down approximately \$105M from its Current Expense Fund (CEF) to achieve balanced budgets throughout the Fiscal Plan Period.⁸

Table O-1 provides an annual and cumulative view of PRASA's FY2021 pre-measures and post-measures financial results. By implementing each of the measures identified in the 2020 Fiscal Plan, PRASA must improve its financial and operational performance, while also ensure continued investments in its system necessary for maintaining water quality standards and reliable water supply. PRASA will need to draw down from its CEF to ensure it achieves a balance budget in all fiscal years.

TABLE O-1: POST-MEASURES FINANCIAL RESULTS FOR FY2020-FY2025, (IN \$' MILLIONS)

<i>in \$Millions</i>	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY20/25
Authority Revenues	945	953	925	914	904	895	5,536
Senior Debt Service	(251)	(251)	(251)	(251)	(251)	(251)	(1,505)
Net Operating Expenses	(721)	(668)	(711)	(720)	(730)	(741)	(4,291)
Operating Reserve Fund	(32)	(33)	(5)	(2)	(3)	(3)	(78)
Capital Improvement Fund	(97)	(178)	(279)	(271)	(198)	(171)	(1,195)
Commonwealth Payment Fund	(21)	(26)	(28)	(28)	(32)	(32)	(167)
Pre-Measures Financial Result	(178)	(203)	(348)	(359)	(310)	(303)	(1,700)
Measures Benefit	112	201	343	344	292	312	1,604
Post-Measures Financial Result	(66)	(1)	(5)	(15)	(18)	9	(96)
Funds available at CEF	66	1	5	15	18	-	105
Transfer to RSA	-	-	-	-	-	(9)	(9)
Final Annual Need	-	-	-	-	-	-	-

Supporting the execution of the measures mentioned above, the 2020 Fiscal Plan also requires PRASA to deliver on four enabling measures designed to ensure long-term planning, improve management controls, and increase operational efficiency and accountability:

- **Project Management Office (PMO) execution:** establish a PMO office tasked and empowered to ensure the successful execution of the measures outlined in the 2020 Fiscal Plan and key internal projects within the organization
- **Emergency response plan and climate risk preparedness:** develop and update PRASA's Emergency Response Plan and ensure findings are integrated across the organization and specifically into the CIP

⁸ Current Expense Fund – According to the MAT, on a monthly basis, after the payment of debt service, PRASA's Trustee shall deposit in the Current Expense Fund (CEF), at the Authority's request, at least one month and up to three months of current expenses. As such, the CEF is used to fund current operating expenses of PRASA.



- **10-year Master Plan:** PRASA’s 10-year plan, to be developed with results from the 2020 US Census, must provide a long-term roadmap to transform PRASA’s system into a simpler, safer, operationally efficient, and financially sustainable system and serve to consolidate recommendations from other plans and strategies (e.g., Fiscal Plan, Emergency Preparedness Plan, Climate Change Adaptability Plan)
- **Asset management and maintenance:** properly track and monitor the condition of all PRASA assets and revamp maintenance program from primarily corrective to a more balanced target that promotes higher preventative maintenance practices

PRASA’s chief priority must be the timely and comprehensive implementation of the 2020 Fiscal Plan measures. Not executing the Fiscal Plan threatens the safety and reliability of the Authority’s infrastructure, which could potentially put Puerto Rico’s residents at risk of poor water quality, diminished water availability and access, and affordability concerns. Provided that the Fiscal Plan is successfully executed, and financial and operational sustainability is achieved, PRASA will be in a position to access short and long-term capital markets at reasonable rates again, thus enabling it to continue providing reliable, affordable, and safe water and wastewater services to Puerto Rico for the foreseeable future.



1 Introduction

As the sole provider of public water and wastewater services for Puerto Rico, the Puerto Rico Aqueduct and Sewer Authority (the “Authority” or “PRASA”) is committed to providing reliable, affordable, and safe water and wastewater services to the people of Puerto Rico. This Fiscal Plan outlines the actions that will enable PRASA’s transformation into a well-performing, safe, efficient, and sustainable water and wastewater utility in a manner that is beneficial to the interests of the people of Puerto Rico and compliant with PROMESA.

1.1 Purpose of the Fiscal Plan

The 2020 Fiscal Plan has been developed with the focus and commitment to deliver reliable, affordable, and safe water and wastewater treatment services while ensuring PRASA’s continued financial sustainability. In order to implement this Fiscal Plan, PRASA must take or is in the process of taking the following steps:



Enhance revenues



Reduce expenses



Improve operational performance



Improve customer satisfaction and experience



Increase water availability and reduce service rationing risks



Execute a Capital Improvement Program (“CIP”) on time and on budget

Successful completion of these steps will place PRASA on a path to achieve financial and operational sustainability and establish the foundation for PRASA to become a well-performing utility with access to short-term and long-term capital markets at reasonable rates.

1.2 Changes from Previous Fiscal Plan

The major changes from the prior Fiscal Plan, as certified by the Oversight Board on June 25, 2019, are as follows:

1. Updated projection period (from FY2019 through FY2024 to FY2020 through FY2025)
2. Included known and preliminary projected impact of COVID-19 on PRASA’s revenues and collections
3. Revised projections based on updated information, including electricity rates and macroeconomic assumptions
4. Incorporated the federal debt reprogramming into pre-measures financial projections
5. Included new, revised, and updated proposed measures



6. Updated CIP projections

1.3 Authority’s general information

PRASA is a public corporation and governmental instrumentality of the Government of Puerto Rico (the “Government”). PRASA owns and operates the public water and wastewater system (the “System”) of the Commonwealth of Puerto Rico.

1.3.1 Authority’s Mission and Vision

PRASA’s core mission is to provide high-quality, safe, reliable, and affordable water and wastewater services to the people of Puerto Rico, protecting their health and the environment. To accomplish its mission, PRASA has adopted a vision to become a top-performing utility while continuously exceeding customer expectations and ensuring sustainable water resources management.

1.3.2 History of the Authority

PRASA is an instrumentality of the Government created on May 1, 1945 for the purpose of owning and operating the Government’s public water supply and wastewater systems.⁹ Exhibit 1-1 below provides a timeline of PRASA’s history.

⁹ Act No. 40



EXHIBIT 1-1: THE AUTHORITY'S HISTORICAL BACKGROUND TIMELINE

●	1945	<ul style="list-style-type: none"> • Authority created through Act No. 40-1945
●	1990–1993	<ul style="list-style-type: none"> • PRASA state of emergency declared by Governor: <ul style="list-style-type: none"> – PRASA's revenues were deemed insufficient to cover all obligations – PRASA was subsidized by Government (over \$400M annually)
●	1994	<ul style="list-style-type: none"> • Debt downgraded below investment grade, eliminating capital market access • Severe drought impacted Puerto Rico
●	1995	<ul style="list-style-type: none"> • Commonwealth guarantee of PRASA's outstanding debt and future federal debt through Act No. 45-1995
●	1995–2004	<ul style="list-style-type: none"> • PRASA's management goes under privatization: <ul style="list-style-type: none"> – 1995-2002: Professional Service Group Inc/Compania de Aguas de Puerto Rico – 2002-2004: Ondeo wins O&M water services contract
●	2004	<ul style="list-style-type: none"> • Operational restructuring through Act No. 92-2004: <ul style="list-style-type: none"> – PRASA management transferred back to public sector – Operations reorganized into five Regions and Infrastructure Directorate
●	2005–2006	<ul style="list-style-type: none"> • Rate increase implemented in two phases (128% on average across customer segments) • Elimination of Government subsidies • Bond anticipated financing obtained from private banks
●	2008	<ul style="list-style-type: none"> • Investment grade rating recovered, allowing return to capital markets: <ul style="list-style-type: none"> – Master Agreement of Trust (MAT) was created – \$1.3B in revenue bonds issued to PRASA
●	2008–2012	<ul style="list-style-type: none"> • Lines of credit from GDB and BANS used to finance PRASA's CIP
●	2012	<ul style="list-style-type: none"> • MAT amended to enhance bondholder protections • \$2.1B in revenue bonds issued to PRASA
●	2012–2014	<ul style="list-style-type: none"> • Credit rating downgraded to "non-investment grade" • Strategic Plan adapted to reduce dependence on bonds for CIP financing
●	2013	<ul style="list-style-type: none"> • Rate increase of 60% on average across customer segments • \$200M BAN loan to finance CIP
●	2015	<ul style="list-style-type: none"> • Severe drought required water rationing plan, resulting in decreased billings
●	2016	<ul style="list-style-type: none"> • "Revitalization Act" (Act no 68-2016) provided the issuance of up to \$900M in new bonds • PROMESA enacted in response to Puerto Rico's financial and debt crisis • Forbearance Agreements executed for deferral on federal debt payments
●	2017	<ul style="list-style-type: none"> • Hurricanes Irma and Maria caused extensive system damage • Series of modest rate increases adopted from 2018 to 2021
●	2019	<ul style="list-style-type: none"> • PRASA's debt obligations re-programmed for SRF and RD loans
●	2020	<ul style="list-style-type: none"> • January 2020 earthquakes caused extensive system damage • COVID-19 pandemic caused collection delays and suspension in service disconnection

Beginning in the early 1990s, due to an inability to control operating expenditures and implement consistent, modest rate increases, the Authority's revenues became insufficient to meet all of its obligations, including paying debt service on its outstanding revenue bonds. As a result, the Government provided the Authority with subsidies, including direct Government appropriations



to fund the Authority's capital projects. In 1994, the Governor declared the Authority in a state of emergency, and its debt was downgraded below investment grade, eliminating the Authority's access to capital markets at reasonable rates to finance its CIP.

Between 1995 and 2004, to improve service and overall efficiency, the Government and the Authority engaged and contracted with private companies to manage, operate, and maintain its System. In 2004 the Government enacted Act 92-2004 which transferred all responsibilities back to the public sector. Post-privatization, and in efforts to allow the Authority to become more autonomous, a two-phased rate increase was implemented in October 2005 and July 2006; the first rate increases in almost 20 years. Implementation of the rate increase allowed the Authority to meet all operational and debt service obligations without the need for subsidies from the Government, which were discontinued shortly thereafter. However, the Authority still faced challenges in generating sufficient revenues to invest in its CIP. As such, the Authority covered CIP costs through interim financing until 2008.

In 2008, the Authority recovered its investment grade credit rating and was able to access the capital markets at reasonable rates. The Authority raised \$1.3 billion in new senior lien debt in March 2008 to finance its CIP and repay outstanding lines of credit. Also, \$284 million of PRASA's 1995 bonds were refunded for a total bond issuance of approximately \$1.6 billion.

Once the proceeds of the 2008 senior bonds were used for the construction of CIP projects, the Authority continued to finance its CIP with interim lines of credit from the GDB and bond anticipation notes ("BANs") from commercial banks until 2012. In 2012, the Master Agreement of Trust ("MAT") was amended to enhance bondholder protections and provide additional guarantees of repayment to senior bond holders by agreeing to a gross revenue pledge (i.e., senior lien debt service would be paid ahead of the Authority's operating expenses). The amendments to the MAT allowed the Authority to issue \$2.1 billion in revenue bonds (i.e., senior lien) in 2012, to term out \$1.1 billion in GDB and BANs interim lines of credit, and to provide \$350 million additional funds for its CIP.

In 2013, a new rate adjustment was implemented, incorporating a new environmental, compliance, and regulatory charge into the rate structure, to generate enough revenue to cover all operating needs (i.e., expenses and debt service) at the time. In addition, a \$200 million BAN was extended to the Authority by a syndicate of local commercial banks to fund its CIP costs until a new, long-term bond issuance could be completed. The bond issuance was expected to be completed during FY2014 but was never executed due to downgrades in the Government's credit ratings, leading to subsequent downgrades in the Authority's credit ratings.

From late 2012 through 2014, the major credit rating agencies gradually downgraded the Authority's long-term credit ratings to non-investment grade territory, citing similar reasons for the decision.¹⁰ For example, Standard & Poor's justification for its downgrade was:

- "Relatively fragmented water and wastewater system, which, coupled with significant deferred capital needs, has resulted in high operational deficiencies;
- Historically poor financial performance stemming from unwillingness to raise rates, deficient billing and collection systems, and low liquidity;

¹⁰ Moody's: downgraded from Ba1 to Ba2 on December 2013; S&P: downgraded from BBB- to BB+ on March 2013; Fitch: downgraded from BBB- to BB+ on February 2014.



- Estimated \$1.5 billion in identified capital improvements over the next five years, stemming primarily from compliance-related mandatory projects, as well as other critical system improvements.”¹¹

The downgrade in the rating would have been worse if not for the recent rate increase that boosted confidence in the Authority’s financial operations.¹² However, the outcome was that the Authority once again lacked access to short-term and long-term capital markets at reasonable rates in order to finance its CIP, forcing it to suspend its CIP and accumulate approximately \$150 million by FY2016 in debt to its vendors and suppliers.

In 2016, the US Congress enacted the Puerto Rico Oversight, Management, and Economic Stability Act (“PROMESA”) to head off Puerto Rico’s financial and debt crisis. PROMESA created the Financial Oversight and Management Board for Puerto Rico (the “Oversight Board” or “FOMB”), which provides oversight to the Authority so that it may achieve fiscal balance.

In 2016, the Authority executed a Forbearance Agreement that allowed for deferral of payments on its federal debt until 2019, resulting in approximately \$128 million in debt service relief.¹³ In 2019, the Authority and PRFAFAA consummated definitive agreements that reprogrammed the approximately \$1 billion in federal debt. This resulted in \$380 million in debt service relief over the next ten years, \$30 million in interest forgiveness, and renewed access to potential sources of federal funding.

In recent years, the Authority, in collaboration with the Oversight Board, has made measurable progress towards reaching fiscal sustainability. Successful implementation of fiscal measures, such as mandated rate increases and more proactive and targeted collections practices, has improved the Authority’s overall financial position. However, operational deficiencies still remain. If left unaddressed, they pose a risk to water quality, availability, and affordability for the people of Puerto Rico. The Authority’s history demonstrates that gaining access to short-term and long-term capital markets at reasonable rates, in and of itself, is not a predictive formula that guarantees long-term performance. Instead, the Authority must focus on achieving and maintaining sustainability across management, finances, and operations.

1.4 Overview of the Authority’s system

In 2019, the Authority served a population of approximately 3.2 million residents and approximately 5.2 million visitors.¹⁴ The Authority is the sole provider of two distinct services in Puerto Rico—clean water supply and wastewater management—serving approximately 96% and

¹¹ Chapman, Theodore, “Ratings Direct Summary: Puerto Rico Aqueduct & Sewer Authority; Water/Sewer”, Standard & Poor’s Rating Services, 26 March 2013.

¹² “Moody’s downgrades Puerto Rico GO and related bonds to Ba2, notched bonds to Ba3 and COFINA bonds to Baa1, Baa2; outlook negative”, Moody’s Investors Service, 7 February 2014.

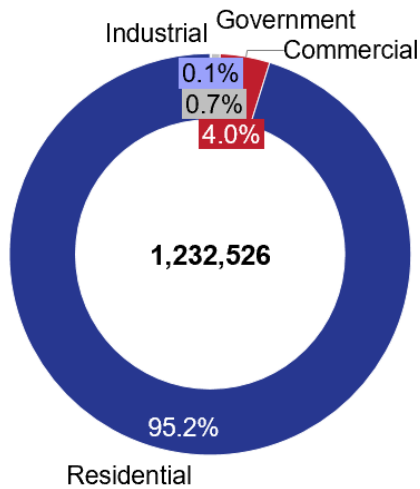
¹³ Drinking Water State Revolving Funds, Clean Water State Revolving Funds, and USDA Rural Development loan program

¹⁴ Source: US Census Bureau – December 2019 estimates; Aerostar, AirDNA, Discover Puerto Rico, Smith Travel Research.



59% of the population,¹⁵ respectively. As of June 30, 2019, PRASA had 1,232,526 active accounts, of which 95% were residential accounts. Exhibit 1-2 provides a breakdown of customers by category.

EXHIBIT 1-2: CUSTOMER BREAKDOWN BY CATEGORY



The Authority provides water and wastewater services throughout the island, which has an approximate area of 3,535 mi² (additional facts shown in Exhibit 1-3). Because Puerto Rico is an island with varied topography, dispersed demographic distributions, and a diverse mix of users, the Authority has a fragmented and localized system of water sources, treatment, and delivery (as shown in Exhibit 1-4 and Exhibit 1-5). While a few facilities serve the large urban centers and several adjacent communities in a single area, most of the Authority’s facilities are small in terms of service capacity.

¹⁵ Remaining 41% of wastewater service customers use septic tanks and other forms of wastewater disposal (smaller private effluent disposal systems).



EXHIBIT 1-3: OVERVIEW OF THE AUTHORITY'S INFRASTRUCTURE SYSTEM



8 dams



113 Filter Plants with 136 intakes, producing ~540 MGD



51 Wastewater Plants treating ~200 MGD

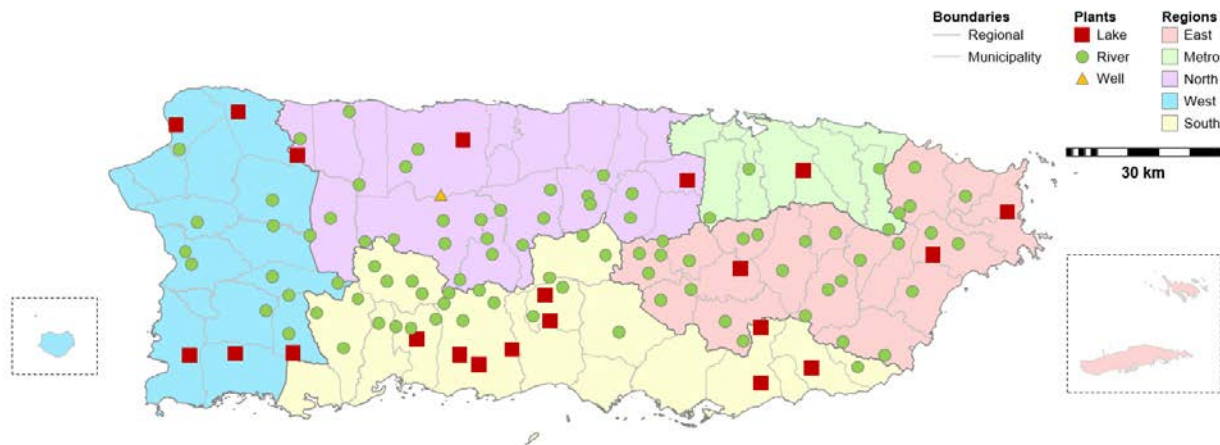


Around 3,800 auxiliary facilities:
Tanks – 1,560
Pump stations – 1,977
Water wells – 249



Over 20,000 miles of pipes

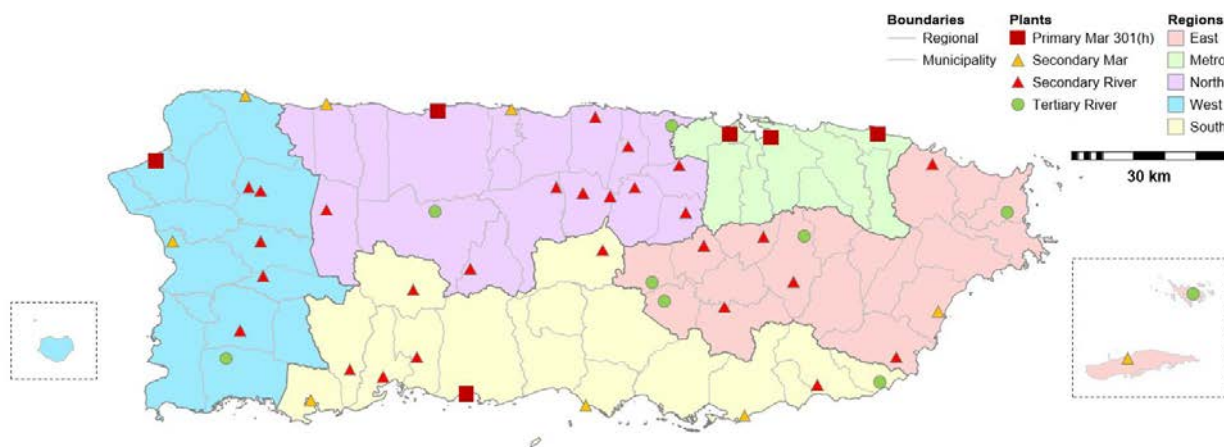
EXHIBIT 1-4: PRASA WATER TREATMENT PLANTS¹⁶



¹⁶ Active facilities as of December 31, 2019, according to PRASA's internal GIS database.



EXHIBIT 1-5: PRASA WASTEWATER TREATMENT PLANTS¹⁷



1.5 Governance and Organizational Structure

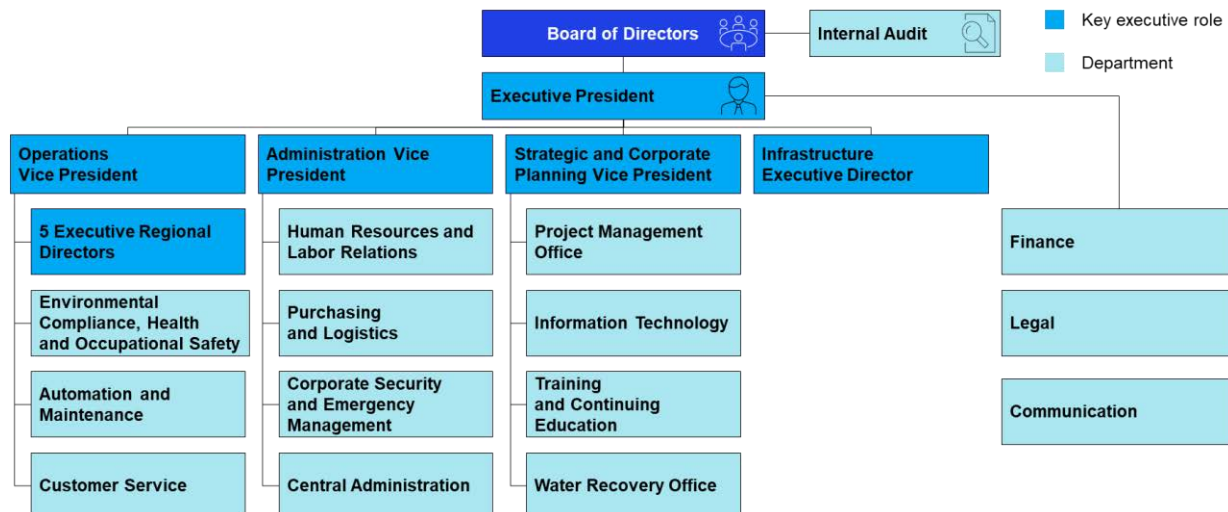
The Authority has adopted an organizational structure and governance model to better achieve its mission, implement its Fiscal Plan, and improve operational efficiency and accountability. Exhibit 1-6 shows PRASA’s current organizational structure. Three key departments and offices to highlight are:

- **Strategic and Corporate Planning Department** is responsible for the PMO that ensures the successful execution of Fiscal Plan measures. It’s Water Recovery Office is specifically responsible for all non-revenue water related measures.
- **Infrastructure Department** plans and executes the CIP, in collaboration and with the support of the Finance Department.
- **Office of Environmental, Compliance, Health and Occupational Safety** focuses on providing quality water service and oversees compliance requirements related to the consent decree.

¹⁷ Active facilities as of December 31, 2019, according to PRASA’s internal GIS database.



EXHIBIT 1-6: ORGANIZATIONAL STRUCTURE



1.5.1 Governing Board

An experienced Governing Board that is independent from direct political influence is essential to ensuring the Board can effectively carry out its duties. Moreover, ensuring Board Members are able to serve their entire term length—and not be replaced due to changes in the political system—is essential to keeping consistency and institutional knowledge in the decision-making process.

PRASA’s Governing Board is responsible for making and/or approving all major decisions taken by the Authority, including overall institutional policies, strategies and programs, budget and capital improvement, executive and key management recruitment and removal, approval of union contracts, major procurements, professional services contracts (beyond the materiality limits awarded to the Executive President), and all contract changes (beyond the materiality limits awarded to the Executive President).

Pursuant to Act No. 68-2016, which sets requirements for a diversified and professionalized board, PRASA’s Governing Board was restructured to include seven members, consisting of four Independent Directors appointed by the Governor (with advice and consent from the Senate), two ex officio members, and one Consumer Representative, with the following qualifications:

1. One Professional Engineer licensed to practice in Puerto Rico with at least ten years of experience
2. One attorney with at least ten years of experience in Puerto Rico and licensed to practice in the Commonwealth of Puerto Rico
3. One Corporate Finance Specialist with wide knowledge and experience in the field
4. One Professional with expertise in any field related to PRASA functions
5. The Executive Director of the Association of Mayors (ex officio member)
6. The Executive Director of the Federation of Mayors (ex officio member)



7. One Consumer Representative, a private citizen representing the Authority's customers¹⁸

Members not named by the Governor include the Consumer Representative, the Executive Director of the Association of Mayors, and the Executive Director of the Federation of Mayors.

Members appointed by the Governor shall be selected from a list of at least ten candidates, vetted by a recognized executive search firm, and evaluated according to objective criteria that includes the professional and educational backgrounds of the candidates. The Consumer Representative is elected by PRASA's customers through a process under the jurisdiction of the Puerto Rico Department of Consumer Affairs.

Term lengths for non-ex-officio members are as follows:

- The Consumer Representative will serve for a three-year term with no term limits
- The Governor-appointed members shall serve staggered terms of five years and may only hold office for three terms¹⁹

Additionally, an AAFAF Representative will sit on the Board while PRASA is a covered territorial instrumentality under PROMESA, thus temporarily increasing its size to eight Board Members.²⁰

1.5.2 Executive Officers

Executive Officers shall be those appointed by the Governing Board. Having an independent and experienced Board select the leadership further protects the Authority from political influence and ensures only the most qualified individuals are selected for these roles.

The Executive Officers include:

- **Executive President:** The Chief Officer, based solely on experience, ability, and other qualities that especially enables them to lead the Authority, achieving its strategic mission and vision
- **Infrastructure Executive Director:** Preferably a Licensed Professional Engineer with experience in activities related to the development and management of infrastructure projects
- **Five Regional Executive Directors:** For the Metro, North, South, East, and West Regions
- **Three Vice Presidents:** Operations, Administration, and Strategic & Corporate Planning

The President and the six Executive Directors will serve a five-year term as established by Act No. 68-2016.

¹⁸ Currently, PRASA's Governing Board has two Consumer Representatives, as they were selected prior to the enactment of Act No. 68-2016 and their current terms do not expire until June 2020. However, after their terms end PRASA's Governing Board will be revised to have only one Consumer Representative, as stated by Act No. 68-2016.

¹⁹ Initially, two members were appointed for five years and two members for six years in order to achieve the staggered term requirement. After this, all members were shifted to five-year terms.

²⁰ Act No. 2-2017.



1.6 The Authority's challenges

Over the past several years, Puerto Rico has faced significant structural challenges that have adversely affected the Authority (e.g., declines in economic activity and population). Similarly, the Authority faces major financial, strategic, and operational challenges specific to water utilities.

PRASA faces a specific set of challenges, such as:

- Maintaining a large, complex, and capital-intensive system (+20,000 miles of pipeline and 164 water and wastewater treatment plants)
- Reducing longstanding and significant volumes of non-revenue water
- Addressing system vulnerabilities to climate change and natural disasters
- Declining population and water consumption
- Balancing a need for revenue increases for cost recovery against customer affordability issues
- Meeting environmental and safety regulatory requirements, including implementing EPA/DOJ consent decree requirements
- Accessing federal funding to restore the System to pre-hurricane levels

All these issues must be addressed while facing an inability to access short-term and long-term capital markets at reasonable rates. In recent months, there has been the added challenge of operating during a global pandemic. While many of these challenges may be present in other water utilities, the Authority's challenges are heightened due to Puerto Rico's current economic situation.

1.6.1 Infrastructure system challenges

1.6.1.1 Large and complex infrastructure

Water and wastewater utilities are among the most *capital-intensive* business entities in the world, requiring significant investment in property, facilities, and equipment in order to provide services.²¹ Water and wastewater utilities are approximately 76% more capital-intensive than power utilities, making investment and maintenance of the System more essential than other businesses.²²

Exhibit 1-7 shows that PRASA has one of the most complex systems when compared to other US-based, peer utilities serving more than one million customers. This results in a higher degree of diversity throughout the Authority's assets in terms of size and age when compared to other utilities, driving up operating costs and capital requirements. There are also added safety challenges, system complexity, and structural risks compared to more centralized infrastructure systems with larger regional facilities. Moreover, having such a large, complex network plays a role in the high level of water losses it experiences.

²¹ The term capital intensity is used to describe the amount of capital assets required to support a business in the generation of revenue.

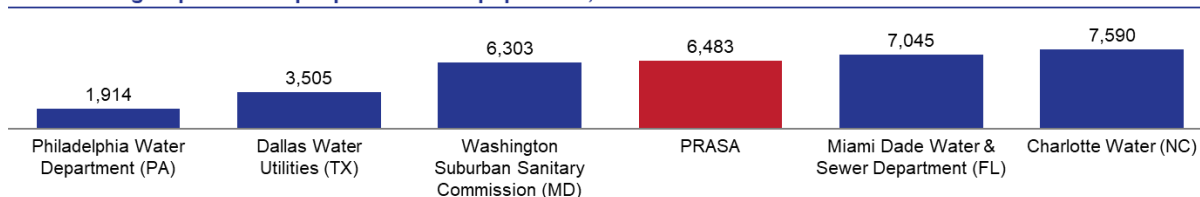
²² Improving Water Utility Capital Efficiency (USEPA and WRF, 2009).



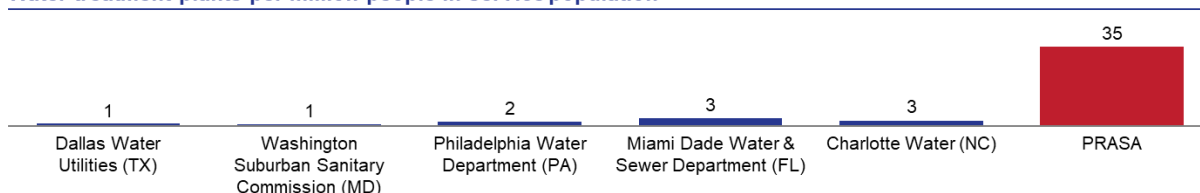
As a result of the complexity of the System and years of underinvestment, PRASA faces safety and reliability risks that will require a high level of capital investment to remediate. The long-term delivery of reliable, affordable and safe water and wastewater services requires a near-term implementation of system improvement and water loss initiatives as well as a fundamental reassessment of PRASA’s operations. PRASA must complete a Water and Wastewater 10-year Master Plan, focusing on achieving long-term structural integrity and ensuring it can provide reliable, affordable, and safe water and wastewater services for Puerto Rico while ensuring financial sustainability.

EXHIBIT 1-7: SYSTEM COMPLEXITY FOR COMBINED WATER AND WASTEWATER (UTILITIES IN THE U.S. WITH MORE THAN ONE MILLION CUSTOMERS²³)

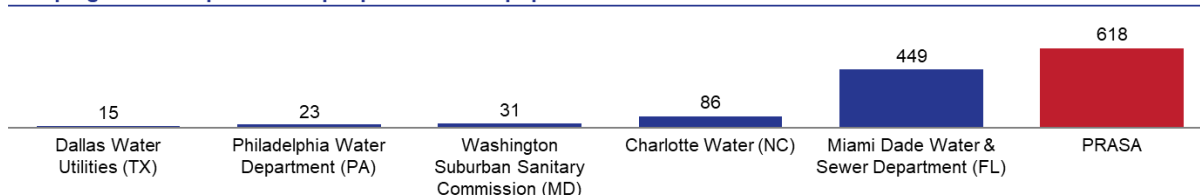
Network length¹ per million people in service population, miles



Water treatment plants per million people in service population



Pumping stations² per million people in service population



¹ Combined water and sewer network length
² Combined water and wastewater pumping stations

1.6.1.2 High volume of NRW

Water losses consist primarily of commercial and physical losses. The AWWA defines the water balance components of water losses as apparent (or commercial) and real (or physical) losses.²⁴ Different categories of water loss can be found in Table 1-1

Commercial losses are due to unauthorized activities such as theft, or operational short comings like meter error, misbilling, or data error. Hence, commercial losses represent water that is

²³ Utility specific data, available through public records.

²⁴ “M36 Water Audits and Loss Control Programs, 4th Edition”, AWWA, 2016.



produced and reaches customers but is not billed, and therefore does not generate revenue for PRASA.

Physical losses, on the other hand, are due to leaks and breaks throughout the System network. It represents water that is produced but never reaches the end customer and thus, is not billed. This is partially due to the gradual aging and depreciation of infrastructure, however, it's also the result of long term under-investment, such as failure to install appropriate instrumentation for loss control and the lack of monitoring technology. As a result, PRASA must process substantially more water than is required, incurring significant added costs along the way (via chemicals and electricity spending, mainly). This added production aggravates issues of water availability during periods of droughts, thus increasing the likelihood of rationing programs that provide only short-term relief.

TABLE 1-1: WATER BALANCE COMPONENTS (AWWA M36 MANUAL)

System input volume (dispatched water)	Authorized consumption	Billed authorized consumption	Billed metered consumption	Revenue water	
			Billed unmetered consumption		
	Water losses	Unbilled authorized consumption		Unbilled metered consumption	NRW
				Unbilled unmetered consumption	
		Commercial losses (apparent losses)		Unauthorized consumption (theft)	
				Customer metering inaccuracies	
				Data handling (billing) errors	
		Physical losses (real losses)		Main line leakage	
	Storage tank overflows				
	Service connection leakage				

Source: AWWA and International Water Association

PRASA's underinvestment in metering infrastructure affects both its customer service capabilities and its ability to address NRW as a whole. Some of PRASA's old, mechanical meters have an estimated error margin of up to 15%.²⁵ For example, during COVID-19, old metering technology and the inability for meter readers to perform their duties forced PRASA to rely on consumption estimates rather than using actual, accurate meter measurements. Therefore, inaccurate consumption data, combined with the fact that PRASA does not measure its water production, effectively precludes PRASA from sizing and managing the impacts of NRW.

Estimates from FY2015 indicate that approximately 55% of water (299 MGD of the average 557 MGD) produced is lost and not billed by PRASA. Of the total amount of water losses,

²⁵ Professional Opinion report: Puerto Rico Aqueduct and Sewer Authority; prepared by Raftelis Financial Consultants, 2016



approximately 64 MGD (~21%) was due to commercial losses and 235 MGD (~79%) due to physical losses.²⁶ These levels of water loss are up to two times higher than comparable utilities.²⁷

Since commercial losses have a higher economic value than physical losses and require less upfront capital, PRASA is prioritizing commercial losses over physical losses. Simply put, a portion of commercial losses can be converted into service revenues, primarily through meter replacement, resulting in a reduction of meter error, theft, and unauthorized consumption. For this reason, PRASA must address commercial losses as a Fiscal Plan measure, either implemented independently or through a P3 agreement (further described in Chapter 3).

On the other hand, reductions in physical water loss can result in cost savings associated with water production. To address physical losses, typical operational measures include installing appropriate flow monitoring equipment, performing leak detection throughout the water system (i.e., water mains, service lines, meters, hydrants, valves), and reducing water pressure where potential leaks may occur. The capital investment requirements to decrease leaks include investing in the replacement of infrastructure, specifically underground water lines, making this a much more time and resource intensive effort compared to commercial loss reduction. PRASA's efforts to reduce physical losses are detailed in Chapter 3.

PRASA's failure, over the years, to address both commercial and physical water losses contributes significantly to PRASA's financial challenges. In particular, the System's high levels of physical water losses have increased costs and have placed a burden on Puerto Rico's residents and businesses, increasing their vulnerability to rationing measures implemented during droughts. Therefore, water loss reduction is a top priority for PRASA.

1.6.2 Vulnerability due to climate change, natural disasters, and COVID-19

1.6.2.1 Climate change and natural disasters

Worldwide, water utilities have been exposed to more frequent hazards from climate change and natural disasters such as hurricanes, droughts, storms, floods, and rising sea levels. In some regards, given its location, the Authority is even more exposed to these risks. Since FY2015, Puerto Rico has been affected by a severe drought (October through December 2015), two Hurricanes (Irma and Maria in September 2017), and a major earthquake in Puerto Rico's southern region (January 7, 2020, with a magnitude of 6.4 on the Richter scale).

According to most recent information, Hurricanes Irma and Maria alone caused \$769M in damages to PRASA's infrastructure²⁸. Furthermore, PRASA estimates that revenue reduction and incremental expenses incurred accounted for \$293M and \$228M, respectively. Therefore, the total Hurricanes impact is estimated at \$1.3B²⁹ in damages. Similarly, the January earthquakes in

²⁶ Professional Opinion report: Puerto Rico Aqueduct and Sewer Authority; prepared by Raftelis Financial Consultants, 2016

²⁷ PRASA's commercial and physical losses for FY2015 were 44 and 160 gallons per service connection per day, respectively. For combined water and wastewater utilities, commercial losses of comparable utilities are 21 gallons per service connection per day and physical losses from 95 gallons; 2018 AWWA Utility Benchmarking

²⁸ Preliminary estimates calculated by PRASA and subject to further revisions.



the south and west regions of Puerto Rico are likely to have caused damage to PRASA’s buried infrastructure (pipeline network) and other assets, however, this figure has not yet been estimated. In addition to damages to its infrastructure, PRASA also incurred operational costs, including increased expense for payroll and other emergency-related mitigating action (e.g., water transport, electric generator rental).

Currently, PRASA is facing a new dry season with 50% of the Island under moderate to severe drought conditions, which resulted in the Authority needing to implement a planned service interruption program for approximately 8,000 clients served by the El Yunque water treatment plan (WTP) located in the eastern region of the Island.

As the Earth’s temperature rises and ocean temperatures become warmer for longer periods of time, an increase in the frequency of severe weather events is expected.³⁰ In FY2015, PRASA completed a Vulnerability Study on the impacts of climate change on the System and concluded that three specific stressors present the highest impact risk to PRASA’s System were the following:

- **Sea level rise** threatens flooding coastal infrastructure, which could force PRASA to decommission specific infrastructure along the coasts altogether.
- **Changes in precipitation patterns** could negatively impact the Authority’s infrastructure and service levels. On one hand, more precipitation in the short term increases turbidity, affecting the overall water quality. On the other hand, less precipitation in the long term leads to droughts, which reduces the availability of water.
- **Hurricane and tropical storms** and the damage caused by such events could generate significant infrastructure damage and impose large additional, and unforeseen, capital expenses.

The risks identified in the Vulnerability Plan served as the basis for PRASA’s Adaptation Plan, which was completed in April 2015. The Adaptation Plan included recommendations for studies that, if resulting in capitalizable projects, could be included in the CIP; otherwise, recommended studies and projects could be included in the operational budget.³¹ In the five years since the plan was developed, the capital projects from this Adaptation Plan have yet to be integrated into PRASA’s CIP, increasing overall System risk from the effects of climate change.

PRASA is in the process of updating its Vulnerability Analysis and Emergency Response Plan to comply with the America Water Infrastructure Act of 2018 (“AWIA”). The updated plan must include an assessment of PRASA’s System vulnerability to several threats, including climate change and natural disasters. PRASA must also update its 10-year Master Plan with information from the 2020 census to be able to identify projects that properly address challenges arising from climate and population change. Integrating these capital investment requirements into future plans, strategies, and—most importantly—the CIP will be critical to PRASA’s preparedness to face climate change.

1.6.2.2 COVID-19 challenges

³⁰ Khan, J. Stuart et al., “Extreme weather events: Should drinking water quality management systems adapt to changing risk profiles?”, *Water Research*, Volume 85, November 2015

³¹ Projects capable of being converted into capital



Like the rest of the world, Puerto Rico was confronted with the COVID-19 global pandemic in late February of this year, which required immediate and urgent action. On March 15, the Government enacted Executive Order 2020-023, which implemented social distancing measures such as the closure of all businesses in Puerto Rico, a curfew for all residents, and penalties to enforce compliance. The Government issued several extensions on the March order with various modifications to Puerto Rico’s social distancing measures. On April 9, the Government approved Act 39-2020, which prevented PRASA from disconnecting residential customer’s water services due to non-payment.

The COVID-19 pandemic, associated mitigation policies, and resulting economic impacts have presented certain challenges for PRASA:

- **Reduced collections:** Leading up to March 15, PRASA gathered 96% of forecasted collections in FY2020. After March 15, once social distancing measures went into effect, weekly collection rates dropped as low as 40%. After March 15, once social distancing measures went into effect, weekly collection rates dropped as low as 40% in April. As of May 31, PRASA reported that actual collections were 18%, or \$60 million, lower than expected for the time period, thus presenting a risk to short-term liquidity. PRASA is anticipating collecting 85% of overdue bills from April to June 2020 during FY2021. Collections are also showing an upward trend since easing of lockdown measures. Further discussion on the collection impacts can be found in Chapter 3.
- **Increased costs:** An additional \$6 million in costs as of May 31, 2020, was incurred to address and manage the emergency, including incremental costs for additional payments to essential workers—as required by current legislation—and for additional personal hygiene and protection equipment. As social distancing measures remain, additional costs are expected in order to ensure compliance.
- **Shortage of supplies and interruption to contracted services:** There has been a shortage in personal protection equipment (“PPE”) that allows for proper hygiene and prevention to protect the health of PRASA’s employees. Moreover, supply chain interruptions have also resulted in shortages of critical materials like chemicals, thus putting service continuity at risk. Finally, PRASA’s contractors and other service providers were either impacted or unable to deliver goods and services to PRASA.
- **Workforce issues:** Some employees were unwilling to perform work due to concerns for their health and their families, leading to an increased work backlog.
- **Delayed implementation of CIP:** Crew operational limitations and restrictions on construction meant that PRASA had to halt work on its CIP. Further sustained delays to CIP implementation could leave the System, potentially, at risk of additional safety, reliability, and water allocation issues.

Notwithstanding, PRASA has taken proactive actions to support its liquidity, such as promoting alternative payment options to improve collections, drawing down on previously collected insurance proceeds, and temporarily pausing funding of its Capital Improvement Fund.

PRASA also took steps to address operational challenges, including:

- Maintaining on-site employees at minimum required levels in order to ensure an adequate and uninterrupted service while minimizing exposure (e.g., suspension of meter readings to protect the health of employees and closing customer service offices)
- Providing PPE to all employees required to report on-site



- Promoting remote work for administrative and support personnel, significantly expanding the number of virtual tasks performed, and increasing virtual communication among PRASA’s personnel
- Developing—in collaboration with labor unions—a *Plan for Exposure Control on Return to Work*, which establishes prevention and control policies to manage confirmed cases or symptomatic personnel, and security measures specific to site types (e.g., plants, commercial agencies, lab), amongst other things.

1.6.3 Customer Demographic Challenges

1.6.3.1 Population decline

For over a decade, Puerto Rico has faced an economic crisis that has caused severe hardships on its residents. This difficult economic landscape, underpinned by years of negative economic growth, has resulted in increased poverty levels, population decline, and reduced labor participation rates, all of which have negatively impacted PRASA’s finances. This situation has been exacerbated by recent natural disaster events, which have accelerated population out-migration.

The decrease in population and economic growth has resulted in a corresponding decrease in billed water consumption. Between FY2015 and FY2019, the island’s population decreased by 9.1%.³² This corresponded with a decline in water consumption of 13% and billing by 2%, despite rate increases implemented in FY2018-FY2020.

1.6.3.2 Rate affordability

Affordability of service is an important concern for all utilities. The rate structure in place needs to balance between adequate cost recovery and minimizing financial burden on all customer classes. For this reason, one of the measures recommended is to perform a comprehensive cost of service and rate structure design study to ensure PRASA has an optimal rate structure in place.

1.6.4 Regulatory Challenge

1.6.4.1 Environmental Regulations

Water utilities, such as PRASA, are highly regulated by several local and federal entities to ensure the protection of consumers’ health and the environment. Implementing projects to comply with these regulations requires a high level of investment and operating costs, which must be balanced with funding availability and affordable rates.

The Authority is currently under a Consent Decree with the U.S. Environmental Protection Agency (USEPA) and the Department of Justice (DOJ) and a Transactional Agreement with the Department of Health (DOH). These agreements require the Authority to take certain actions, including the execution of certain projects based on a prioritization system.

Additional details on the consent decree can be found in the Appendix.

³² The 2020 Fiscal Plan incorporates the macroeconomic and demographic projections developed for and presented in the 2020 Commonwealth Fiscal Plan certified by the FOMB on May 27, 2020.



1.6.5 Financing Challenges

1.6.5.1 Access to FEMA funding

Recovery funds from FEMA are essential for short-term system quality to restore the System after hurricanes, with damages estimated at a total of \$769 million. PRASA is currently working with FEMA to expedite the process of the damage evaluation and funds disbursements to restore the System.

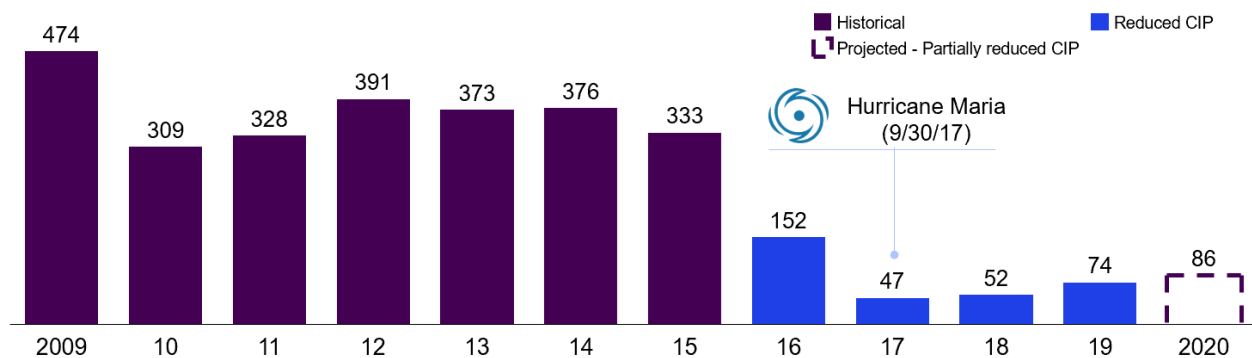
To date, the Authority has received \$139M in reimbursements directly related to Emergency Works, and is expecting \$43M in FY2021. Regarding Emergency and Permanent works, the Authority is currently working with FEMA and COR3 on an award strategy which will result in a recovery budget amount for all eligible permanent work.

The Authority is also developing scopes of work and cost estimates for infrastructure projects resulting from the January earthquakes. Additionally, the Authority has already incurred or committed \$10M in operational costs related to the January earthquakes.

1.6.5.2 Inability to access the capital markets

PRASA's inability to access short-term and long-term capital markets at reasonable rates to meet its borrowing needs has required it to self-fund its CIP. This limited its ability to finance a full CIP portfolio from 2016 to 2019. Capital disbursements averaged only \$81 million per year during this time compared to the 2005 to 2016 average of approximately \$400 million, as shown in Exhibit 1-8.

EXHIBIT 1-8: CAPITAL IMPROVEMENT PROGRAM FUNDING (FY2009-FY2019, IN \$' MILLIONS)



2 Pre-Measures Financial Results

The Pre-Measures Financial Results considers the Authority’s current financial situation and assumes the Authority will continue its current state of operations without implementing any new additional measures to increase revenues, reduce expenses, or modify existing debt service obligations. The Pre-Measures Financial Results reflects the Authority’s financial needs if it were to cover all of its current obligations under a status-quo situation. The Pre-Measures Financial Results do not include measures completed as a part of past Fiscal Plans nor new measures to improve financial situation.

The main assumptions used to determine the projections for the four components of PRASA’s financial and operational model—revenues, expenses, CIP and financing and debt service—are explained throughout this Section.

2.1 Main Assumptions

PRASA’s Pre-Measures Financial Results presented herein reflect the best projections of future results pre-measures based on (i) PRASA’s current financial situation and (ii) the following general assumptions:

- Service rates as approved in 2013 not including additional rate adjustments required by the Oversight Board already implemented in FY2018-FY2020 and future projected adjustments
- Current level of expenses increased by inflation, excluding impact from unknown, extraordinary circumstances
- Current contractual debt service, including the benefit of the federal debt reprogramming completed on July 26, 2019
- Capital Improvement Program as approved by PRASA’s Governing Board on February 25, 2020 (Resolution 3154)
- Macroeconomic projections provided by the Oversight Board

A summary of some specific assumptions used to develop the 6-year Pre-Measures Financial Results are included in Table 2-1.



TABLE 2-1: SPECIFIC ASSUMPTIONS TO DEVELOP THE FISCAL PLAN

Revenues	<ul style="list-style-type: none"> • Billings: Residential, Commercial and Government billings are projected based on macroeconomic and demographic indicators.³³ Industrial billing is projected based on real GNP macroeconomic indicators.³⁴ • Collections: <ul style="list-style-type: none"> ○ FY2021: Projected a partial recovery of uncollected FY2020 revenues as a result of public policy measures taken in response to COVID-19; projecting a recovery in collections to 96% for residential, commercial, and industrial accounts, and 91% for government accounts by January 2021³⁵ ○ After FY2021: Projected collections of 96% for residential, commercial, and industrial and 92% for government accounts in FY2022, which gradually increases to 95% by FY2025 ○ Deferred collections: Projected recovery of uncollected revenues in FY2020 (i.e., payments not received during the pandemic) due to COVID-19 is estimated at 85% over a 9-month period in FY2021.
Expenses	<ul style="list-style-type: none"> • Payroll and related: Based on average cost per FTE as of May 2020, and including assumption that headcount increases to 4,700 by FY2021 • Electricity: Based on FY2020 preliminary consumption projections and electricity rates projections as provided by PREPA on June 12, 2020, ranging from 22.2 to 23.8 cents per kWh during the Fiscal Plan period • Other expenses: Projected based on historical representative costs and increased by associated inflation rate
Capital Improvement Program	<ul style="list-style-type: none"> • Emergency/permanent works: Estimated cost was based on preliminary assessment of damages from the Hurricanes Maria and Irma to PRASA's infrastructure, assuming 90% of federal funds from FEMA for such projects after insurance proceeds are applied • Compliance Projects: Based on current agreements with USEPA and DOH • Renewal and replacement: Estimated based on identified funds
Contractual Debt Service	<ul style="list-style-type: none"> • Debt Service: Projected based on current debt service as per amortization tables, reflecting the benefit of the completed federal debt reprogramming, and excluding debt service on PFC Superaqueduct debt and the GDB Debt Recovery Authority Loan

³³ The 2020 Fiscal Plan incorporates the macroeconomic and demographic projections developed for and presented in the 2020 Commonwealth Fiscal Plan certified by the FOMB on May 27, 2020.

³⁴ *Ibid.*

³⁵ Act 39-2020; Executive Orders 2020-023 and 2020-038

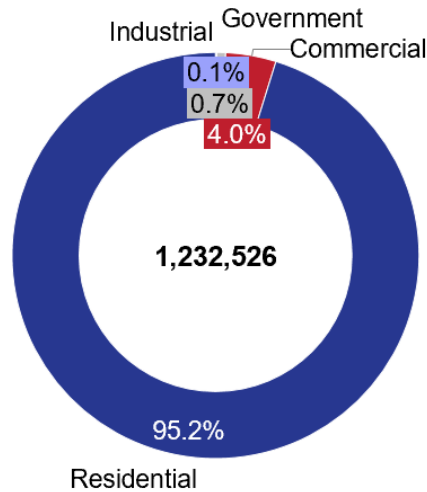


2.2 Revenues

2.2.1 Customers and Revenue Base

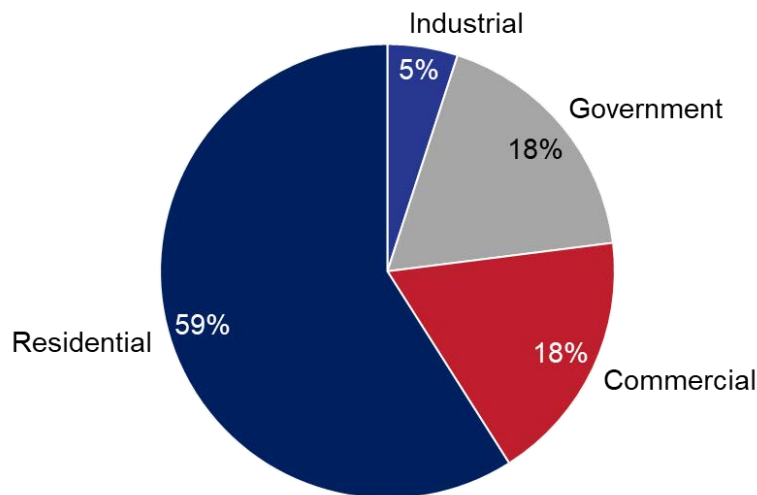
As of June 30, 2019, PRASA had 1,232,526 active accounts, of which 95% were Residential accounts. Residential customers account for 59% of the Authority’s revenues. Exhibit 2-1 provides a breakdown of customers by category.

EXHIBIT 2-1: FY2019 CUSTOMER BREAKDOWN BY CATEGORY



However, the share of total revenues attributable to non-residential accounts is expected to gradually increase as higher annual rate adjustments projected in this Fiscal Plan are applied to these customers classes. The billings by customer type during FY2019 is presented in Exhibit 2-2.

EXHIBIT 2-2: FY2019 REVENUE BREAKDOWN BY CUSTOMER CATEGORY



2.2.2 Service Revenue

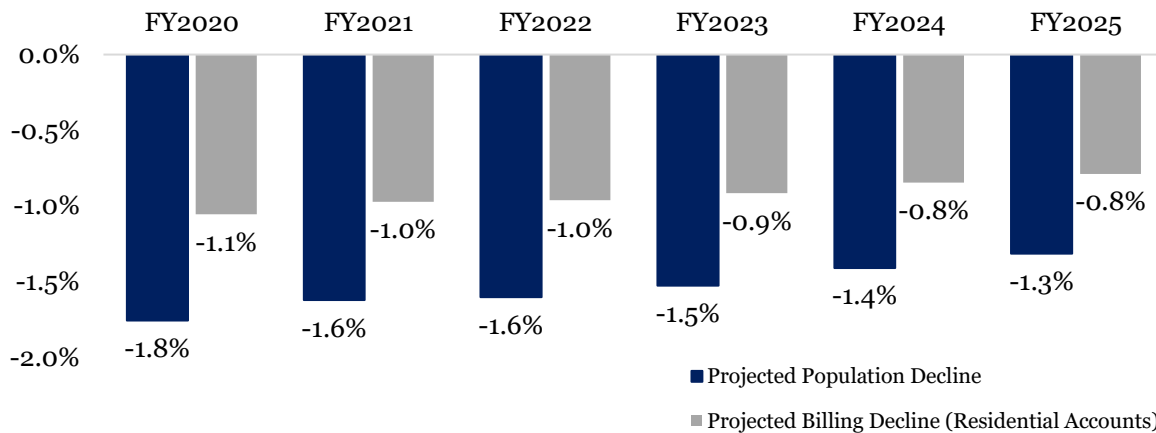
The Authority’s service revenues (base fee and service charges) are derived from water and wastewater service billings and are presented net of current subsidies (i.e., PAN, TANF, ASES and Public Housing), and are a product of the number of active accounts and monthly consumption per account. Service revenue projections in this Fiscal Plan start off from FY2020’s actual billings as of February 2020, and are shown prior to any rate adjustments implemented after FY2018.

2.2.2.1 Billing Trend

Since the 2017 Hurricanes, revenue projections have been materially reduced as a result of declines in population, water consumption, and overall levels of economic activity in Puerto Rico. Among these factors, the main driver behind the downward trend in revenues is the sustained decline in population. In FY2020, revenue estimates were further adjusted downward to reflect the actual and projected impact of Government imposed actions (e.g., “lockdown” measures) that were taken to mitigate the spread of COVID-19.³⁶

Exhibit 2-3 illustrates the projected population decline as well as the expected reduction in billings.

EXHIBIT 2-3: RESIDENTIAL ACCOUNTS TREND

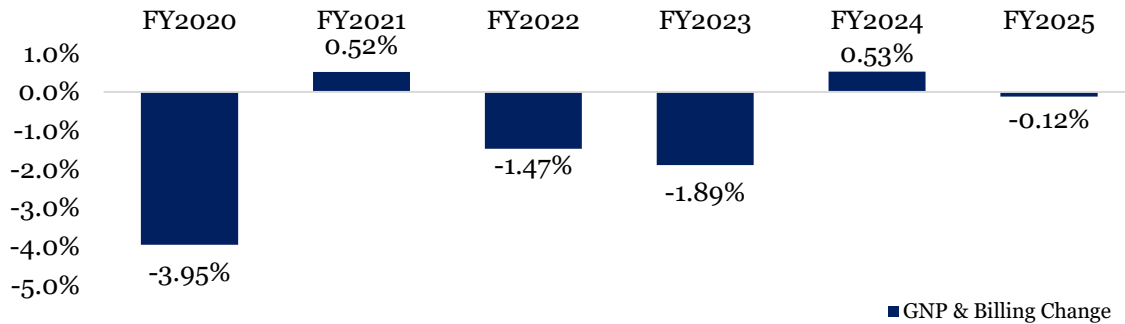


Billings for Industrial accounts are projected using the nominal Gross National Product (GNP) forecast as included in Exhibit 2-4.

³⁶ The Authority recognizes the COVID-19 pandemic may have an impact on water consumption, billings, and collections, and is subject to variability and error, nonetheless it was calculated using best available information.



EXHIBIT 2-4: INDUSTRIAL ACCOUNTS AND NOMINAL GNP GROWTH RATES



2.2.2.2 Collections Rate

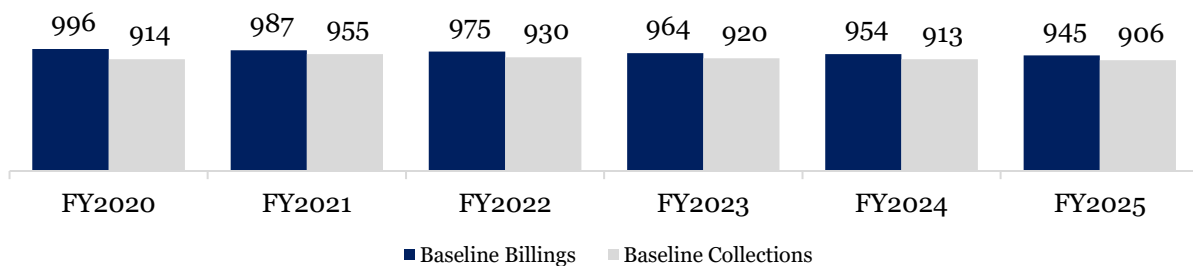
Collection rates across all customer segments have been revised based on actual collections from FY2020 to reflect the impact of the COVID-19 pandemic, using available information as of May 31, 2020. The collections assumptions incorporate the impact of lower collections due to economic hardship and suspending service disconnections during the crisis (considered a key activity when attempting recovery of outstanding balances). PRASA expects partial recovery of uncollected revenues from FY2020 due to the impact of COVID-19, in the first half of FY2021. Starting in January 2021, PRASA expects to return to a 96% collections rate for residential, commercial, and industrial accounts and remain at that level through FY2025. For government accounts, PRASA is projecting a 91% collections rate starting in January 2021, increasing by 1% each fiscal year thereafter and reaching 95% by FY2025.

PRASA has also seen a significant increase in its outstanding receivables from billed consumption since the pandemic started in late February. As of May 31, 2020, PRASA reported that actual collections were ~\$60 million lower than their year-to-date budget projections. Accounting for this lower collections percentage and other ancillary factors, PRASA is anticipating collecting 85% of deferred collections from April 2020 and onwards during the first 9 months of FY2021.

2.2.2.3 Projected Service Revenues

Based on the assumption included above, PRASA’s projected service revenues and collections are presented in Exhibit 2-5.

EXHIBIT 2-5: PRE-MEASURES BILLINGS AND COLLECTIONS (IN \$' MILLIONS)



2.2.3 *Miscellaneous Income*

Miscellaneous income includes revenues received mainly from interest income and Developers' Contributions.³⁷ Based on historical information, miscellaneous income is projected at \$2 million per year during the Fiscal Plan period.

2.2.4 *Insurance Proceeds*

Insurance Proceeds for FY2020 includes \$50 million received on account of business interruption (BI) losses as a result of Hurricane Maria in 2017. Insurance proceeds associated with revenue loss are considered operating revenues pursuant to the MAT.

2.2.5 *Summary of Project Pre-Measures Revenues*

Table 2-2 summarizes projected revenues for the fiscal plan period, presented on cash basis.

TABLE 2-2: PRE-MEASURES PROJECTED REVENUES (IN \$' MILLIONS)

<i>in \$ Millions</i>	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY20/25
Service Collections	893	951	923	912	902	893	5,474
Insurance Proceeds/BI	50	-	-	-	-	-	50
Miscellaneous income	2	2	2	2	2	2	12
Total Revenues	945	953	925	914	904	895	5,536

Accumulated impact from rate adjustments implemented in January 2018, July 2018 and July 2019 are not included in the pre-measures financial results. Implemented and projected rate adjustments are included in Chapter 3 under new revenue enhancement measures.

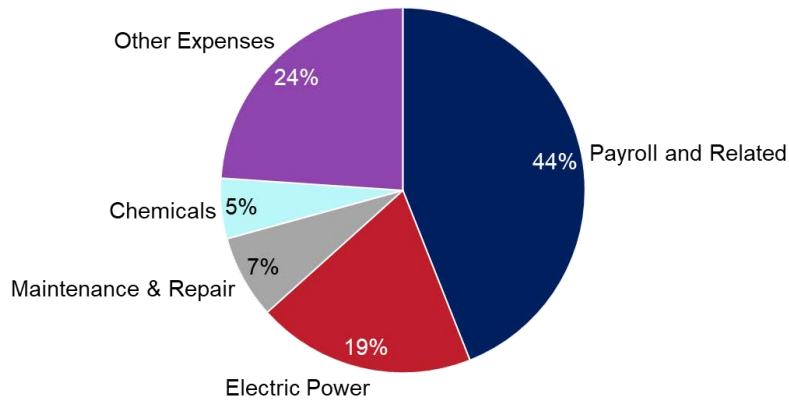
2.3 Expenses

Exhibit 2-6 provides a percentage breakdown of expense by category. Approximately two thirds of PRASA's expenses are made up of payroll and electricity costs. When adding maintenance & repair and chemicals, these four aforementioned categories represent 76% of total expenses. Other expenses consist largely of costs directly related to operations, including rentals, security services, insurance, billings and collections related costs, water purchase, sludge disposal, and water transport, among others.

³⁷ Fees paid by developers to connect their projects to the Authority's water and/or sewer pipelines



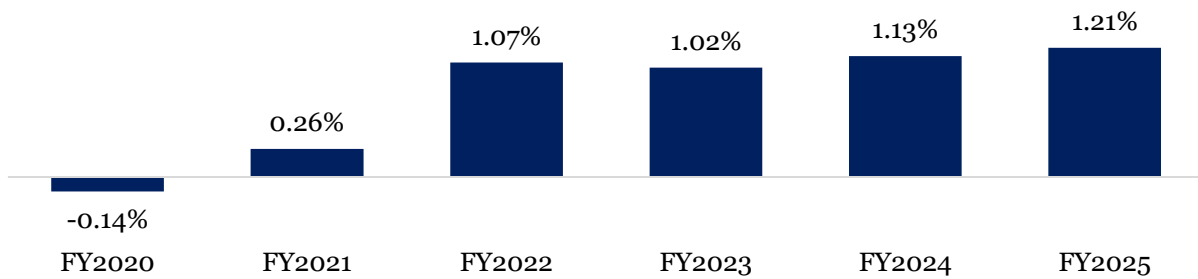
EXHIBIT 2-6: EXPENSE BREAKDOWN BY CATEGORY, %



For the pre-measures financial results most of the expenses were increased year-over-year to account for inflation. However, PRASA used different assumptions for both payroll and benefits and electricity expenses, which are further explained below.

Inflation rates used to project expenses are included in Exhibit 2-7.

EXHIBIT 2-7: PROJECTED INFLATION RATE



2.3.1 Payroll and Related

PRASA’s largest expense category, representing almost 45% of its annual budget, is Payroll and related. This includes labor costs and benefits, such as healthcare and pension obligations, and is presented net of the labor expense portion capitalized to projects (estimated at 3.7% of total operational expenses³⁸ starting in FY2021).

The following main assumptions are applied:

- Headcount of 4,600 for FY2020 and 4,700 for each year thereafter.
- Implementation of Act 26-2017, including the following change in benefits:

³⁸ Source: PJ Sun LLC Report on Overhead Capitalization



- Maximum overtime factor of 1.5 times³⁹
- Reduction of holidays
- 30 days of vacation and 18 days of sick leave per year in accordance to Act 176-2019
- Healthcare plan without changes from the FY2020 coverage and benefits, increased by healthcare inflation each year thereafter.
- Christmas Bonus payment of \$600 per employee per year.
- Pension costs paid through “PayGo” based on the projections provided by the Government Employees Retirement System (ERS).
- Healthcare plan costs are subject to specific inflation.

2.3.2 Electricity

PRASA’s electricity cost represents the second largest expense in its budget and is highly sensitive to fluctuations in electricity rates, which are set by PREPA, and subject to Puerto Rico Energy Bureau (PREB) regulatory oversight. To illustrate, a ±\$0.01 variation in the cost per kWh represents approximately \$6.5M per year in PRASA’s annual electricity cost.

The expected cost of electricity is based on projected rates applicable to PRASA during the Fiscal Plan period, as provided by PREPA.

Electricity consumption is presented based on current level of usage, prior to the implementation of any additional savings measures.

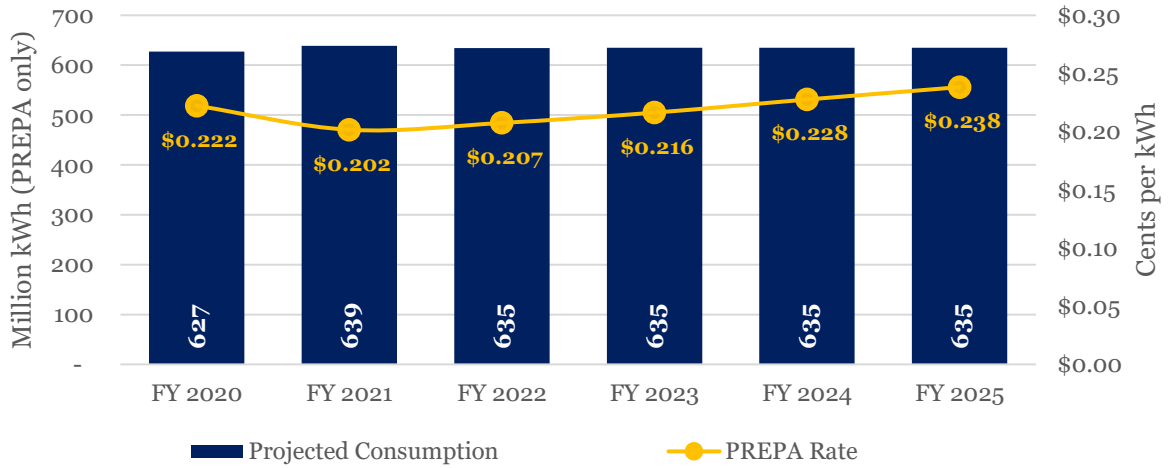
PRASA has entered into PPA agreements that generate electricity at a cost of \$0.15 per kWh. Currently, PRASA consumes 11M kWh produced through such PPAs, approximately enough to cover ~2% of its total annual consumption.

Exhibit 2-8 below includes the projected electricity rates supplied by PREPA and PRASA’s annual consumption for the Fiscal Plan period. As seen below, rates are projected to drop from FY2021 to FY2022 to a value of \$0.222 per kWh and then increase to \$0.238 per kWh by FY2025.

³⁹ Prior to Act 26-2017, maximum overtime factor was 2.5 times



EXHIBIT 2-8: PROJECTED ELECTRICITY COSTS AND CONSUMPTION (PRE-MEASURE)



2.3.3 Maintenance and Repair

At almost \$60 million per year, maintenance and repair costs represent PRASA’s third largest expense category. The maintenance cost includes only external contractor spend for both corrective and preventive maintenance and incremental costs of complying with the Sewer System Operation and Maintenance Program (“SSOMP”), as required by the USEPA. An increase in this expense category is projected to cover System needs from deferring required repair and maintenance of the assets due to: (i) lack of funds and (ii) redirection of efforts and funding to address service recovery and continuity following natural disasters and the COVID-19 pandemic.

For FY2022 and subsequent years, PRASA has included an annual increase for this category based on the projected average annual inflation rate of 1.11%.

2.3.4 Chemicals

PRASA’s chemical expense includes costs for chlorine, coagulants, flocculants, and other chemicals required to properly treat water and wastewater. This expense is projected based on the requirements for treatment and disinfection at PRASA’s treatment plants and wells, which is necessary to comply with environmental standards set by federal and local agencies (e.g., USEPA Clean Water Act).

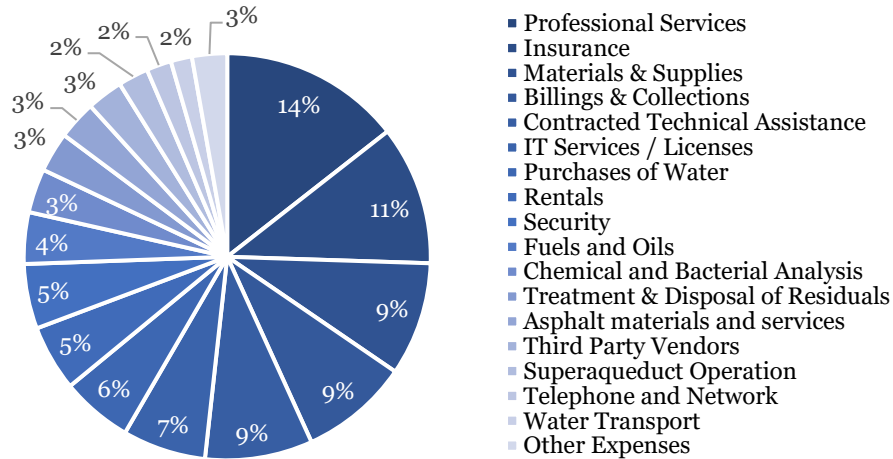
PRASA used FY2020 as a base to project future costs, and further adjusted FY2021 costs based on actual identified needs. For FY2022 and subsequent years, the Authority has included an annual increase for this category based on the projected inflation rate.

2.3.5 Other Expenses

This expense category includes all the Operating Expenses not covered in the prior categories and are mostly being projected to increase at the inflation rate. Exhibit 2-9 included below presents the breakdown for the Other Expenses category.



EXHIBIT 2-9: OTHER EXPENSES BREAKDOWN (FY2020)



2.3.6 Summary of Projected Post-Measures Expenses

Total operating expenses during the Fiscal Plan projected period are summarized in Table 2-3.

TABLE 2-3: PRE-MEASURES PROJECTED EXPENSES (IN \$ MILLIONS)

<i>in \$Millions</i>	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 20/25
Payroll and Related	328	329	330	330	331	332	1,980
Electric Power	141	131	133	139	146	153	843
Maintenance & Repair	54	57	58	58	59	60	345
Chemicals	39	40	40	41	41	42	242
Other Expenses	174	181	177	179	181	183	1,076
FEMA Reimbursement	(7)	(43)	-	-	-	-	(50)
Capitalized Expenses	(7)	(26)	(27)	(28)	(28)	(28)	(144)
Operating Expenses, Net	721	668	711	720	730	741	4,291

2.4 Capital Improvement Program

One of the most critical priorities for the Authority is the continuity of its CIP projects. The CIP aims to maintain, modernize and simplify the System to achieve operational efficiency, protect public health and safeguard environmental quality to ensure compliance with all regulatory requirements, including the 2015 USEPA Consent Decree and the 2006 Drinking Water Settlement Agreement. After the 2017 Hurricanes, the CIP was adjusted to comply with these objectives and other critical priorities, such as System recovery & resiliency and NRW reduction. Moreover, the CIP aims to improve and maintain the water and wastewater infrastructure at a level that supports commercial and industrial activity.

The Pre-Measures Financial Results do not include any expected bond issuance or external financing for the CIP. Instead, the CIP is expected to be financed exclusively through self-operating revenues and federal funds. Excluding its day-to-day operational and interest expenses,



the CIP represents the Authority's greatest financial obligation over the Fiscal Plan Period (~\$1.7B).

Projects included in the CIP cover major capital improvements in all five regions (Metro, North, South, East, and West) and island-wide System improvement measures, such as integration of technological advancements, telemetry implementation, and general renewal and replacement projects.

2.4.1 CIP Phases

After a project has been developed to the point that it has a clear project charter, which formalizes its requirement and existence, the CIP construction projects are implemented through phases, as illustrated in Exhibit 2-10.

EXHIBIT 2-10: CIP PHASES & ACTIVITIES



2.4.2 CIP Cost Components

Costs to the owner associated with the construction of facilities include the initial capital costs, planning, permitting, design, other expenses related and inherent to construction, operational, and maintenance costs.

The CIP also makes an allowance for contingencies, or unexpected costs occurring during construction. This contingency amount may be included within each cost item or as a single category of construction contingency. The amount of contingency is based on industry guidelines, historical experience, and complexity of the project. Those amounts not spent for construction can be released near the end of the project, be used for additional project elements, or reassigned to other projects in a program.

To budget for all of the required activities necessary to execute construction work, PRASA uses a 1.6 contingency and overheads factor, which means that on average, a project will need to budget for its estimated construction plus an additional 60% for overheads and contingency cost. This does not necessarily mean that all projects will need to budget for an additional 60%, as each project is evaluated on its specific characteristics and complexities.

PRASA's CIP projects are classified into the following categories and descriptions:

- **Emergency/Permanent Works:** Projects to repair the infrastructure impacted by Hurricanes Irma and María;
- **Renewal and Replacement (R&R):** Projects aimed at renewing or replacing aging infrastructure at or near the end of its useful life (e.g., pipelines, pumps, motors, etc.);
- **Compliance (Mandatory/Non-mandatory):** Projects required by agreements—including USEPA Consent Decree, PRDOH Drinking Water Settlement Agreement, civil actions, administrative orders, court orders, and other mandatory projects—or that would be included in future agreements if not performed;
- **Quality:** Projects aimed at increasing the quality of the water and wastewater service provided to customers;



- **Fleet and IT:** Replacement of vehicles in PRASA’s fleet and improvement of IT infrastructure;
- **Optimization and Emergencies:** Projects to increase efficiency and infrastructure emergencies and contingencies;
- **Safety and Growth:** Projects to allow for System growth and increased security at PRASA’s facilities.

A clear, objective project prioritization process is key to identifying critical projects across the CIP portfolio, to ensure the most important projects are given priority and completed first. Clearly defining a scoring criteria for all projects is standard practice across water utilities.

Currently, PRASA does not have a prioritization methodology except for mandatory projects. PRASA must establish a methodology for all projects in the PRASA’s 10-year Master Plan (expected completion date in 2021). The implementation schedule of future long-term projects must then be subject to the prioritization system and availability of funds.

2.4.3 Emergency and Permanent works

Emergency and permanent works are projects necessary to repair the infrastructure impacted by the 2017 Hurricanes. FEMA defines emergency work as repairs and replacements that address immediate threats to public health and safety. Permanent work restores or repairs a facility to its pre-disaster design and function.

FEMA and the state/territory government recipients (COR3) will work with PRASA to formulate disaster-related damage into emergency work projects and reach agreements on the eligible scopes of work (SOW) for all permanent work projects.

2.4.4 Renewal and Replacement

PRASA must rehabilitate and replace its assets to maintain and improve its current levels of infrastructure performance (i.e., service levels). Operating assets beyond their expected useful life run the risk of excessive breaks and leaks, lower service quality, and higher operating costs associated with more frequent repair and maintenance.

Pipes (i.e., water and wastewater), facilities (plants, pump stations, reservoirs, intakes, tanks), and other assets require annual investments to ensure that desired service and performance levels are met. Utilities must also budget for replacement infrastructure prior to the end of its useful life. Nevertheless, without access to capital markets at reasonable rates, PRASA is required to set the amount of renewal and replacement projects below desired levels to a level fundable through operating revenues.

2.4.5 Mandatory Projects

On September 15, 2017, the DOJ filed a consent decree (the “2015 USEPA Consent Decree”) executed among USEPA, PRASA and the Government. Negotiations leading to the execution of the 2015 USEPA Consent Decree were commenced by PRASA in order to mitigate the high CIP costs mandated by prior Consent Decrees. Despite being in material compliance with the CIP requirements of the prior Consent Decrees, PRASA began discussions with the DOJ, on behalf of USEPA and PRDOH, seeking to amend such Consent Decrees. The resulting 2015 USEPA Consent Decree realigned the cost of CIP mandatory projects and activities with the Authority’s current financial condition and economic prospects, while maintaining compliance with environmental requirements and regulations.



The revisions to the 2015 USEPA Consent Decree include the following:

- Elimination of certain projects included in prior Consent Decrees deemed unnecessary or certified completed
- Reduction of annual capital expenditure levels for mandated projects, based on a new comprehensive and holistic prioritization system (the “Prioritization System”)
- Completion of a series of scheduled high priority, mandatory projects, referred to as the “Base List”

In addition, PRASA is currently in negotiations with PRDOH to modify the existing 2006 Drinking Water Settlement Agreement. The modifications are expected to include: (i) An update of PRASA’s facilities; (ii) the removal of completed projects and/or requirements included in the agreement; (iii) the acceptance and the implementation of the Prioritization System and the Base List; and (iv) the inclusion of scheduled mandatory projects under the Base List.

Through the application of the Prioritization System, PRASA has established the relative priority of all CIP projects required under the 2015 USEPA Consent Decree and the 2006 Drinking Water Settlement Agreement (excluding “Base List” projects), thus objectively allocating the Authority’s limited financial resources. This prioritization system can be found in Exhibit 2-11.

EXHIBIT 2-11: PRASA SCORING CRITERIA FOR MANDATORY PROJECTS

Weight	Category	Description
40%	Regulatory Compliance	<ul style="list-style-type: none"> ▪ Effect that a given project would have on compliance-related issues ▪ Scores assigned based on the historical compliance records for each facility
30%	Quality of Service and Reliability	<ul style="list-style-type: none"> ▪ Ability of a project to address service areas with existing water deficits ▪ Scores assigned based on average day demand and/or maximum day demand deficits
20%	Operational Efficiency Improvements	<ul style="list-style-type: none"> ▪ Effect that a given project will have on operational system efficiency ▪ Scores assigned based on the anticipated operational savings incurred or the need to replace elements of the water system before their useful life expires
10%	Population Impacted by a project	<ul style="list-style-type: none"> ▪ Effect that a project will positively impact the population ▪ Scores assigned based on total # of expected customers to be impacted by project

2.4.6 Project Execution and Metrics

The work needed to complete projects from their planning phase to completion requires both internal and external personnel resources.

PRASA issued an RFP to secure an engineering firm to serve as the Project Management Consortium (PMC) for efficient and timely execution of the CIP. Negotiations with PMC are ongoing and should result in signed contracts by July or August of 2020.



To track its CIP execution PRASA must establish metrics by project and must monitor compliance and execution through a CIP tracking tool. Moreover, PRASA is in the process of implementing a new module in SAP to be able to review and update its current tracking tool to ensure compliance with the expected execution schedules and costs.

Typically, the construction phase includes the highest potential for deviations in cost and time. To maintain control of these, PRASA keeps monthly track of two industry standard KPIs:

- **Cost Performance Index (CPI):** Measures the cost efficiency of resources committed to the project, evaluating whether the project will be completed on budget.
- **Schedule Performance Index (SPI):** Measures the relationship between the executed work versus the planned work, assessing whether the project will be completed on time.

The established metrics will allow for high level planning and management of the CIP, while the tracking tool will allow for detailed tracking of CIP compliance against what was planned.

2.4.7 CIP Pre-Measures Projections

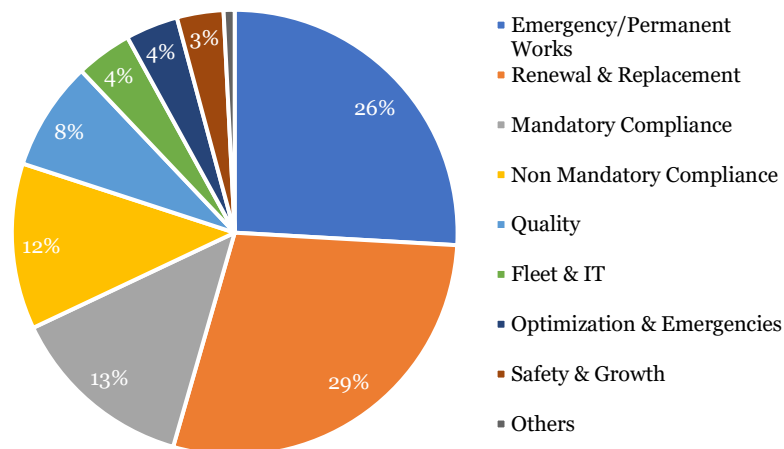
The projected CIP during the Fiscal Plan period is included in Table 2-4.

TABLE 2-4: PROJECTED CIP (IN \$' MILLIONS)

<i>in \$'Millions</i>	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY20/25
Emergency/Permanent Works	33	125	141	41	44	57	441
Renewal & Replacement	50	98	83	80	81	96	487
Mandatory Compliance	7	44	76	62	24	17	230
Non Mandatory Compliance	6	29	72	62	25	12	205
Quality	0	14	40	41	25	15	135
Fleet & IT	19	14	9	9	9	9	70
Optimization & Emergencies	0	15	15	14	16	5	65
Safety & Growth	4	5	14	13	13	9	58
Others	1	4	4	1	2	3	14
Total	119	349	454	323	238	222	1,704

Exhibit 2-12 illustrates that ~80% of the CIP is related to emergency and permanent works, compliance, and renewal and replacement works.

EXHIBIT 2-12: CIP BREAKDOWN BY CATEGORY (FY2020-FY2025)



The pre-measures CIP is assumed to be fully funded by PRASA’s operating revenues except for insurance and FEMA proceeds.⁴⁰ The assumptions applied to determine the amount of emergency and permanent works must be updated once more information become available,

A summary of the projected required sources for the CIP by year is included in Table 2-5 below:

TABLE 2-5: REQUIRED SOURCES FOR CIP (IN \$’ MILLIONS)

<i>in \$ Millions</i>	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY20/25
Operating Revenues	86	223	312	282	194	166	1,263
FEMA Reimbursements	30	113	127	37	39	51	397
PRASA Cost Share	3	13	14	4	4	6	44
Total	119	349	454	323	238	222	1,704

2.5 Debt Service and Other Deposits Required Under the Master Agreement of Trust (MAT)

The debt service included in the pre-measures financial results reflect PRASA’s current debt structure and contractual obligations, incorporating the benefit from the Federal Debt reprogramming as further detailed in Chapter 3.

2.5.1 MAT Payment Priorities

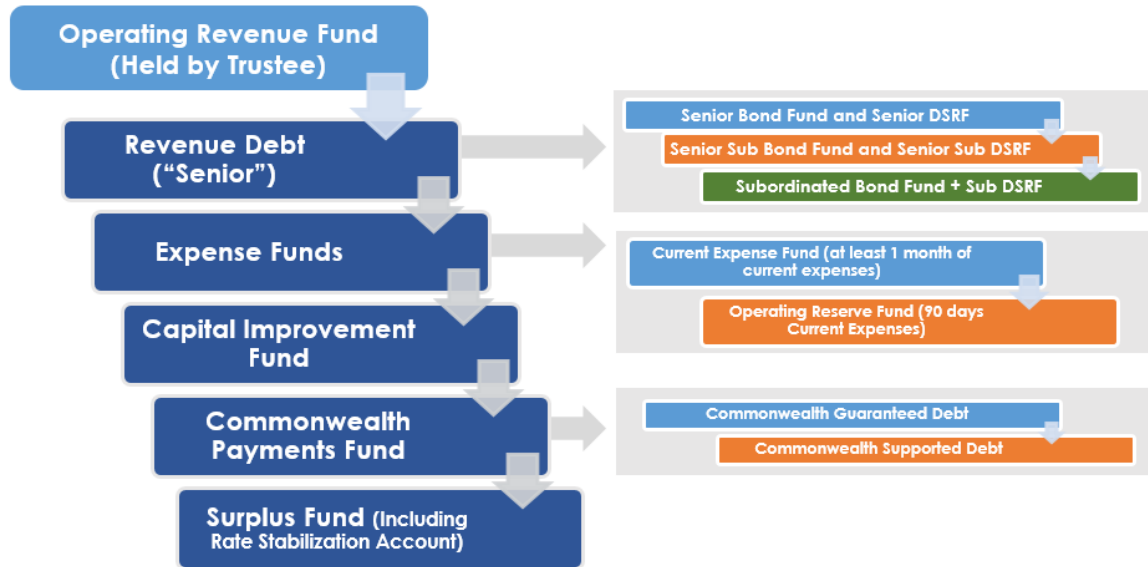
The MAT, executed in 2008 and as subsequently amended, establishes the way that PRASA’s revenues are to be applied to the payment of debts and the lawful priorities for payment thereof.

The payment priority of the different levels of debt service and other required deposits is presented in Exhibit 2-13.

⁴⁰ Assumed at 90% of the total Emergency/Permanent works line; the remaining 10% is considered a cost share taken on by PRASA, funded from operating revenues



EXHIBIT 2-13: MAT PAYMENT PRIORITIES



The level of payment priority is established by Article V of the MAT, which is outlined below.

- **Revenue Debt:** Currently, around 95% of the PRASA’s debt consists of Senior and Senior Subordinated Debt—including Other System Indebtedness—which is paid from operating revenues prior to the payment of current expenses.
 - Senior and Senior Subordinated debt service includes payments related to the Senior Bonds issued in 2008 and 2012 and to the federal debt reprogramming.
 - The 2008 Senior Bonds are also entitled to the benefits of a Debt Service Reserve of \$90.6 million which is currently funded in full. The 2012 Senior Bonds and the federal debt do not have a debt service reserve fund requirement.
- **Expense Funds:** Accounts for two funds for supporting expenses:
 - **Current Expense Fund:** On a monthly basis, after the payment of debt service, the Trustee shall deposit in the Current Expense Fund, at PRASA’s request, at least one month and up to three months (90 days) worth of current expense capital.
 - **Operating Reserve Fund:** PRASA is required to maintain an Operating Reserve Fund equal to three months of current expenses. Currently, the Authority is in the process of cash funding the reserve during a five-year period (FY2017-2021), depositing monthly 1/60th of the requirement.⁴¹ The Authority is currently in compliance with its obligations.
- **Capital Improvement Fund:** The amount to be deposited in the Capital Improvement Fund is defined in PRASA’s budget and is used to pay for the CIP from the Authority’s revenues. Under the pre-measures financial results, the total amount required for the CIP (net of FEMA proceeds) is expected to be funded solely by operating revenues.

⁴¹ Stipulated in the Sixth Supplemental Agreement of Trust



- **Commonwealth Payments Fund:** This fund includes monies available for two additional debt categories. Failure to make the payments or required deposits to the Commonwealth Payments Fund is not an event of default under the MAT. This fund includes money available for two additional debt categories:
 - **Commonwealth Guaranteed Indebtedness (CGI):** Includes debt issued by PRASA and guaranteed by the Government through June 30, 2020.⁴² Only the 2008 Revenue Refunding Bonds—issued by PRASA on March 2008 to refinance the balance of its 1995 Commonwealth Guaranteed Bonds—fall under this category. After the federal debt reprogramming, the balance was elevated to senior status and no longer benefits from the CGI.
 - **Government Supported Obligations (CSO):** Includes a portion of the 2011 Series B Bonds issued by PFC on December 2011 to refinance certain outstanding debt. It includes the cost of the North Coast Superaqueduct, one of PRASA’s main assets. PRASA agreed with the Government to pay the debt service on a portion of this debt (\$162.7 million) if sufficient funds were available for such purposes. However, this is not a general obligation of PRASA and is payable solely from legislative appropriations. PRASA has been unable to make such payments in recent years because no funds have been appropriated by the Government for such payments. As stipulated in the MAT, if PRASA is unable to make payments on the PFC debt, the obligation is not cumulative and therefore does not carry forward to future periods.
- **Surplus Fund:** After making all the deposits to the funds set forth above and any other fund required by the MAT, any excess cash can be deposited into the Surplus Fund to be used at the discretion of PRASA. As part of the Surplus Fund, a Rate Stabilization Fund (RSA) can be created to cover any operating needs in the future and minimize the need for rate increases.

2.5.2 Contractual Debt Service

PRASA’s debt as of December 31, 2019, recognized under the MAT is presented in Table 2-6.

⁴² Per Act 45-1994 as amended by Act 95-2015



TABLE 2-6: OUTSTANDING DEBT AS OF DECEMBER 31, 2019 (IN \$' MILLIONS)⁴³

			Balance as of 12/31/19		FY2021 Debt Service	
Payable from Gross Revenues	Senior	2008 Revenue Bonds	\$1,248.8	\$4,135.4	\$90.6	\$250.8
		2012 Revenue Bonds	\$1,888.9		\$140.2	
		State Revolving Fund	\$595.7		\$10.0	
		Rural Development Bonds	\$402.0		\$10.0	
Payable from Net Revenues	Commonwealth Guaranteed Indebtedness	2008 Ref Bonds – Series A&B		\$284.8		\$26.0
			\$4,420.2			\$276.7

PRASA has an outstanding loan with principal balance of approximately \$57 million owed to the GDB Debt Recovery Authority, a newly created public instrumentality that assumed the loans previously held by GDB following the restructuring of its obligations under Title VI of PROMESA (the “GDB-DRA Loan”). Based on PRASA’s projected financial condition, no debt service payments are included in this Fiscal Plan to cover debt service on the GDB-DRA Loan, which is solely payable from available Surplus Funds not otherwise deposited in the Rate Stabilization Fund.

The Authority’s projected debt service during the Fiscal Plan period is included in Table 2-7:

TABLE 2-7: PROJECTED DEBT SERVICE (IN \$' MILLIONS)

<i>in \$ Millions</i>	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY20/25
Operating Reserve Fund	32	33	5	2	3	3	78
Capital Improvement Fund	97	178	279	271	198	171	1,194
Total Other Deposits	129	211	284	273	201	174	1,272

⁴³ Excludes debt issued by PFC (included in PRASA’s Financial Statements), which is payable from legislative appropriations. The PFC debt is subject to ongoing bankruptcy proceedings of the Commonwealth under Title III of PROMESA. PRASA can pay such debt if surplus funds are available and not otherwise deposited in the Rate Stabilization Account.



2.5.3 Other Deposits Required by the MAT

Deposits that are projected to fund the base CIP a portion of PRASA’s CIP and the Operating Reserve Fund required under the MAT, which vary based on the projected level of operating expenses, are included in Table 2-8:

TABLE 2-8: OTHER DEPOSITS REQUIRED BY THE MAT (IN \$’ MILLIONS)

<i>in \$ Millions</i>	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY20/25
Operating Reserve Fund	32	33	2	2	2	2	73
Capital Improvement Fund	97	178	279	271	198	171	1,194
Total Other Deposits	129	211	281	273	200	173	1,267

Projected deposits to the Operating Reserve Fund assume that PRASA does not make any withdrawals throughout the forecasted period. Deposits to the Capital Improvement Fund reflect the amount required to be deposited in such fund from operating revenues, after beginning balances available for the CIP and projected federal funds sources are discounted from the CIP needs.

2.6 Pre-Measures Financial Results Summary

Table 2-9 describes the major assumptions discussed above and used for the development of the Pre-Measures Financial Results. Of note is the pre-measure financial results for federal debt reprogramming. This is the only measure performed as part of a previous fiscal plan that has been incorporated into the pre-measure financial results; all other completed measures will be incorporated in the post-measure financial results.

TABLE 2-9: SUMMARY OF THE PRE-MEASURES FINANCIALS ASSUMPTIONS

Assumptions for Revenues and Expenses Projections			Assumptions for CIP and Debt Service Projections		
Revenues	Average Annual Billing Reduction (Residential) FY2021/FY2025	-0.9%	CIP	Average Annual CIP (\$M)	\$284
	Average Collections Rate (Residential) after FY2021	96%		CIP Funding	Additional Annual Federal Funds
	Average Rate Increase (Residential)	2.5%	New CIP Financing		No
Expenses	Headcount by FY 2021	4,700	Debt Service	Debt Service Payments	Contractual debt as reprogrammed
	Pension Cost	Pay Go			
	Average Electricity Cost (PREPA) per kWh FY2021/FY2025	\$0.22			
	Average Expenses Growth (inflation) FY2021/FY2025	0.94%			
	Capitalization Rate FY2021/FY2025	3.7%			



Table 2-10 included below presents a summary of the deficit resulting from the pre-measures financial results for FY2020-FY2025. A total of \$1.7 billion of funding or financing is needed for the 6-year period, of which \$1.2 billion or 80% is to be used to finance the Authority’s CIP, assuming no external funding or federal funds beyond the forecast FEMA funds.

TABLE 2-10: PRE-MEASURES FINANCIAL PROJECTIONS RESULTS (IN \$’ MILLIONS)

<i>in \$’Millions</i>	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY20/25
Authority Revenues	945	953	925	914	904	895	5,536
Senior Debt Service	(251)	(251)	(251)	(251)	(251)	(251)	(1,505)
Net Operating Expenses	(721)	(668)	(711)	(720)	(730)	(741)	(4,291)
Operating Reserve Fund	(32)	(33)	(5)	(2)	(3)	(3)	(78)
Capital Improvement Fund	(97)	(178)	(279)	(271)	(198)	(171)	(1,195)
Commonwealth Payment Fund	(21)	(26)	(28)	(28)	(32)	(32)	(167)
Pre-Measures Financial Result	(178)	(203)	(348)	(359)	(310)	(303)	(1,700)

PRASA, in collaboration with the Oversight Board, has identified several measures described in the following chapter, which will reduce the projected financial need.



3 Fiscal Plan Measures and Post-Measures Financial Results

Eliminating structural deficits in each fiscal year and achieving financial sustainability will ensure PRASA can provide safe, reliable, and affordable water and wastewater services to Puerto Rico. Achieving a balanced budget will also place PRASA on a path to access short-term and long-term capital markets at reasonable rates to fund critical capital expenditures.

PRASA should not focus solely on resolving fiscal challenges, but also address the operational deficiencies that threaten the safety, reliability, and overall performance of the System. Previous efforts have relied on rate increases and debt reprogramming to improve fiscal standing while offering little in operational improvements. Persistent operational underperformance will continue to challenge PRASA’s ability to remain fiscally sustainable and place an unnecessary burden on the well-being of the Puerto Rico’s population and economy, both of which depend on reliable quality water supply.

This chapter summarizes a set of recently implemented and new measures across revenue enhancement, cost savings, and debt service reduction. In addition to measures that will improve PRASA’s financial position, several enabling measures have been identified that will help to improve operational performance but may not result in direct or immediate financial improvements.

If successfully implemented and maintained, these measures would both improve PRASA’s financial situation—including reducing the fiscal deficit in its Pre-Measures Financial Results—and improve operational performance.

3.1 Recently Implemented Measures

This section summarizes the measures implemented by PRASA in past fiscal plan periods and their impact on the Authority’s finances.

3.1.1.1 *Implemented Measures Summary*

The measures presented in this chapter reflect only those that have been implemented since FY2018 and have had a material qualitative or quantitative impact on the Authority:

1. **Rate adjustments:** implemented scheduled rate increases of between 2.5-4.5% in FY2018-FY2020 for all customer classes
2. **Government account collections:** collected past due government receivables and improved government collections in future periods
3. **Recovery of disconnection cost:** instituted a \$15 disconnection fee
4. **Leaks adjustment policy:** Customer’s bills adjustments for hidden leaks will be limited to the wastewater portion of the bill
5. **Pre-retirement program:** saved on payroll by incentivizing early retirement for eligible employees
6. **Electricity savings:** saved on energy through efficiency measures and installation of renewable distributed generation (“DG”)



7. **Debt service reprogramming:** consolidated and restructured SRF and RD loans as senior debt and with more favorable repayment terms for PRASA

These measures have had \$471 million in positive financial impact from FY2018-FY2020. Table 3-1 summarizes the benefits of implemented measures.

TABLE 3-1: FINANCIAL RESULTS OF IMPLEMENTED MEASURES (FY2018-FY2020, IN \$' MILLIONS)

<i>In \$' Millions</i>	FY 2018	FY 2019	FY 2020 (Projected)	FY 2018 to 2020
Revenue Enhancement Initiatives				
Rate Adjustments	13.3	60.3	72.1	145.7
Government Account Collections	55.9	72.6	18.0	146.5
Disconnection Cost Recovery	-	1.8	1.0	2.8
Leaks Adjustment Policy	-	1.1	1.9	3.0
Cost Saving Initiatives				
Pre-Retirement Program	-	5.9	7.4	13.3
Electricity	0.5	0.7	0.9	2.1
Debt Service Reduction				
Federal Debt Restructuring	55.6	32.4	39.7	127.7
PFC Debt	9.0	9.0	9.0	27.0
Total	134.3	183.8	150.0	468.1

The benefit from these implemented measures in FY2020-FY2025, except for the federal debt reprogramming, are included in the post-measure financial results.⁴⁴

PRASA failed to implement four of the measures identified in the 2019 Fiscal Plan:

- Christmas bonus elimination
- Uniform healthcare
- Metering and commercial service optimization
- Physical water loss reduction

All of these measures have been reintroduced in the 2020 Fiscal Plan and will be discussed in the new measures section

3.1.2 **Implemented Revenue Enhancing Measures**

PRASA has implemented a series of measures to increase its revenues while attempting to minimize negative impacts on service affordability.

⁴⁴ Federal debt reprogramming benefits have been incorporated into the pre-measures financial results.



3.1.2.1 Rate adjustments

In 2017, the Oversight Board required PRASA to implement moderate, but consistent multi-year rate adjustments to ensure its costs are fully covered by service revenues. The increase was meant to address years of failure to perform an industry standard practice of raising rates to cover increasing costs.

Rate adjustments collected (FY2018 through FY2020)
\$146 million

PRASA’s current rate structure, set by its Governing Board, provides for an annual rate adjustment of up to 4.5% and not more than 25% through the use of an “Annual Adjustment Coefficient”.⁴⁵

PRASA has an approved moderate rate adjustment schedule for five years between FY2018-FY2022, summarized in Table 3-2. The first three scheduled rate adjustments were implemented as planned, on January 1, 2018, July 1, 2018 and July 1, 2019, respectively. The next scheduled rate adjustment is expected to be implemented on July 1, 2020. For residential customers with low to average water consumption, these adjustments represents a \$0.60-1.15 increase to their monthly bills.⁴⁶

TABLE 3-2: IMPLEMENTED & PROJECTED RATE INCREASES

Type of Client	Jan 1, 2018 (FY2018)	July 1, 2018 (FY2019)	July 1, 2019 (FY2020)	July 1, 2020 (FY2021)	July 1, 2021 (FY2022)
Residential	2.5%	2.5%	2.5%	2.5%	2.5%
Commercial	2.8%	2.8%	2.8%	2.8%	2.8%
Industrial	3.5%	3.5%	3.5%	3.5%	3.5%
Government	4.5%	4.5%	4.5%	4.5%	4.5%



Additional rate adjustments are forthcoming which are discussed in Section 3.2.1.1.

3.1.2.2 Government Account Collections Improvement

The Authority has four different government client categories: (i) central government agencies, paid from the general fund; (ii) public corporations, generally paid from their own revenues; (iii) municipalities; and (iv) Federal agencies. During the last several years, PRASA has worked jointly with the Government to reconcile balances of accounts receivables and speed up the collection process. As a result of these efforts, PRASA’s collections rate for government

Government accounts recovered receivables (FY2018 through FY2020)
\$147 million

⁴⁵ PRASA’s rate structure was adopted through the public hearing process of Act 21 and approved by the Governing Board pursuant to Resolution No. 2794 on July 3, 2013 and as amended by Resolution No. 2825. It was approved on December 18, 2013.

⁴⁶ 46% of residential customers consume ≤10m³ (low consumption); average water use is estimated at ~14m³



accounts in FY2018 and FY2019 was 94.5% and over 100%, respectively; it recovered \$55.9 million of Government accounts receivables in FY2018 and \$72.6 million in Government and public corporations accounts receivables in FY2019.⁴⁷ As of January 31, 2020, the Authority was able to collect all outstanding balances from FY2019 still owed by central government agencies covered by the general fund. Furthermore, after the collection of approximately \$18 million in aged accounts receivables, only \$8 million in outstanding receivables remain from public corporations as of March 31, 2020.

3.1.2.3 Disconnection Cost Recovery

To deter delinquency among its customer base and recover the cost related to service disconnection, PRASA implemented a \$15 disconnection fee in January 2018 to recover costs associated with disconnecting customers for non-payment.

Disconnection Fee Costs
billed (FY2018 through
FY2020)

\$2.8 million

Since its implementation, the revenue generated from the disconnection fee has been approximately \$100,000 per month. This benefit is expected to decrease over time as customer behavior changes in response to the introduction of the fee.

3.1.2.4 Leaks Adjustment Policy⁴⁸

PRASA revised its Customer Service regulations in 2018 to adjust its policy for hidden leaks adjustments.⁴⁹ When a hidden leak is detected, an adjustment is no longer applied to the sewer portion of customers' bills as the water has already been consumed or lost and PRASA has already incurred its production cost. Since its implementation, the hidden leaks adjustment measure has saved the Authority almost \$3M when compared to FY2017 adjustments.

Hidden Leaks
Adjustments (FY2018
through FY2020)

\$3.0 million

3.1.3 Cost Saving Implemented Measures

PRASA has implemented several cost reduction measures, including various measures focused on the two largest expense categories: payroll and electricity costs.

⁴⁷ High collection rates were partly driven by arrears

⁴⁸ Customer's bills adjustments for hidden leaks will be limited to the wastewater portion of the bill

⁴⁹ Regulation 8901 for the use of water and wastewater services.



3.1.3.1 Pre-retirement Program

As a result of the fiscal crisis, the Government created a Voluntary Pre-Retirement Program in FY2016.⁵⁰ The program provides incentives to certain eligible government employees to voluntarily retire early from service.⁵¹ The program was implemented to reduce the workforce progressively and voluntarily, allowing employees to retire with an orderly transition process. The resulting vacant positions created from the retirement program must be closed.

Pre-Retirement Program Savings (FY2018 through FY2020)

\$13 million

As of June 30, 2019, over 350 employees had retired under the program, generating an estimated average annual savings for PRASA of \$5 million per year and an estimated cumulative impact \$13.3 million through June 30, 2020.

3.1.3.2 Electricity

PRASA has implemented an Energy Management Program to help manage and reduce its electricity expense. PRASA implemented internal measures at a regional level to reduce electricity consumption, and supply side projects through Power Purchase Agreements (PPAs) to reduce overall electricity cost:

Electricity Savings from PPAs (FY2018 through FY2020)

\$2 million

- **Regional Measures:** PRASA has implemented a regional level commitment to execute energy conservation measures throughout its facilities. Since FY2013, PRASA reduced its electricity consumption by over 13%, from over 740 million kWh to under 640 million kWh through regional measures.
- **PPAs:** PRASA operates 10 facilities using solar energy, consuming approximately 11.5 million kWh at a \$0.15 per kWh blended rate, which is less than rates charged by the grid. Annual savings from these PPAs total approximately \$1 million. Facilities currently under PPA and their average annual solar energy production are shown in Table 3-3

TABLE 3-3: FACILITIES WITH SOLAR ENERGY

Facility	Million kWh
Yunque WTP	3.43
Arecibo WTP	1.71
Canóvanas WWTP	1.71
Guaynabo WTP	0.86
Aguada WWTP	0.86

⁵⁰ Enacted by Act 211-2015 on December 8, 2015.

⁵¹ Incentives include: 60% payment of average salary, payout of unused vacation and sick days (as per Act 66-2014) and maintaining their health insurance coverage for a term of two years. These incentives are applicable until eligible employee meets the requirement for full retirement.



Facility	Million kWh
Humacao WWTP	0.86
Cayey WWTP	0.86
Culebra WWTP	0.49
Vieques WWTP	0.33
Arcadia WPS	0.19
Total kWh	11.30

Additional reductions in electricity cost as a result of future PPAs measures are included in Section 3.2.2.6: *Electricity Cost Reduction*.

3.1.4 Debt Service Reduction

PRASA has implemented two debt service reduction measures: federal debt reprogramming and Commonwealth supported obligations (PFC debt).

3.1.4.1 Federal Debt Reprogramming

Historically, the Authority has received federal funds for its CIP through loans from the Clean Water State Revolving Fund Programs (CWSRF) and the Drinking Water State Revolving Fund Programs (DWSRF)—collectively known as the “SRFs”—and bonds or loans from the USDA Rural Development (RD) Program.

Debt service relief through
forbearance agreements
(FY2018 through FY2020)

\$128 million

On June 30, 2016, the Authority executed a Forbearance Agreement with the DOH and EQB (administrators of the DWSRF and CWSRF, respectively). PRASA was also granted a short-term forbearance period under the USDA RD loans. This allowed for deferral of payments due from 2016 through 2019, subject to certain conditions and partial payments.

On July 26, 2019, the Authority and PRFAFAA consummated definitive agreements (the “Agreements”) that reprogrammed the Authority’s debt obligations under the SRF and RD loans, which totaled approximately \$1 billion in federal debt. The Agreements were approved by the Oversight Board pursuant to Section 207 of PROMESA on July 3. The benefits of the Agreements to PRASA and the Government include the termination of existing Commonwealth guarantees over the Federal Debt—thus reducing overall Government contingent liabilities by approximately \$1 billion—and the consolidation of all the reprogrammed debt into two SRF loans and one RD loan. The restructured Federal Debt was designated as “Other System Indebtedness” in parity with other senior debt under PRASA’s MAT.

A summary of the modification to the Federal Debt terms is summarized in Exhibit 3-1



EXHIBIT 3-1: MODIFICATIONS TO FEDERAL DEBT TERMS

	Prior to debt modification	After debt modification	Projected Impact (FY21-FY31)
SRF			
Balance	\$581M	\$596M (including new loans)	
Amortization term	20 years	30 years	\$260M
Interest rate	2%	0% for years 1-10/1% thereafter	
Annual debt service	\$36M	\$10M for years 1-10/\$27M thereafter	
RD			
Balance (incl. accrued interests)	\$392M	\$392M	
Amortization term	40 years	40 years	\$120M
Interest rate	4% (average	2%	
Annual debt service	\$24M	\$10M for years 1-10/\$17M thereafter	

The debt service relief from FY2018-FY2020 was approximately \$128 million. The federal debt reprogramming resulted in substantial benefits for PRASA, the Government and the people of Puerto Rico, including:

- Debt service relief to the Authority of \$40 million per year and approximately \$380 million over the next ten years
- Renewed access to potential sources of funds under Federal programs for infrastructure projects
- Adequate protection of the interests of the Federal agencies
- Accrued interest forgiveness in SRF loans with savings of approximately \$30 million

3.1.4.2 Commonwealth Supported Obligations – PFC Debt

The Authority’s Commonwealth Supported Obligations (CSO), as defined in the MAT, include a portion of the 2011 Series B Bonds issued by PFC on December 2011 to refinance certain outstanding debt. It includes the cost of the North Coast Superaqueduct, one of the main assets owned and operated by the Authority, producing around 100 MGD or approximately 20% of the Authority’s total daily water production. The Authority agreed with the Government to pay the debt service on a portion of the PFC debt (\$162.7 million) if sufficient funds were available for these purposes. However, the Authority has no legal obligation under this debt agreement and such debt is otherwise payable solely from legislative appropriations received from the Government. The Authority has been unable to make such payments in recent years. As provided in the MAT, if the Authority is unable to make this payment, the obligation is not cumulative and therefore does not carry forward to future periods; failure to make the payments or deposits related to this debt is not an event of default under the MAT.

PFC Debt Adjustment
(FY2018 through FY2020
2020)

\$27 million

The Authority is not assuming any payment related to the PFC debt during the Fiscal Plan period. The PFC debt is subject to ongoing bankruptcy proceedings of the Commonwealth under Title III of PROMESA.



3.2 New Measures Summary

There are several measures that PRASA must implement in order to eliminate its fiscal deficit, maintain financial stability, and improve operational performance. This will ensure PRASA's long-term sustainability and safe, reliable, and affordable service that the people of Puerto Rico deserve. Three broad categories of measures must be incorporated in the Post-Measures Financial Results:

1. **Revenue Enhancement Measures:** measures ensuring adequate cost recovery such as rate adjustments and improvements in billing accuracy for PRASA to continue operating an efficient system
2. **Expense Reduction and New Financing Measures:** measures to reduce PRASA's overall spend through labor and operational optimization across all spend categories as well as securing federal funding to help finance the CIP
3. **Enabling Measures:** measures without financial impact, but which are important to successful implementation of the Fiscal Plan and help further ingrain principles of long-term financial and operational sustainability throughout the organization

A summary of the expected net benefit for each individual measure within discussed measure category is included in Table 3-8: New Measures Projected Benefit at the end of this chapter.

3.2.1 Revenue Enhancement Measures

PRASA must pursue two major measures directed at increasing revenues:

- **Rate Adjustments:** continue with the scheduled implementation of modest rate increases in both FY2021 and FY2022—consistent with past Fiscal Plans and standard utility practice—and conduct a review of the current rate structure with the aim of ensuring simplicity, affordability, and adequate cost recovery in FY2023 and beyond.
- **Metering and customer service optimization:** reduce commercial water losses and improve customer experience and satisfaction either independently or through a P3 agreement.

3.2.1.1 Rate Adjustments

As discussed in Section 3.1.2.1 PRASA has an approved moderate rate adjustment schedule for five years between FY2018-FY2022. This rate adjustment schedule is summarized in Table 3-2. The final two scheduled rate adjustment are expected to be implemented on July 1, 2020 and July 1, 2021.

To continue delivering reliable, affordable, and safe water and wastewater services without reducing necessary investments in its CIP, PRASA must ensure adequate revenue levels over time through a rate structure redesign. Therefore, PRASA must engage a third-party expert in utility rate design to perform a comprehensive cost of service study and recommend an optimal rate structure aligned with industry standard cost allocation and rate design principles. PRASA must also complete a comprehensive cost of service studies for the System.

Any rate structure review should emphasize the following objectives:

- Optimal cost recovery
- Affordability and protection for vulnerable customers
- Ease of implementation, understanding, and simplicity



- Fairness and equity between and within customer classes
- Incentivizing conservation, including both reduction in peak and average day demands

Finally, PRASA must commit to transparency around rate setting and structuring. Many leading water utilities make information on the frequency of rate setting proceedings, review and approval process, and general justifications for rate increases a matter of public record. Accordingly, PRASA should commit to making this information public starting in FY2021.

Currently, the rate adjustment measure has generated an estimated \$150 million in additional revenues between FY2018-FY2020. For future years, the accumulated projected impact is illustrated in Exhibit 3-2

PRASA expects further revenue growth from rate adjustments beyond FY2022, but the actual rate adjustments will be evident only after the rate redesign process is completed. Though PRASA cannot represent or guarantee what these adjustments will be, the 2020 Fiscal Plan assumes revenues generated from rate adjustments will continue at 2.5% across all customer segments in FY2023-FY2025.

EXHIBIT 3-2: RATE ADJUSTMENT PROJECTED BENEFITS (IN \$' MILLIONS)

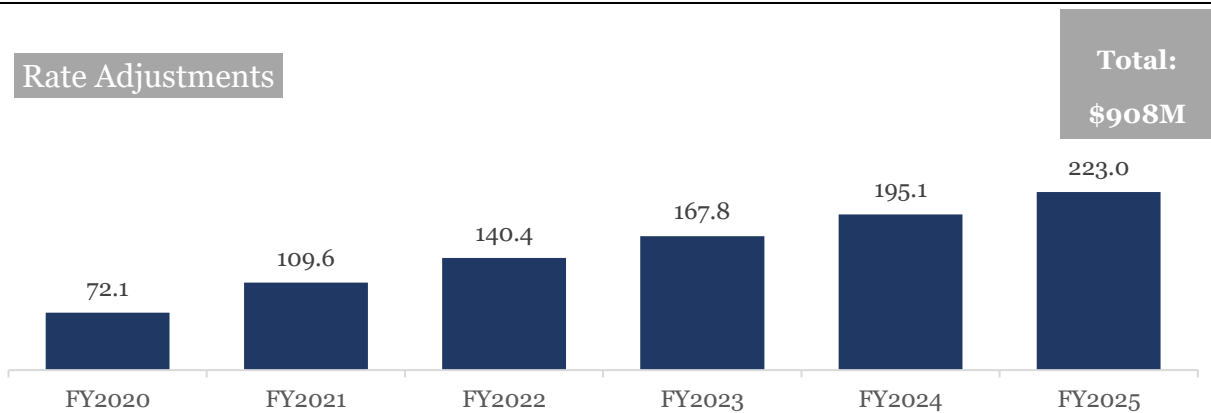


Exhibit 3-3 outlines the key action items for successful and timely delivery of this measure.



EXHIBIT 3-3: ACTION PLAN FOR RATE ADJUSTMENT MEASURE

<u>Action items</u>	<u>Deadline</u>	<u>Owner</u>
Implement FY2021 approved rate adjustments	July 1, 2020	Finance
Complete procurement process for rate design study	December 15, 2020	Finance
Complete comprehensive review of current rate structure	June 30, 2021	Finance
Implement FY2022 approved rate adjustments	July 1, 2021	Finance
Submit proposed revised rate structure for Board approval	July 31, 2021	Finance
Publicize information on proposed rate design changes	October 1, 2021	Finance
Implement revised rate design	July 1, 2022	Finance

3.2.1.2 Metering and customer service optimization

PRASA must work to reduce commercial water losses and improve customer experience and satisfaction. The main objectives of this measure are summarized in Exhibit 3-4.

EXHIBIT 3-4: GOALS FOR METERING & CUSTOMER SERVICE OPTIMIZATION MEASURE



This measure aims to install real-time smart meter technologies and pursue activities that would help decrease commercial water losses and—to a lesser degree—physical water losses. By increasing the accuracy of water meters, PRASA will be able to transition away from estimated commercial losses and achieve a greater level of precision in its measurements.

Moreover, by reducing the uncertainty of the System’s apparent losses, PRASA will be able to recover revenues lost to theft and unmetered usage and determine with greater accuracy the volume of real physical water losses. Ultimately, through this measure, PRASA will be able to



better determine its CIP needs and intelligently address the renewal and replacement of its linear (pipe) assets to reduce real losses.

PRASA must implement this measure either on its own or through a P3 agreement. Potential responsibilities of a private sector partner could be:

1. All customer service activities, including meter readings, collection efforts, operation of commercial offices, addressing service orders, and issuing and distributing monthly invoices
2. Replacement of all PRASA’s water meters with new ultrasonic smart meters and an island-wide Advanced Meter Infrastructure (AMI) which will feed directly into PRASA’s main operating system.

Exhibit 3-5 shows the forecasted financial impact during the plan’s fiscal years if the measure is performed through a P3 agreement. Projections shows a net benefit of \$33 million during the Fiscal Plan period.

However, P3 projects are typically long-term and should be evaluated based on the benefits generated throughout the term of the underlying agreement. This measure, over the proposed 20-year term, is expected to generate net benefits to PRASA, at nominal value, of approximately \$570 million on a fiscal basis—which excludes the avoided capital costs for meter replacement—and approximately \$870 million on a capital basis—which includes the benefit for the avoided capital costs for meter replacement.

As meter replacement ramps up during the first years of the measure, there is a negative impact on PRASA’s financial results from initial payments to the proponent for meter installation and system setup. Starting in FY2023, the net impact turn positive as PRASA begins to generate higher revenues from lower commercial water losses.

EXHIBIT 3-5: EXPECTED BENEFITS FOR METERING AND CUSTOMER SERVICE OPTIMIZATION MEASURE (IN \$’ MILLIONS)

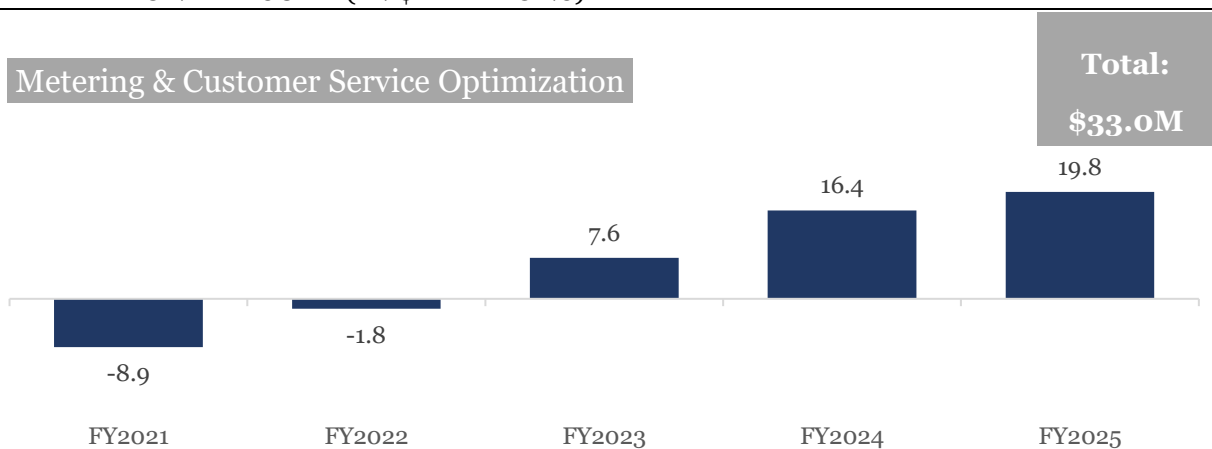


Exhibit 3-6 outlines the key action items for successful and timely delivery of this measure if implemented through a P3 agreement.



EXHIBIT 3-6: ACTION PLAN FOR METERING AND CUSTOMER SERVICE OPTIMIZATION MEASURE

<u>Action items</u>	<u>Deadline</u>	<u>Owner</u>
P3 Committee approval	TBD	VP of Strategic Planning
PRASA Governing Board approval	TBD	VP of Strategic Planning
AAFAP approval	TBD	VP of Strategic Planning
Oversight Board approval	TBD	VP of Strategic Planning

3.2.2 Expense Reduction and New Financing Measures

PRASA must pursue eight major measures to reduce operating and capital expenses:

1. **Chemical expense reduction:** reduce chemical usage and costs through improved inventorying, contracts negotiation, and laminar aeration installation at Carraizo Dam
2. **Pension reform:** improve the financial stability of public employees through reforms that maintain enough funds for employee pension plans and create a defined contribution plan for employees; consistent with the Commonwealth of Puerto Rico’s pension reform measure.
3. **Christmas bonus elimination:** remove the annual end-of-year bonus starting in FY2021
4. **Uniform healthcare:** implement a newly negotiated medical health plan by July 1, 2020
5. **Headcount cap:** limit the Authority’s workforce size to 4,600 while a comprehensive productivity and rightsizing assessment is conducted
6. **Electricity cost reduction:** reduce electricity costs through increased efficiency and distributed generation
7. **Physical water loss reduction:** reduce physical water loss through master meter installation, leaks reduction, and pressure management
8. **Capital delivery optimization:** achieve a more cost-effective way to deliver its CIP. The Oversight Board urges PRASA to onboard a Project Management Consortium (PMC), PRASA also much establish a prioritization criteria for all projects, set up a CIP tracking tool, and monitor KPIs.
9. **New Financing for CIP:** obtain new financing from two federal loan programs: State Resolving Funds (USEPA) and the Rural Development Program (USDA)

3.2.2.1 Chemical Expense Reduction

Chemical spend is PRASA’s fourth largest projected operating expenditure for FY2021 at almost \$40 million. While it is a cost reduction opportunity, it needs to be carefully managed in order to ensure compliance with environmental regulations.



Complicating the matter is the fact that water quality and availability in Puerto Rico are quickly and constantly changing.⁵² Droughts, hurricanes, and climate change have altered water quality and supply, which create challenges for effective chemicals application and optimization. To appropriately understand the impact of raw water quality on the System, monitoring has started at PRASA's three main water reservoirs: La Plata, Carraizo, and Cidra.

In the meantime, PRASA has identified four levers to reduce chemical usage and spend while ensuring high water quality:

- **Chemicals Inventory and application:** PRASA must establish a detailed inventory for chemicals use and application, with the following goals:
 - Improve chemical consumption visualization
 - Increase supplier provision accuracy
 - Detect and prevent unallowed chemical uses
 - Optimize chemical inventory levels
 - Control and monitor chemical consumption by region
- **Coagulant and Flocculant cost reduction:** PRASA must issue an RFP to consolidate purchase of coagulants and flocculants for all its plants. The RFP is expected to be issued by July 2020. The centralized RFP process is expected to maximize opportunities for price reductions through bulk purchasing. Furthermore, the single supplier must provide guidance to PRASA for the adequate type of chemicals, thereby further increasing efficiency in chemicals application.
- **Liquid Chlorine Cost Reduction:** A liquid chlorine bidding process must be pursued to provide for island-wide requirements for all of PRASA's facilities based on various levels of concentration and sizing. The bulk bid must be started in the first half of FY2021 with the expectation that bulk negotiations will lead to pricing optimization.
- **Water Reservoir Laminar Aeration**⁵³: Currently 65% of the raw water supply is from dams. Nevertheless, the eutrophic state of most of the dams (18 of 19) limit the water extraction to 35%-50% of their total capacity. Under drought events, the water available falls drastically due to algae concentration. With the reduction of organic waste (e.g., algae) the water treatment plants receiving the raw water will require less chemicals for treatment.

PRASA has already successfully implemented a laminar aeration process in the Toa Vaca reservoir, reducing chemicals consumption on the 3 plants supplied by this reservoir by almost 20-40%. A bid for providing the Carraizo Dam with laminar aeration was issued on June 2, 2020, which is expected to reduce the chemical requirement for Sergio Cuevas WTP by around 20%.⁵⁴

Due to the fact that the bidding process has not been started for coagulants & flocculants and liquid chlorine, there is no current estimated financial impact from these priorities. Financial

⁵² Lugo et al. 2011

⁵³ Laminar aeration injects air (microbubbles) in a laminar ascending flow in slow speed (one feet per second) from the bottom to the top of the reservoir through ceramic diffusers improving the freshwater quality and reducing the harmful algae

⁵⁴ Chemical spending at Sergio Cuevas was ~\$7 million. Savings from aeration approximately \$1-1.5 million per year



impact for laminar aeration is estimated based on historical performance of the same program at the Toa Vaca Reservoir.

Exhibit 3-7 estimates the projected impact for this measure between FY2021-2025.

EXHIBIT 3-7: PROJECTED IMPACT FROM CHEMICAL SAVINGS (IN \$' MILLIONS)

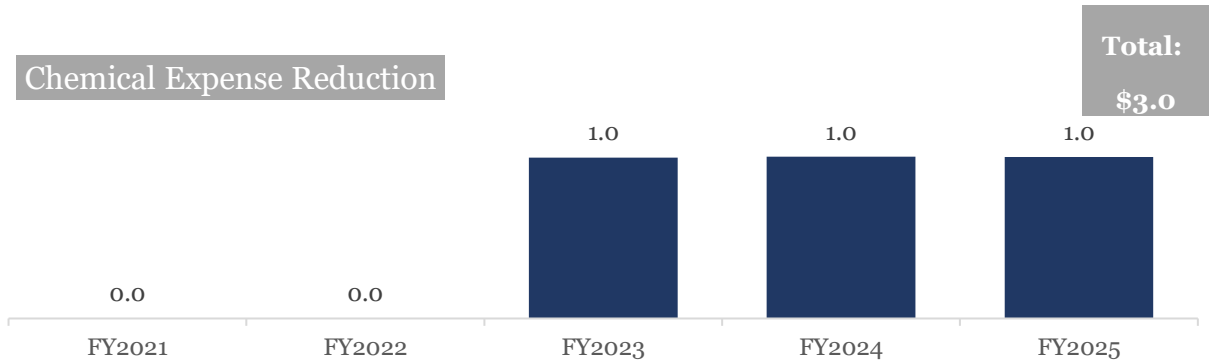


Exhibit 3-8 outlines the key action items for successful and timely delivery of this measure. The action plan also lists several reports and updates required to the Oversight Board.

EXHIBIT 3-8: ACTION PLAN FOR CHEMICAL EXPENSE REDUCTION MEASURE

Action items	Deadline	Owner
Issue consolidated coagulant and flocculant procurement RFP	July 31, 2020	VP of Strategic Planning
Submit construction execution planning and timing for Carraizo Dam to Oversight Board	August 15, 2020	VP of Operations
Submit purchasing strategy report with list of chemicals contracts that will be tendered in first half of FY21	August 31, 2020	VP of Strategic Planning
Submit chemicals inventory program planning and timing to FOMB	October 31, 2020	Purchasing & Logistics
Submit purchasing strategy report with list of chemicals contracts that will be tendered in second half of FY21	November 1, 2020	Purchasing & Logistics

3.2.2.2 Pension Reform

PRASA’s pension reform measure is part of the Commonwealth’s overall measure to progressively restore fiscal health to Puerto Rico while ensuring that adjustments to pension benefits occur in a manner that protects the economic well-being of all retirees. PRASA (in compliance with Act 106-2017) uses the Pay-as-you-Go (“PayGO”) system. PRASA’s pension contributions will be reduced by a maximum of 8.5% depending on participant with no reduction to those with benefits less than \$1,200 per month starting in FY2022 following the Commonwealth’s direction.

Total savings from this measure during the Fiscal Plan period is projected at \$21.0 million as illustrated in Exhibit 3-9 below.



EXHIBIT 3-9: PENSION REFORM SAVINGS (IN \$' MILLIONS)

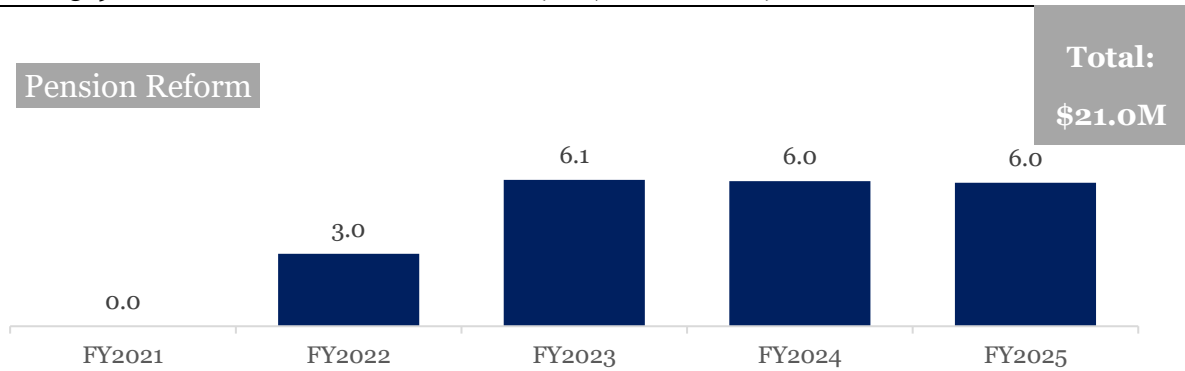


Exhibit 3-10 outlines the key action items for successful and timely delivery of this measure.

EXHIBIT 3-10: ACTION PLAN FOR PENSION REFORM MEASURE

Action items	Deadline	Owner
Implement Pension Reform	January 1, 2022	Commonwealth

3.2.2.3 Christmas Bonus Elimination

In an attempt to reduce cost without impacting personnel PRASA will look to reduce non-salary compensation paid to employees such as Christmas bonuses for both temporary and permanent workers, as well as existing and new hires. The Christmas Bonus program is not to be replaced by another form of annual bonus program.

Total savings from this measure during the fiscal plan period is illustrated in Exhibit 3-11 below.

EXHIBIT 3-11: CHRISTMAS BONUS ELIMINATION SAVINGS (IN \$' MILLIONS)

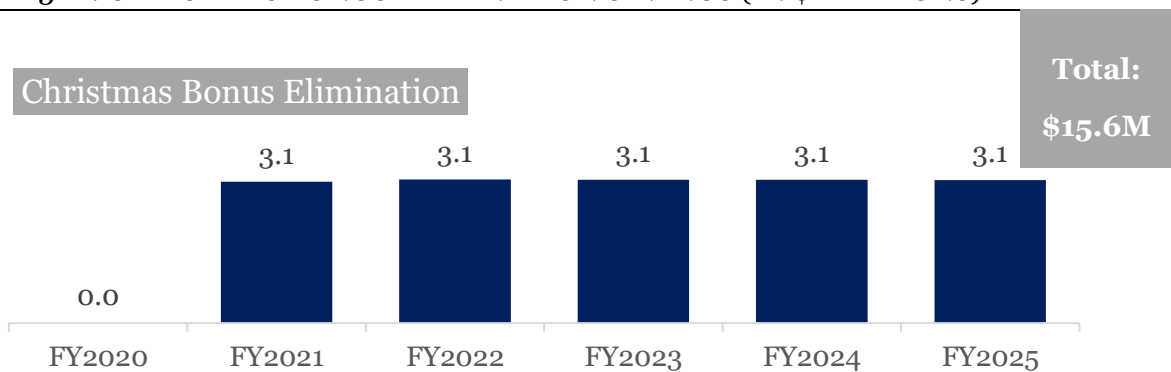


Exhibit 3-12 outlines the key action items for successful and timely delivery of this measure.



EXHIBIT 3-12: ACTION PLAN FOR CHRISTMAS BONUS ELIMINATION MEASURE

Action items	Deadline	Owner
Implement Christmas Bonus Elimination	November 1, 2020	Human Resources & Labor Relations

3.2.2.4 Uniform healthcare

PRASA must sign a new medical health plan agreement that enters into effect on July 1, 2020 in order to lower costs, but not quality in coverage for its employees. PRASA issued an RFP for health plan services in November 2019 with the goal to standardize health insurance contributions so that all regular employees without pre-existing conditions have an average contribution of \$125 per employee per month (lowered from \$495) and regular employees with pre-existing conditions remain at their current contribution level of \$495 in accordance to Commonwealth guidance. On June 1, 2020 awarded the contract for FY2021 to the preferred proponent. The selection of the preferred proposal took in consideration cost savings and minimization of impact on current benefits and service provider availability throughout the Island.

The new contract represents a projected average annual saving of \$2.3 million and total savings of \$11.5 million during the Fiscal Plan period, as illustrated in Exhibit 3-13 below.

EXHIBIT 3-13: UNIFORM HEALTHCARE PROJECTED SAVINGS (IN \$' MILLIONS)

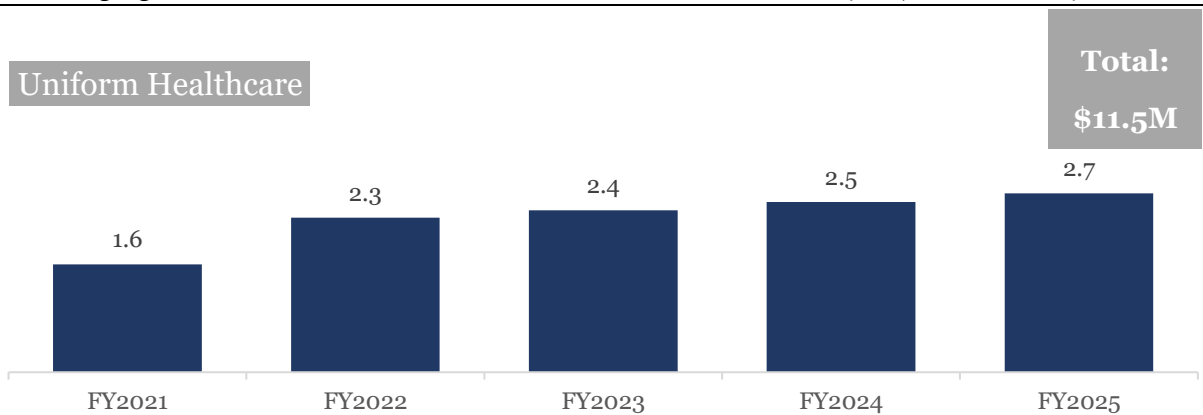


Exhibit 3-14 outlines the key action items for successful and timely delivery of this measure.

EXHIBIT 3-14: ACTION PLAN FOR UNIFORM HEALTHCARE MEASURE

Action items	Deadline	Owner
Implement new medical plan	July 1, 2020	Human Resources & Labor Relations

3.2.2.5 Headcount Cap

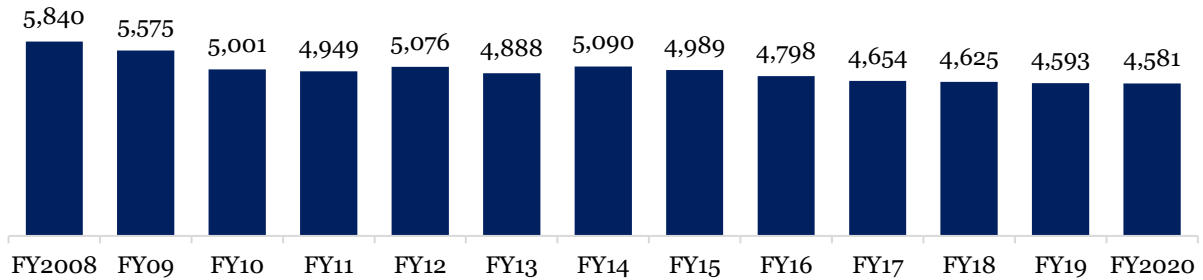
As of May 2020, the Authority's workforce was 4,581, 119 less than its FY2020 target of 4,700 employees. Since FY2008, with the exception of FY2014, the Authority has experienced year-



over-year reductions in headcount and has been unable to reach its target employee headcount, even though funding has been allocated to do so (Exhibit 3-15). More recently, PRASA has operated with fewer than 4,600 employees, experiencing a net reduction of 12 employees from FY2019 to FY2020. PRASA’s most recent labor capacity and productivity assessment was conducted in 2014 and must be revised in order to provide an updated assessment of PRASA’s optimal workforce structure and number.

In FY2020, the Authority used 26% of its labor "net additions" budget – an allocation of funds within previous Fiscal Plans specifically for hiring purposes –to cover costs associated with staff replacement—and to reapportion funding towards other cost categories.

EXHIBIT 3-15: PRASA HEADCOUNT FY2008-FY2019



Given the Authority’s historical year-over-year reductions in headcount, its underspending in “net addition” in FY2020, and the need to conduct an updated labor capacity assessment to provide a better understanding of PRASA’s labor needs, PRASA’s must enforce a headcount cap of 4,600 employees which shall be assumed to remain in place for the 2020 Fiscal Plan period. By capping PRASA’s headcount at 4,600, the 2020 Fiscal Plan allows PRASA to continue its hiring efforts and provides sufficient funding to increase its current workforce by an additional 19 employees. If circumstances are such that PRASA needs additional funds for hiring beyond the 4,600 target, PRASA and the Oversight Board will discuss feasibility, scope, and alignment of potential modifications with the 2020 Fiscal Plan.

Meanwhile, in FY2021, PRASA must conduct an updated labor capacity and productivity assessment aimed at the following:

- determine the adequate personnel resources to operate and maintain PRASA’s System in optimal conditions
- improve recruiting and retention practices
- bring compensation levels in line with the Puerto Rico and U.S. mainland markets

The headcount cap represents a projected average annual reduction in payroll expenditures of \$3.3 million and total reduction of \$16.3 million during the Fiscal Plan period, when compared with PRASA’s original target of 4,700 employees by FY22, as illustrated in Exhibit 3-16. The reduced expenditure in payroll helps PRASA reduce its projected pre-measure operating deficit and focus investments in critical areas for system reliability and safety.



EXHIBIT 3-16: HEADCOUNT CAP PROJECTED SAVINGS (IN \$' MILLIONS)

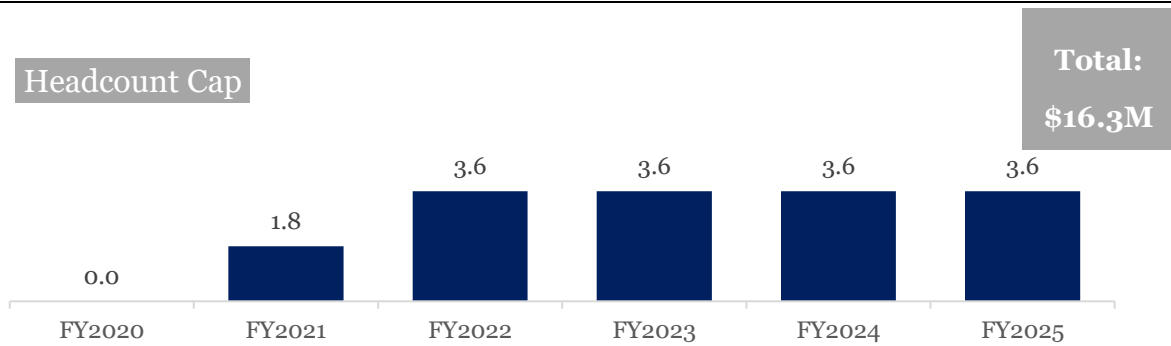


Exhibit 3-17 outlines the key action items for successful and timely delivery of this measure.

EXHIBIT 3-17: ACTION PLAN FOR HEADCOUNT CAP MEASURE

<u>Action items</u>	<u>Deadline</u>	<u>Owner</u>
Implement headcount cap	July 1, 2020	Human Resources & Labor Relations
Complete procurement process for productivity and rightsizing study	October 15, 2020	Human Resources & Labor Relations
Complete comprehensive productivity and rightsizing study	February 28, 2021	Human Resources & Labor Relations
Submit key findings and proposed changes resulting from workforce planning and talent management study to Oversight Board	March 15, 2021	Human Resources & Labor Relations
Discuss findings and proposed changes with Oversight Board	April 1, 2021	Human Resources & Labor Relations

3.2.2.6 Electricity Cost Reduction

PRASA must continue reducing electricity costs and consumption through efficiency measures and distributed generation. Similar to the past measures, reducing its second largest cost must include various non-capital intensive measures:

- Performing further operational improvements focused on conservation measures in its water treatment plants (WTPs) and wastewater treatment plants (WWTPs)
- Leveraging hydraulic modeling analyses and optimization efforts to reduce energy consumption in the water distribution and wastewater collection system (i.e., pump station facilities)
- Providing more flexibility to the System, reducing and optimizing the hours of operation at the facilities
- Identifying energy conservation measures in equipment operation



Through the measures set forth above, PRASA expects to reduce its consumption by almost 16 million kWh by FY2025.

PRASA must also pursue additional PPA measures at 14 new sites to obtain up to 26 million kWh from solar energy at a reduced rate projected at \$0.13 per kWh. The timeline for the new PPAs is included in Table 3-4 below.

TABLE 3-4: NEW PROJECTED PPAS

Facility	Million kWh	Expected by:
Barceloneta WWTP	1.66	FY 2026
Bayamon WWTP	1.64	FY 2024
Mayaguez WWTP	4.96	FY 2025
SuperAqueduct RWPS	4.92	FY 2024
Guayama WWTP	1.64	FY 2024
Fajardo WWTP	1.66	FY 2026
Fajardo WTP & RWPS	1.66	FY 2026
Ponce WWTP	1.65	FY 2025
Utua WWTP	1.00	FY 2026
Hatillo Camuy WWTP	1.00	FY 2026
Arecibo Islote WWTP	1.00	FY 2026
Caguas WWTP	1.17	FY 2026
Carolina WWTP & Torrecillas WWPS	1.65	FY 2025
Santa Isabel WWTP	1.00	FY 2026
Total kWh	26.62	

The actual cost savings from this measure will depend on the cost of electricity produced by PREPA. Based on current projected electricity rates, the financial impact of this measure is illustrated in Exhibit 3-18, with total expected saving of \$13.2 million during the fiscal plan period.

EXHIBIT 3-18: PROJECTED ELECTRICITY COST REDUCTION (IN \$' MILLIONS)

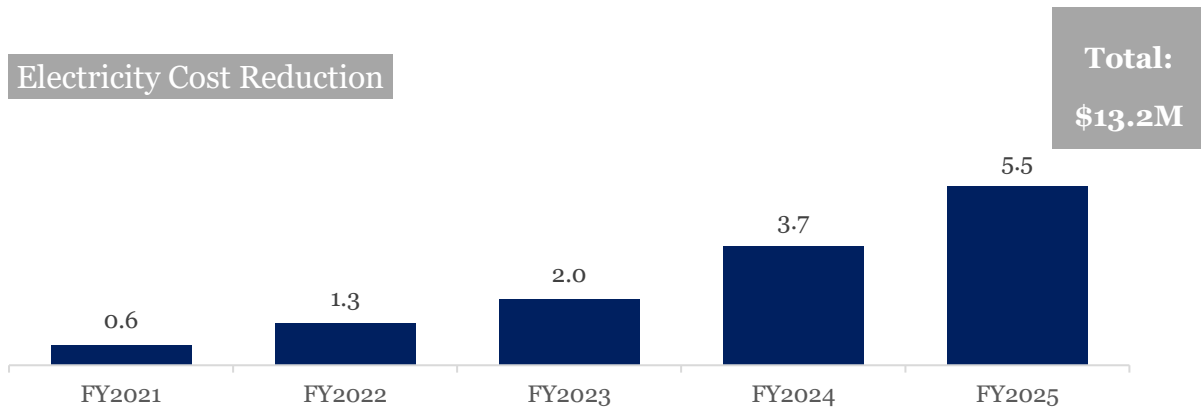


Exhibit 3-19 outlines the key action items for successful and timely delivery of this measure.



EXHIBIT 3-19: ACTION PLAN FOR ELECTRICITY COST REDUCTION MEASURE

<u>Action items</u>	<u>Deadline</u>	<u>Owner</u>
Energy Office to target energy reduction goal in kWh per region and create structured plan	July 31, 2020	VP of Operations
Submit proposed goals and action plan to Oversight Board	August 25, 2020	VP of Operations
Begin monthly tracking of energy reduction across regions	September 15, 2020	VP of Operations

3.2.2.7 Physical Water Loss Reduction

High levels of physical water losses are one of PRASA’s major challenges and it must take steps to reduce it. Physical losses are due to leaks and breaks throughout the System. The water fails to reach the customer and therefore is not billed even though the cost of producing it is incurred. By addressing physical water loss, PRASA can lower production requirements, thus reducing the strain on its infrastructure and lowering electricity and chemical costs. It can also conserve and manage the Island’s water resources more effectively, which will help minimize the need for rationing during drought periods.

PRASA’s Water Recovery Office (WRO) is responsible for guiding the Authority’s three main physical water loss reduction programs:

1. **Master Meters:** accurately measuring water production by the installation of water meters at critical facilities
2. **Pressure Management:** incorporating pressure management best practices across the transmission and distribution network
3. **Leaks Detection and Reduction:** improving identification, prioritization, and resolution of major leaks across PRASA assets

These three measures will address the largest pain points and are central to achieving PRASA’s goal of reducing losses by 41 MGD by FY2025.

3.2.2.7.1 Master Meters Program

Master Meter validation, calibration or replacement will allow PRASA to obtain the most accurate flow (production) data for evaluation of System performance and water balance calculations. Only with accurate production data may the Authority accurately determine the true cost of water production and the losses incurred. The goal of this program is to increase the percentage of the Authority’s water production that is accurately and reliably measured.

Of PRASA’s 113 water treatment plants and ~250 wells, only 58% of the facilities currently provide a measured value of production. PRASA’s goal is to increase the measured water production to 80% by the end of FY2021.

The Master Meter program’s current approach is to visit the top water production facilities and determine whether the current Master Meter complies with the manufacturer specifications and if the value provided is reliable and consistently entered in PRASA’s SCADA system. Meters that do not comply must be either replaced with another technology or moved to a new location at the



facility to ensure compliance. PRASA must contract a third party for meter installation services, including the validation and transfer of water production information to the SCADA system.

3.2.2.7.2 Pressure Management Program

Pressure Management is one of the most basic tools available to address total water losses. Lowering the water pressure within the System will essentially reduce leakage, thereby reducing water production requirements. Most of the Potable Water System Identification (PWSIDs) on the Island operate with a focus on a minimum pressure requirement and not a maximum pressure restriction or limitation, resulting in numerous high pressures areas. This program will allow for the optimization of the pressure for each PWSID through repairs or replacement of equipment and reducing excess pressure events in the system.⁵⁵

Moreover, PRASA must monitor and control pressure on a live basis, a capability it does not currently possess.

3.2.2.7.3 Leaks Reduction Program

Water leaks are one of the main reasons for physical water losses. Leaks can occur on transmission or distribution lines, tanks, and on service connections up to the customer meter. An active leak detection program paired with prompt repair is an essential component for every utility to lower their Non-Revenue Water (NRW) levels. In previous years, PRASA has contracted third parties to perform active leakage detection in certain areas of the system. In the North, Metro and East region alone 2,362 leaks were identified.

PRASA must continue to contract outside services to identify leaks, prioritize underground infrastructure repairs and replacements, and train PRASA teams to perform the work. PRASA has recently procured specialized equipment that must be used to support this initiative, not only in identifying existing undetected leaks, but also in emergency responses to effectively identify impacted transmission and distribution pipelines. The WRO must also collect field data on leak occurrences and guide regional teams to make repairs.

3.2.2.7.4 Physical Water Loss Projected Financial Impact

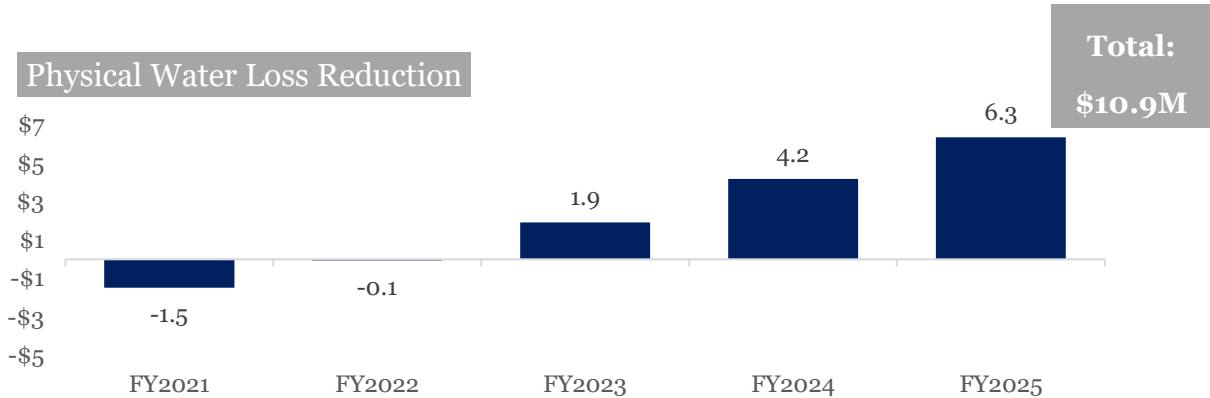
Exhibit 3-20 shows estimated financial impact for FY2021-FY2025. Depending on the unit cost of chemicals and electricity, total projected savings by FY2025 is estimated at up to \$6M per year, net of the measure costs.

⁵⁵ Each PSI lowered is expected to result in 1% reduction of physical water loss;

J. Schwaller, Modelling The Effects Of A Large Number Of Leaks In A Water Distribution Network Using The Favard Equation. In Civil Engineering, Water Infrastructure Engineering, M.Sc. Thesis, University of Applied Sciences Karlsruhe. Karlsruhe, Germany, 2012.



EXHIBIT 3-20: PHYSICAL WATER LOSS REDUCTION PROJECTED INITIATIVE IMPACT (IN \$' MILLIONS)



For FY2021 and FY2022 the initial costs to install master meters and to start the leak detection measure deployment is higher than the expected return. Net savings are expected starting in FY2023.

3.2.2.7.5 Milestones and Action plan

The first step of the physical water reduction measure is aimed at installing and/or calibrating the meters on production plants that account for at least 80% of water production by the end of FY2021. In order to accelerate this measure, PRASA established specific goals for each fiscal year; these are summarized in Exhibit 3-21.

EXHIBIT 3-21: KPIS FOR NRW MEASURE

	FY2021	FY2022	FY2023	FY2024	FY2025	Total 2021/2025
Master Meters (MM):						
Installed/ Calibrated MM	39	27	27	26	25	144
Production Metered (MGD)	425	15	15	14	14	482
% of Water Production Measured	83%	3%	3%	3%	3%	95%
Pressure Management:						
Pressure Zones Visits	39	55	62	66	74	296
Average PSI	78.8	77.8	76.8	75.8	74.8	74.8
Recovered MGDs	1.4	2.0	2.2	2.3	2.6	10.5
Leak Detection:						
Covered Miles	951.0	1,141.2	1,331.4	1,521.6	1,711.8	6,657.2
Estimated Leaks Detected	195	234	273	312	351	1,366
Recovered MGDs (Pipes Leaks)	3.4	4.1	4.8	5.5	6.2	23.9
Pumps with leaks visited	538	398	490	178	-	1,604
Recovered MGDs (Pumps Leaks)	2.2	1.7	2.1	0.8	-	6.8
Total Recovered MGDs	7.0	7.8	9.1	8.6	8.7	41.2
Accumulated Reduction (MGD)	7.0	14.8	23.9	32.5	41.2	

The objectives and milestones must be reviewed once leak detection and pressure management intervention strategies are in place and every 6 months thereafter to reflect actual performance



values. The information obtained through these measures will help develop a more accurate and reliable Water Balance report.

Based on current available information and assumptions included above, Table 3-5 below shows the expected reduction in MGD by program.

TABLE 3-5: EXPECTED MGD REDUCTION

In MGDs	FY2021	FY2022	FY2023	FY2024	FY2025
Pressure Management Program	1.4	2.0	2.2	2.3	2.6
Leak Reduction Program	5.6	5.8	6.9	6.2	6.2
Reduction in Production (MGD)	7.0	7.8	9.1	8.6	8.7
Accumulated Reduction (MGD)	7.0	14.8	23.9	32.5	41.2

PRASA has contracted an external project manager, architect and engineering consultant in June 2020 to execute the Physical Water Loss reduction measure. The execution phase must include close collaboration with PRASA operational teams, specifically within each operational region. Next steps must include onboarding the external project manager and revising the measure project plans and translating the measure objectives into actionable activities. The collaboration must also include designing and implementing several controls and reports to manage and communicate the measure progress.

Exhibit 3-22 lays out the actions required for timely and effective delivery of the overall NRW reduction measure and for each of the specific programs.



EXHIBIT 3-22: ACTION PLAN FOR PHYSICAL WATER LOSS REDUCTION MEASURE

<u>Action items</u>	<u>Deadline</u>	<u>Owner</u>
<i>Overall-</i> Complete procurement of Third Party Leak detection support	October 1, 2020	VP of Strategic Planning
<i>Leak Reduction-</i> PRASA to start reporting quarterly on progress of leaks located and addressed	September 15, 2020	VP of Strategic Planning / VP of Operations
<i>Master Meters-</i> Reporting on maintenance conducted for Master Meters	December 1, 2020	VP of Operations
<i>Master Meters-</i> Installation of Master Meter to be installed by FY2021 after received	February 1, 2021	VP of Strategic Planning
<i>Master Meters-</i> Data Validation of new meters installed during FY2021	March 1, 2021	VP of Strategic Planning
<i>Pressure Management-</i> Condition assessment and prioritization of pressure zones (39 in total) based on analysis	September 1, 2020	VP of Strategic Planning
<i>Pressure Management-</i> Procurement, Stabilization & Repair occurs as WRO team identifies deficiencies in the field (for 39 zones)	March 15, 2021	VP of Strategic Planning
<i>Pressure Management-</i> Optimization post repairs and analysis of new field condition (for 39 zones)	April 30, 2021	VP of Strategic Planning
<i>Pressure Management-</i> Monitoring of controlled pressure zone and maintenance (for 39 zones)	June 15, 2021	VP of Strategic Planning

3.2.2.8 Capital Delivery Optimization

PRASA must take steps to deliver its CIP more efficiently. As discussed in Section 2.4: Capital Improvement Plan, in order to budget for all of the required activities to execute construction work, PRASA uses a 1.6 factor, which means that on average, a project must be assigned a budget for its estimated construction plus an additional 60% to cover overheads and expected contingencies. As the CIP is fully implemented and goes into effect in FY2021, PRASA must take the following actions to improve overall project execution and delivery:

- **Project Management Consortium (PMC):** contracting of a PMC in order to support management of its capital projects during construction, it is expected to have a firm signed on by August 2020
- **Prioritization Criteria for all projects:** Part of the 10-year Master Plan must include a prioritization process for key project types for the Authority including specific criteria for scoring of all projects
- **CIP Tracking Tool:** updating current tracking tool to establish metrics by project and to monitor budget and schedule compliance and execution
- **KPI monitoring:** measuring Cost Performance Index (CPI) and Schedule Performance Index (SPI) at the start of FY2021 to provide transparency on CIP cost and schedule performance

With the efforts listed above it is expected that overall project execution must be optimized for timing and cost with the goal of reducing fully loaded cost of executing projects. Additionally with

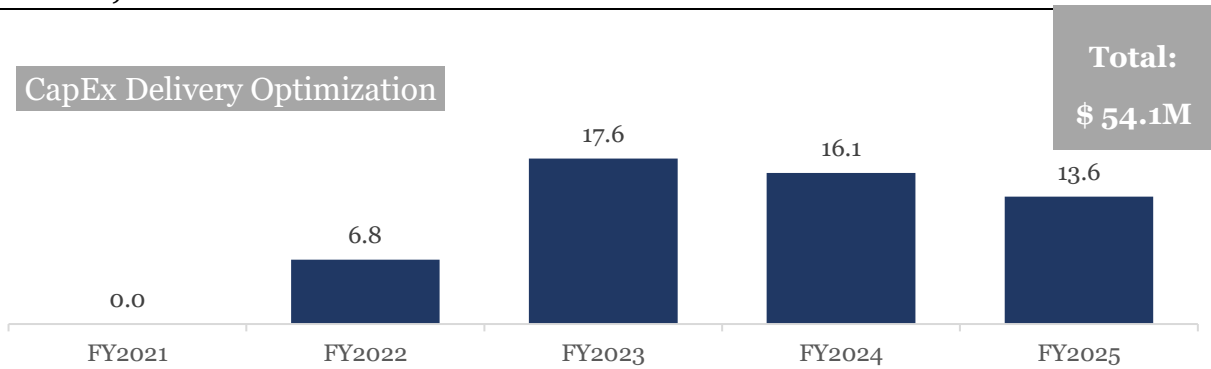


the support of the FOMB and capital project delivery experts, PRASA must take the following actions:

- Understand historical spend components included in 1.6 factor
- Establish clear and achievable savings targets reflective of construction costs in Puerto Rico
- Create an action plan to achieve savings

Improvement in capital delivery is required to ensure that the full CIP can be implemented at lowest possible cost. Exhibit 3-23 provides preliminary savings targets for gradually moving to a 1.3 factor while keeping safety, reliability, and water quality as the core requirements.

EXHIBIT 3-23: PROJECTED CAPITAL DELIVERY OPTIMIZATION SAVINGS (IN \$' MILLIONS)



Due to the highly preliminary nature of savings targets, it will be critical for PRASA to comply with the action plan in Exhibit 3-24 to ensure estimates can be properly refined and savings achieved.

EXHIBIT 3-24: ACTION PLAN FOR CAPITAL DELIVERY OPTIMIZATION MEASURE

<u>Action items</u>	<u>Deadline</u>	<u>Owner</u>
Complete contract with PMC firm	August 31, 2020	Infrastructure
Identify clear and achievable % of possible savings across activities with Oversight Board	September 15, 2020	Infrastructure
Implement new CIP Tracking Tool	December 1, 2020	Infrastructure
Create and submit action plan to achieve and refine savings starting in FY22 to FY25 to Oversight Board	December 15, 2020	Infrastructure
Discuss action plan with Oversight Board	January 15, 2021	Infrastructure

3.2.2.9 New Financing for CIP

After the reprogramming of Federal Debt, PRASA recovered access to future funding from both programs. Table 3-6 describes the two federal funding programs for which PRASA requalifies.



TABLE 3-6: FEDERAL FUNDING PROGRAMS

Program	Description
State Revolving Funds (SRF) Loans	<ul style="list-style-type: none"> Annual grants from USEPA of around \$30 million for Drinking Water SRF (DWSRF) and Clean Water SRF (CWSRF) Programs, Commonwealth match of 20% of the annual grant provided by the Department of Health (DOH) and the Department of Natural Resources (DNR), respectively The program’s Repayment Funds are also available, currently with a balance of around \$200 million to be assigned through new loans for qualifying projects without a state match requirement
Rural Development (RD) Program	<ul style="list-style-type: none"> Bond program operated through Rural Development division of the US Department of Agriculture to provide funds for water and wastewater projects in rural areas Annual appropriation for Puerto Rico has been historically around \$10 million

PRASA’s opportunities for funding are limited to the cost of qualifying projects and capped at the annual appropriations and repayment funds available through these programs.

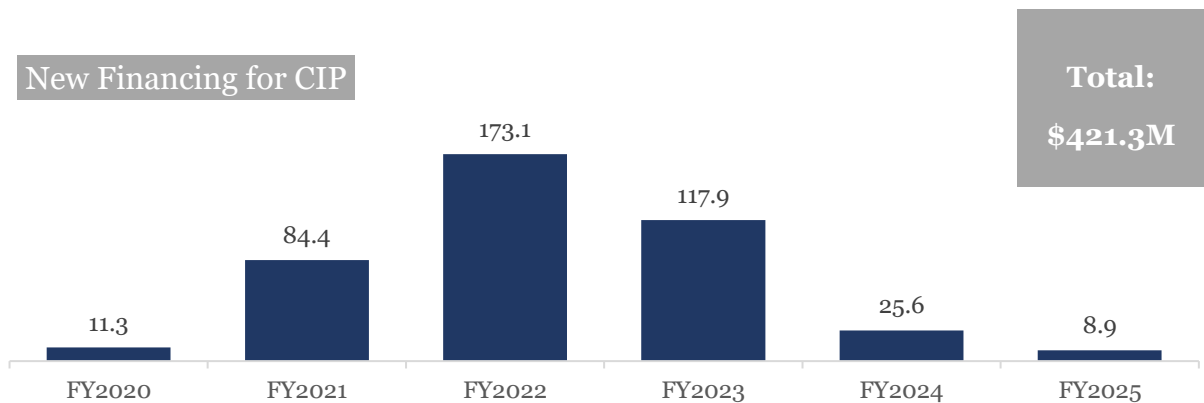
The new funds are projected net of the projected debt service calculated as 30-year loans at 1% for the SRF Program and 40-year loans at 4% for the RD Program. Table 3-7 present the expected federal funding and corresponding costs during the fiscal plan period.

TABLE 3-7: EXPECTED FEDERAL FUNDING AND COST (IN \$’ MILLIONS)

<i>in \$’ Millions</i>	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY20/25
SRF Funds	10.7	82.5	166.3	122.9	32.4	18.5	433.3
RD Funds	1.0	4.4	16.5	10.0	10.0	8.3	50.3
SRF Debt Service	(0.4)	(2.3)	(8.7)	(13.4)	(14.7)	(15.4)	(54.9)
RD Debt Service	-	(0.2)	(1.1)	(1.6)	(2.1)	(2.5)	(7.4)
New Federal Funds, Net	11.3	84.4	173.1	117.9	25.6	8.9	421.3

A total of \$483 million of federal funds are projected to be received during the fiscal plan period with a net impact after debt service of \$421 million as presented in Exhibit 3-25.

EXHIBIT 3-25: PROJECTED NEW NET FEDERAL FUNDS MEASURE (IN \$’ MILLIONS)



The projections included herein may change based on the projects and progress of federally funded capital improvements as well on the federal funds’ annual appropriations and availability.

Exhibit 3-26 outlines the key action items for successful and timely delivery of this measure.

EXHIBIT 3-26: ACTION PLAN FOR NEW FINANCING FOR CIP

Action items	Deadline	Owner
Apply for SRF grant or loan with applicable projects	TBD	Infrastructure
Apply for RD grant or loan with applicable projects	TBD	Infrastructure

3.3 Enabling Measures

Beyond the measures discussed above, PRASA is developing additional measures with the goal of improving efficiencies and reducing costs:

- **Project Management Office (PMO) execution:** establish a PMO office tasked and empowered to ensure the successful execution of the measures outlined in the 2020 Fiscal Plan and key internal projects within the organization
- **Emergency response plan and climate risk preparedness:** develop and update PRASA’s Emergency Response Plan and ensure findings are integrated across the organization and specifically into the CIP
- **10-year Master Plan:** PRASA’s 10-year plan, to be developed with results from the 2020 US Census, must provide a long-term roadmap to transform PRASA’s system into a simpler, safer, operationally efficient, and financially sustainable system and serve to consolidate recommendations from other plans and strategies (e.g., Fiscal Plan, Emergency Preparedness Plan, Climate Change Adaptability Plan)
- **Asset management and maintenance:** properly track and monitor the condition of all PRASA assets and revamp maintenance program from primarily corrective to a more balanced target that promotes higher preventative maintenance practices

The financial impact of these measures has not been included in the financial projections presented herein.

Additional non-financial measures are discussed in the Appendix.⁵⁶

3.3.1 PMO Execution

PRASA must properly set up its PMO and provide enough leadership support and autonomy to be effective. The PMO, under the purview of the Vice President of Strategic & Corporate Planning, serves as a key component for the implementation and monitoring of Fiscal Plan measures. Key responsibilities are summarized in Exhibit 3-27.

⁵⁶ Measures discussed in the appendix: strategic plan update, water availability increase, improving system resiliency, and facilities automation



EXHIBIT 3-27 RESPONSIBILITIES OF THE PMO

PMO roles	PMO responsibilities
Strategic business planning	1 Evaluate corporate risks and provide guidance to project teams
	2 Develop departmental strategies aligned with PRASA's Fiscal and Strategic Plans
	3 Develop and launch new transformational initiatives
Initiative implementation	4 Direct initiative execution
	5 Support project teams with guidance and alignment
	6 Ensure alignment across departmental stakeholders, goals, and objectives to support project teams
	7 Problem solve and escalate program level bottlenecks, risks, issues, and interdependencies
Transparency, control, and accountability	8 Ensure standardization and tracking of project documentation
	9 Monitor progress and overall performance with a clear set of KPIs and milestones
	10 Provide progress updates and escalate issues to different governance boards

The PMO governance and structure is shown in Exhibit 3-28. It promotes executive sponsorship by strategically assigning each measure to an Executive Officer. In turn, each executive officer assigns project manager (PM) to oversee the measure or the projects created underneath it. The PM develops a Project Committee with project measures led by their Direct Reports. The Project Manager monitors the progress of individual projects and measures within their purview, and in turn provides visibility to the other Steering Committee Members, ensuring the alignment of objectives across the organization. A detailed breakdown of structure and responsibilities is below:

- Each PM must participate in the department’s Project Committee
- In some cases, the Project Committee Lead (member of the Steering Committee) may be the PM of an individual project
- The Project Committee must provide alignment and visibility across the specific executive organization
- The Steering Committee must provide alignment and visibility across the organization

The PMO Director’s role is to coordinate efforts across Project Managers and Project Committees, provide necessary support to them, monitor and report on progress, and escalate decisions and issues to the Cross-Functional Steering Committee as needed.

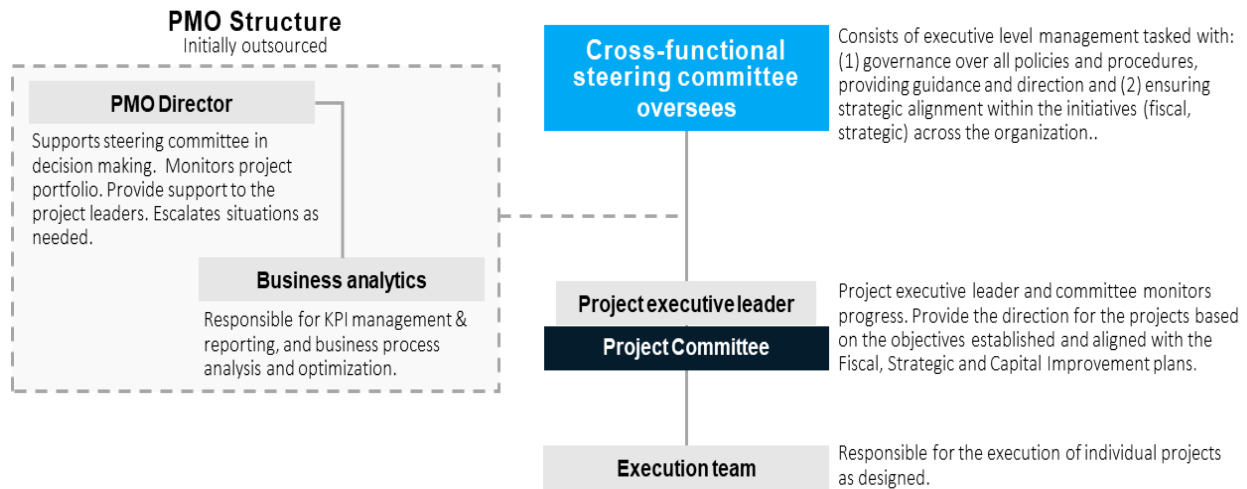
The Cross-Functional Steering Committee is chaired by the Executive President and is composed of the Executive Officers and Project Committee Leaders. The PMO Director serves as the



Committee Coordinator. The Steering Committee is responsible for monitoring progress the Fiscal Plan, ensuring alignment across all plans and priorities, and providing oversight, guidance, and direction to ensure the goals of the plans are met in a timely, efficient, and cost-effective manner.

Key performance indicators (KPIs) must be defined and monitored to ensure the objective achievement and successful performance. Throughout the life of the projects, based on actual results, adjustments to goals might be necessary, subject to approval from the initiative’s Steering Committee. In turn, each initiative’s leader must be accountable for any deviation and is monitored by the Steering Committee.

EXHIBIT 3-28: PMO STRUCTURE



Though PRASA has set up this PMO structure, they still need to institute the elements that are critical to effective and efficient operations. These include: assigning a PMO Director and measures owners, creating project committees and execution teams, setting meeting cadence and reporting cadences, and establishing KPIs for the measures and underlying projects. PRASA must have all of these in place by start of FY2022.

Exhibit 3-29 outlines the key action items for successful and timely delivery of this measure. During these months, PRASA should update FOMB on its progress in establishing the PMO.



EXHIBIT 3-29: ACTION PLAN FOR PMO EXECUTION

Action items	Deadline	Owner
Assign initiative owners for all Fiscal Plan initiatives	July 15, 2020	PMO Director
Establish project committees and execution teams and assign project executive leaders	July 31, 2020	PMO Director
Convene first Cross-functional steering committee meeting to kick-off PMO process	July 31, 2020	PMO Director
Establish meeting cadences, reporting requirements, and initiative/project KPIs	August 31, 2020	PMO Director
Appoint permanent PMO Director	July 1, 2021	VP of Strategic Planning

3.3.2 Emergency Response Plan and Climate Risk Preparedness

Puerto Rico faces significant risk from natural disasters (e.g., droughts, earthquakes, and hurricanes) and events outside of its direct control (e.g., COVID-19 pandemic) that can threaten its ability to provide safe, reliable, and affordable water and wastewater treatment services.

Section 2013 of America’s Water Infrastructure Act of 2018 (AWIA) requires all community water systems that serve more than 3,300 people to complete a risk and resilience assessment (“RRAs”) and emergency response plans (“ERPs”) for all hazards and threats beyond terrorism.

After the RRAs are finalized, ERPs will be developed to be define, amongst others:

- Strategies and resources to improve system resilience, including physical & cyber security
- Plans, actions, procedures, & equipment to be utilized & lessen the impact of malevolent acts or natural hazards
- Actions/procedures/equipment that can significantly lessen the impact of a malevolent act or natural hazard on the public health and the safety/supply of drinking water
- Strategies that can be used to aid in the detection of malevolent acts or natural hazards that threaten the security or resilience of the System

The final objective of this measure is to incorporate the plans into PRASA’s planning, procedures, and decision-making to ensure continual improvement of the utility safety and reliability in the face of a changing threat environment. Particularly, it should ensure the recommendations from these plans are incorporated into the CIP.

The Authority is in the process of updating its current Vulnerability Analysis and Emergency Response Plan to comply with the America Water Infrastructure Act of 2018 (AWIA), which will include an assessment of the Authority’s System vulnerability to several threats, including climate change and natural disasters. Also, during calendar year 2021, PRASA will update its Master Plan with information from the 2020 census, to be able to include any required project to address climate and population changes. Exhibit 3-30 outlines the timeline for completing its RRA and ERP.



EXHIBIT 3-30: ACTION PLAN FOR EMERGENCY RESPONSE PLAN AND CLIMATE RISK PREPAREDNESS MEASURE

<u>Action items</u>	<u>Deadline</u>	<u>Owner</u>
Update Vulnerability Study	June 30, 2021	Corporate Security and Emergency Department
Submit key findings to Oversight Board	August 15, 2021	Corporate Security and Emergency Department
Complete and submit Emergency Response Plan to EPA	December 30, 2021	Corporate Security and Emergency Department
Submit key findings and proposed changes resulting from plan to Oversight Board	February 15, 2022	Corporate Security and Emergency Department

3.3.3 10-year Master Plan

Every ten years, using the data published in the United States Census, PRASA develops its Water and Wastewater Master Plan (Master Plan). The current Master Plan was last completed in 2010 and then revised in 2014 to account for adjusted population projections.⁵⁷

The 2020 Master Plan must focus on achieving long-term structural integrity, ensuring clean, affordable, and safe water and wastewater provision for the island, while ensuring financial sustainability. In the plan, the Authority must create a roadmap for transforming Puerto Rico’s water and wastewater infrastructure from a complex, expensive, and highly vulnerable system to a simpler, safer, resilient, operationally efficient, and financially viable system.

The new 2020 Master Plan must also incorporate the recommendations of the Fiscal Plan, Emergency Response Preparedness Plan, the Climate Change Adaptation Plan, and other inputs that have long-term implications on the System.

The Master Plan must also provide PRASA with an updated prioritization tool which must determine project order in the CIP. PRASA’s CIP projects must be developed in accordance with the Master Plan and the CIP will be constantly updated to align with the System needs.

Exhibit 3-31 outlines the key action items for successful and timely delivery of this measure. However, PRASA’s ability to complete the plan in 2021 will be contingent on the availability of 2020 US Census data.

⁵⁷ Population projection adjustments provided in 2013 by the Puerto Rico Planning Board reflected a reduction in population, as opposed to the data from the 2010 Census which showed an increase, which is attributed in part to migration trends from Puerto Rico to the continental United States



EXHIBIT 3-31: ACTION PLAN FOR MASTER PLAN MEASURE

Action items	Deadline	Owner
Complete 2020 Master Plan	TBD	Infrastructure
Submit key findings and proposed changes resulting from Master Plan to Oversight Board	TBD	Infrastructure
Incorporate findings from Master Plan into CIP	TBD	Infrastructure

3.3.4 Asset Management and Maintenance

PRASA aims to develop an Asset Management Program in order to properly track and monitor the condition of all PRASA assets and shift its maintenance strategy from primarily corrective to primarily preventative. Doing so would help to prolong asset life, reduce operating and capital expenditures, improve the security and safety, and shorten responses times to maintenance needs. PRASA is currently in the process of:

- Implementing a revised organizational structure in its maintenance department incorporating project portfolio management and training compliance
- Tracking actual time spent on maintenance activities—with clear differentiation between corrective and preventative work—instead of its current practice of estimating
- Creating a new Planning Center of Excellence
- Implementing a master planning schedule process focused on a sound preventive maintenance plan
- Strengthening and optimizing current data management to provide for timely and effective monitoring, allowing for redesigned key performance indicators follow up and correction plans implementation
- Incorporating the condition and performance of each asset in SAP to better identify and prevent failures
- Budgeting to fund these activities

PRASA is currently in the process of defining current available resources and information to complete its Asset Management Program.

Exhibit 3-32 outlines the key action items for successful and timely delivery of this measure.



EXHIBIT 3-32: ACTION PLAN FOR ASSET MANAGEMENT AND MAINTENANCE MEASURE

<u>Action items</u>	<u>Deadline</u>	<u>Owner</u>
Revise organization structure for maintenance department	August 31, 2020	VP of Operations
Establish Planning Center of Excellence	September 30, 2020	VP of Operations
Transition to system of tracking actual time spent on maintenance activities	October 31, 2020	VP of Operations
Strengthen and optimize current data management	November 30, 2020	VP of Operations
Implement master planning schedule	December 15, 2020	VP of Operations
Create plan and target for incorporation of condition and performance of each asset in SAP	January 31, 2021	VP of Operations
Discuss action plan with Oversight Board	February 1, 2021	VP of Operations

3.4 Summary of Proposed New Measures

The benefit of the new measures is projected at \$1.6 billion during the Fiscal Plan period. A summary of the New Measures projected net benefit is set forth in Table 3-8.

TABLE 3-8: NEW MEASURES PROJECTED BENEFIT (IN \$' MILLIONS)

<i>in \$'Millions</i>	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY20/25
Rate Adjustments	72	110	140	168	195	223	908.1
Government Account Collections Imp	18	1	4	6	8	10	47.3
Leaks Adjustment Policy	2	2	2	2	2	2	11.9
Disconnection Cost Recovery	1	1	1	1	1	1	6.1
Pre-retirement Program	7	6	6	6	6	6	38.2
Metering & Customer Service Optimiz	-	(9)	(2)	8	16	20	33.0
Physical Water Loss Reduction	-	(1)	(0)	2	4	6	10.9
Pension Reform	-	-	3	6	6	6	21.0
Uniform Healthcare	-	2	2	2	3	3	11.5
Headcount Cap	-	2	4	4	4	4	16.3
Christmas Bonus Elimination	-	3	3	3	3	3	15.6
Electricity Cost Reduction	-	1	1	2	4	6	13.2
Chemical Expense Reduction	-	-	-	1	1	1	3.0
Capital Delivery Optimization	-	-	7	18	16	14	54.1
New Financing for CIP	11	84	173	118	26	9	421.3
Initiatives Benefit	112	201	345	346	295	313	1,612
Impact in ORF and OH	-	(0)	(2)	(3)	(2)	(1)	(8)
Initiatives Benefit, Net	112	201	343	344	292	312	1,604



3.5 Post-Measures Financial Result

Implementation of the measures explained in this chapter will allow PRASA to improve its financial position. However, it will be insufficient to close the fiscal deficit forecasted annually in FY2020–2024, as stipulated in PROMESA Section 201(b)1(d). As such, PRASA will utilize reserves in its Current Expense Fund to close the fiscal deficits for the aforementioned fiscal years and will experience a cumulative surplus of \$9 million during the fiscal plan period, which is expected to be deposited in the Rate Stabilization Account. Table 3-9 presents the Post-Measures Financial Results during the Fiscal Plan period.

TABLE 3-9: POST-MEASURES FINANCIAL RESULTS (IN \$' MILLIONS)

<i>in \$' Millions</i>	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY20/25
Authority Revenues	945	953	925	914	904	895	5,536
Senior Debt Service	(251)	(251)	(251)	(251)	(251)	(251)	(1,505)
Net Operating Expenses	(721)	(668)	(711)	(720)	(730)	(741)	(4,291)
Operating Reserve Fund	(32)	(33)	(5)	(2)	(3)	(3)	(78)
Capital Improvement Fund	(97)	(178)	(279)	(271)	(198)	(171)	(1,195)
Commonwealth Payment Fund	(21)	(26)	(28)	(28)	(32)	(32)	(167)
Pre-Measures Financial Result	(178)	(203)	(348)	(359)	(310)	(303)	(1,700)
Measures Benefit	112	201	343	344	292	312	1,604
Post-Measures Financial Result	(66)	(1)	(5)	(15)	(18)	9	(96)
Funds available at CEF	66	1	5	15	18	-	105
Transfer to RSA	-	-	-	-	-	(9)	(9)
Final Annual Need	-	-	-	-	-	-	-



4 Long-Term Financial Sustainability

Since FY2016, PRASA has been able to gradually fund some of its CIP through the implementation of several prior fiscal plans' measures. At the beginning of FY2020, PRASA successfully reprogrammed its federal debt and is paying all its operating expenses and debt service obligations under the MAT with operating revenues. Nevertheless, based on the capital-intensive nature of water utility operations, restoring access to short-term and long-term capital market at reasonable rates to meet its borrowing needs is essential to providing the necessary funding for a portion of its CIP over the long term.

PRASA has defined achieving financial sustainability as the ability to:

- Generate sufficient revenue through a rate structure that allows the PRASA to provide safe, affordable, and reliable service
- Regain access to the capital markets at reasonable rates while adequately meeting all its financial obligations (i.e., operating expenses, debt service requirements, CIP contributions)

PRASA aims to gradually establish self-funding for:

- Annual renewal and replacement investments that allow PRASA to maintain the System in optimal condition for operation
- At least 50% of the total CIP portfolio on a project basis (excluding projects funded through federal loans or grants such as SRF, RD, and FEMA)

PRASA's core goals for self-funding targets are based on industry standard practices and analysis of overall capital portfolio completed by a third party.⁵⁸ Once PRASA has addressed its underlying management and operational deficiencies and has regained access to capital markets at reasonable rates in a manner consistent with PROMESA, PRASA expects the CIP to be partially financed through the issuance of long-term debt.⁵⁹ This approach will help distribute the financial burden of major capital works to customers across a longer time period, thus helping to maintain affordable rates while performing essential work on the System.

4.1 Plan for Restoring Long-Term Financial Sustainability

To achieve long-term financial sustainability, PRASA must first implement all measures outlined in Chapter 3 in order to leverage improvements in financial and operational performance and also mitigate for future demographic, economic, environmental/climate, and fiscal challenges Puerto Rico faces.

PRASA will also need to demonstrate improvements in the main areas of creditworthiness identified by the major rating agencies, such as:

⁵⁸ Professional Opinion Report: Puerto Rico Aqueduct and Sewer Authority, prepared by Raftelis Financial Consultants, 2016.

⁵⁹ CIP will continue to be partly funded through self-funding (i.e., operating revenues), federal funds, and insurance proceeds



- Health of the system, service area, and the economy
- Financial strength of operations (including liquidity and reserves)
- Strength and independence of rate-setting structure and regulatory compliance
- Strength and independence of governance
- Operational and financial management assessments
- Capital improvement plan execution and oversight requirements

Table 4-1 sets forth key steps being taken by PRASA that demonstrate its commitment to long-term financial sustainability through meaningful and measurable actions.

TABLE 4-1: PLAN TO RESTORE COST-EFFECTIVE CAPITAL MARKET ACCESS

Authority action plan		STATUS
Implementation of Measures in Fiscal Plan	<ul style="list-style-type: none"> • Ensure implementation of measures discussed in Chapter 3 through effective planning and implementation of PMO office 	In progress
System health, service area, and economy	<ul style="list-style-type: none"> • Ensure long-term planning by updating the Authority’s Master Plan, ten-year CIP, Climate Change Adaptability Plan, and Emergency Response Plan 	In progress
Financial strength of operations	<ul style="list-style-type: none"> • Update budgeting efforts to exceed covenant requirements, particularly covenants that consider all expenses (including operating revenue deposits to the CIP Fund) • Publish long-term financial projections in annual Fiscal Plan • Publish short-term financial reviews in required quarterly reports • Implement current plan to fund operating reserve requirement with at least 90 days of cash on hand and approximately \$180 million in unrestricted reserves for the Authority to ensure liquidity in the event of disruption 	In progress
Rate setting process and regulatory compliance	<ul style="list-style-type: none"> • Establish systematic annual rate increases approved on a five-year schedule • Establish cadence for conducting necessary studies and analysis for future rate proceedings and transparency on findings • Ensure affordability is taken into consideration by segmenting rate schedules to account for economic conditions and potential customer hardships 	In progress
Strength and independence of governance	<ul style="list-style-type: none"> • Limit turnover of key decision makers by continuing current succession planning process 	Implemented



Authority action plan		STATUS
Operational and financial management assessments	<ul style="list-style-type: none"> • Develop and implement disclosure best practices, including: <ul style="list-style-type: none"> ○ Operational and financial measure tracking ○ Timely publication of audited financial statements ○ Quarterly interim operating reports ○ Consulting engineer reports • Provide progress reports on Fiscal Plan implementation (detailed in Section 5, “Reporting requirements”) 	In progress
CIP requirements	<ul style="list-style-type: none"> • Maximize use of lower cost funding resources such as SRF program or RD bonds by ensuring project compliance with these programs • Maximize FEMA fund proceeds for replacement or repairs of infrastructure damaged by disasters. • Ensure efficient execution of capital projects through capital delivery optimization including (but not limited to) performance tracking, PMC support, and schedule compliance & execution 	In progress

4.2 Debt Sustainability Analysis

The debt sustainability analysis (“DSA”) is intended to provide a framework for assessing PRASA’s long-term capacity to pay debt service under the terms of the MAT. PRASA’s debt levels need to be consistent with the objective of recovering capital market access for future new money borrowings, ongoing infrastructure investment, and/or refunding opportunities (e.g., based on outstanding callable bonds) for savings. PRASA is focused on executing a set of financial and non-financial measures that will set the path for it to regain its investment grade rating and establish a self-sufficient long-term fiscal framework. The following debt sustainability analysis describes PRASA’s capacity to pay current and projected debt within the constraints of the MAT.

The DSA includes implied debt capacity based on a range of interest rates, cash flow availability, and assumed 30-year term and level debt service. The level of sustainable debt shown in illustrates for PRASA ranges from \$2.0 Billion to \$6 Billion, inclusive of existing outstanding bonded debt, depending on the assumed borrowing rate and the level of post-measures cash flow available for debt service.

TABLE 4-2: SENSITIVITY ANALYSIS – IMPLIED DEBT CAPACITY (IN \$’ MILLIONS)

Illustrative Cash Flow Available		\$150	\$200	\$250	\$300	\$350
PV Rate %	4.00%	\$2,594	\$3,458	\$4,323	\$5,188	\$6,052
	5.00%	\$2,306	\$3,074	\$3,843	\$4,612	\$5,380
	6.00%	\$2,065	\$2,753	\$3,441	\$4,129	\$4,818



5 Reporting Requirements

As part of the monitoring progress of Fiscal Plan measures, PRASA is required to submit several reports to FOMB and, on occasion, to the public as well. Table 5-1 lists these reports and the frequency in which they shall be prepared.

TABLE 5-1: REPORTS TO BE PRESENTED

Report type	Detail	FOMB reporting cadence	Public reporting
Budget to actuals (B2A)	Tracking of budgeted to actual spend per budget certification agreement with FOMB, including: <ul style="list-style-type: none"> • Explanation for material variances for YTD (>10% and >\$1 million or > USD 10 million) • Accounts receivable by type of client (residential, commercial, industrial, and governmental) • Schedule with amounts owed by each government client 	<ul style="list-style-type: none"> • Monthly reporting after budget is certified • Quarterly 203 reporting after budget is certified 	<ul style="list-style-type: none"> • Quarterly
Liquidity	Cash flow report, including: <ul style="list-style-type: none"> • Monthly and weekly view of actual and projected cash flows for the FY, including Current Expense Fund beginning and final balance • Total entity cash balance by account, available upon FOMB request 	<ul style="list-style-type: none"> • Monthly 	<ul style="list-style-type: none"> • Monthly (cash flow actuals)
Measures	<ul style="list-style-type: none"> • Fiscal Plan measures status, schedule, and fiscal impact • Specific reporting requirements for measures included in Table 5-2 	<ul style="list-style-type: none"> • Monthly 	<ul style="list-style-type: none"> • N/A



Report type	Detail	FOMB reporting cadence	Public reporting
CIP: implementation plan tracking	<ul style="list-style-type: none"> CIP monthly progress reports, including schedule performance index, cost performance index, and actual spend to date 	<ul style="list-style-type: none"> Project-level reporting: monthly Detailed view of top-ten project list per agreed-upon template⁶⁰ 	<ul style="list-style-type: none"> N/A
Water quality KPIs and environmental compliance	<ul style="list-style-type: none"> Summary of KPI dashboard, including monitoring/quality violation breakout (i.e., health-based violations) Detailed compliance reports, by plant, available upon FOMB request 	<ul style="list-style-type: none"> Quarterly 	<ul style="list-style-type: none"> Annual Consumer Confidence Report
Others	<p>Additional reporting on:</p> <ul style="list-style-type: none"> Status of FEMA funding, on a project-level basis Government collections and payment plans (top-15) Monthly headcount rollforward and by function Monthly profit and loss statement 	<ul style="list-style-type: none"> Monthly summary submitted along with B2As 	<ul style="list-style-type: none"> N/A

5.1 Monthly KPIs for Measures

In order to ensure appropriate tracking of all measures within the Fiscal Plan, PRASA must continue to track the Financial Impact of the following implemented measures in a monthly cadence:

- Government Account Collections
- Disconnection Cost Recovery
- Leaks Adjustment Policy
- Pre-retirement Program

⁶⁰ Specific project types: Nonmandatory Compliance, Mandatory Compliance, Emergency/Permanent Works, Renewal & Replacement, Others. Others includes: Meter Replacement, Projects Not Included in FP, Growth, and Fleet & IT project categories.



For new measures the following Table 5-2 identifies the critical KPI's to be tracked monthly and start date of tracking such measures. All start dates are assumed to be July 15th of listed Fiscal Year unless otherwise listed or modified by FOMB through prior authorization.

TABLE 5-2: NEW MEASURE KPIs

Measure	KPI	Start Date
Rate Adjustment	Financial Impact of Measure	FY2021
Metering and customer service optimization	Financial Impact of Measure	FY2021
	Actual collection rate when compared with the established billing budget	FY2021
	Percent billing adjustments	FY2021
	Percentage of bills generated with actual readings (not estimated)	FY2021
Chemical Consumption Optimization	Financial Impact of Measure	FY2022
	Chemical purchases (spend and volume) at all facilities by chemical	FY2021
Pension Reform	Financial Impact of Measure	FY2022
Christmas Bonus Elimination	Financial Impact of Measure	FY2021
Uniform Healthcare	Financial Impact of Measure	FY2021
Headcount cap	Financial Impact of Measure	FY2021
Electricity Cost Reduction	Financial Impact of Measure	FY2021
	Energy consumption at all facilities	FY2021
Physical Water Loss Reduction-Overall	Real Losses (gallons / serv conn / day)	FY2022
	Real Losses (gallons / mile of main / day)	FY2022
	Real Losses (gallons / serv conn / day / PSI)	FY2022
	Infrastructure Leakage Index	FY2022
Physical Water Loss Reduction-Master Meters	Number of visited facilities	FY2021
	Estimated volume (MGDs) produced per facility	FY2021
	Measured volume (MGDs) produced per facility	FY2021
	Master Meters needed to be replaced and number replaced/installed	FY2021
	Projected Master Meter investment and amount invested to date	FY2021
Physical Water Loss Reduction-	Number of pressure zones visited each month	FY2021
	Number of valves to be installed and number installed each month	FY2021



Measure	KPI	Start Date
Pressure Management	Number of other components to be installed and number installed each month	FY2021
Physical Water Loss Reduction- Leaks Reduction	Unreported Leaks Pre-Located	FY2021
	Average Leaks per Mile	FY2021
	Average Pressure Zones per Region (for Visited Regions)	FY2021
	Unreported Leaks Pinpointed	FY2021
	Average MGDs Loss per Pinpointed Leaks	February 2021
	Average Leak Cost per Day (Leakage Cost)	February 2021
	Leaks Mean Time to Repair	February 2021
	Percentage (%) of Leaks Repaired	February 2021
	Average MGDs Saved per Day	February 2021
Capital Delivery Improvement	Cost Performance Index	FY2021
	Schedule Performance Index	FY2021
New Federal Funds	Financial Impact of Measure	FY2021



6 Risks and Mitigating Strategies

As with any large and complex utility operating in an uncertain environment, the implementation of key measures is subject to risks and unforeseen events that may be outside of the Authority’s control. Table 6-1 summarizes an analysis of the key risks that have been identified as having the potential to impact or delay PRASA’s Fiscal Plan implementation with corresponding mitigation strategies. However, it is worth noting that this outlook is based on best information available at the date of creation of the Fiscal Plan, thus there may be additional risks which have not yet been identified that could affect the Authority’s financial and/or operational performance.

TABLE 6-1: RISKS TO FISCAL PLAN IMPLEMENTATION AND MITIGATING STRATEGIES

Risk category	Potential impacts	Mitigating Strategies
Natural disasters	Catastrophic natural disasters Events such as droughts, floods, hurricanes, and earthquakes could have significant financial and operational impacts, including system failures, water rationing, and water health risks. The severity of some of these events and their impacts on the Authority will be exacerbated over time due to climate change.	<ul style="list-style-type: none"> • Develop Emergency Preparedness Plan and update Climate Change Vulnerability Study and Adaption Plan; ensure plans are integrated into operations and capital requirements are integrated into CIP • Ensure operating reserve fund has at least 90 days of cash to use for emergency operational funding
Revenue risks	<p>Lowered collections recovery – Collections rates may be lower than forecasted due to overall inability for customers to pay for services, resulting in decreased revenues. The economic downturn caused by COVID-19 has increased the likelihood of such an event materializing.</p> <p>Decreased demand – Decreases in population or reduced consumption among customers would lower revenue projections for FY2021 to FY2025. The economic downturn caused by COVID-19 has increased the likelihood of such an event materializing.</p>	<ul style="list-style-type: none"> • Ensure operating reserve fund has at least 90 days of cash to use for emergency operational funding • Increase and enhance digital payment monitoring and collection capabilities • Identify vulnerable customers and offer custom payment plans (e.g., deferred payment plans) • Identify additional opportunities to increase operational efficiency and/or reduce capital and operating costs



Risk category	Potential impacts	Mitigating Strategies
Expense risks	Major change in system performance – A decrease in system performance (e.g., major infrastructure failure, water quality crisis) due to deteriorating system quality may significantly increase operating and capital expenses to address issues.	<ul style="list-style-type: none"> • Ensure operating reserve requirement funding has at least 90 days of cash to use for emergency operational funding • Ensure CIF is funded to appropriate levels to address CIP project outlay and potential emergency projects not identified at time of Fiscal Plan creation when necessary
	Changes in payroll legislation – Payroll expenses account for 45% of projected operating expenses. Changes in payroll legislation may impact the execution of right-sizing measures and projections of future operating expenses.	<ul style="list-style-type: none"> • Payroll expense projections were calculated applying Act No. 26-2017, protecting PRASA from unforeseen incremental labor costs • Identify additional opportunities to increase operational efficiency or reduce operating costs
	Changes in electricity rate costs – Electricity accounts for 20% of projected operating expenses in FY2021. Variations of USD 0.01/kWh can lead to expense variances of ±USD 6.5 million.	<ul style="list-style-type: none"> • Implement energy efficiency and electricity consumption reduction measures contained in this Fiscal Plan
	More stringent environmental regulations – Changes in environmental legislations (e.g., more stringent drinking water standards) may increase overall expenses for chemical and lab usage, in addition to incurring additional mandated project costs.	<ul style="list-style-type: none"> • Implement chemical consumption and purchasing optimization measures in order to lower the variable cost of additional supplies needed • Implement source protection programs (e.g., upstream mitigation programs) that aim to protect water supply
Operational risks	Under-delivery of the capital portfolio – As the CIP emphasizes mandatory compliance (“Base List”) projects, potential noncompliance fines and an overall decrease in performance may occur if projects are under-delivered, which may lead to system failures and water health risks.	<ul style="list-style-type: none"> • Ensure transparent progress on “Base List” projects for FY2021 and identify roadblocks early in project delivery timeline



Risk category	Potential impacts	Mitigating Strategies
	<p>Reduced federal funding levels – Financing of CIP through federal funding is critical for full delivery of CIP project portfolio—specifically for emergency and permanent works—which may lead to system failures and water health risks.</p>	<ul style="list-style-type: none"> • Improve capital delivery for projects to reduce overall need for overhead costs allowing for project completion at lower funding requirements • Refine CIP portfolio to appropriate levels to adequately maintain PRASA liquidity while appropriately supporting the System • Consider additional rate increases or special charges (e.g., System Distribution Charge) to fund potential shortfalls
	<p>Regulation challenges – Challenges such as long permitting processes, misalignment between federal and local regulations, and lack of private and public sector coordination have the potential to delay construction timelines of key capital projects that are crucial to the system.</p>	<ul style="list-style-type: none"> • Allocate sufficient time in the first phase of the CIP process to ensure permitting and regulatory aspects are completed • Support Commonwealth and other regulatory bodies to streamline the preconstruction process
	<p>Labor availability – Decreased availability in labor workforce due to policy restrictions (e.g., COVID-19 policies), labor strikes, or other factors could prevent critical work completion, which may lead to system failures and water health risks.</p>	<ul style="list-style-type: none"> • Identify all critical facilities for societal continuity and ensure robust processes to keep the status list of these current • Identify opportunities to use a likely increase in available labor force with noncontact heavy jobs (e.g., pipeline replacement) • Work with government/regulators on compliance plans for work that was not completed due to resource constraints
	<p>Management capability – Lack of capability to execute and fully deliver on assigned measures in the Fiscal Plan. If 25% of value is not achieved that could add a cumulative deficit of USD 336 million for FY2020 to FY2025.</p>	<ul style="list-style-type: none"> • Ensure PMO has a clear oversight role over Fiscal Plan implementation and the ability to escalate problems to the appropriate decision making parties • Ensure consistent monitoring of KPIs and milestones for all measures to ensure the PMO has the ability to measure and report on progress, identify roadblocks, and address them in a timely manner



Risk category	Potential impacts	Mitigating Strategies
	<p>Coordination – Some measures require coordination across many functional groups, agencies, and stakeholders. There is a risk that a lack of coordination prevents the full implementation of measures in a timely manner, which would delay the Fiscal Plan objectives of long-term financial and operational sustainability.</p>	<ul style="list-style-type: none"> • Ensure PMO has a clear oversight role over Fiscal Plan implementation and the ability to escalate problems to the appropriate decision making parties • Assign clear owners for each measure and establish an operating model for cross-department collaborations
	<p>Cultural/behavioral – Measures must require long-term operational changes and ways of working. There is a risk that teams revert back to old ways of working or outright refuse to implement the action plans, which would delay the Fiscal Plan objectives of long-term financial and operational sustainability.</p>	<ul style="list-style-type: none"> • Ensure leadership visibly champions Fiscal Plan implementation • Assign clear owners and ensure their buy-in through proper incentives (e.g., promote collaboration by acknowledging top performers) • Communicate regularly throughout the organization and ensure a high degree of transparency, including the celebration of successes



7 Conclusion

PRASA's 2020 Fiscal Plan reflects the fiscal goals and requirements as stipulated and required by PROMESA to ensure financial sustainability and access to credit markets at reasonable rates, oriented to ensure a reliable, safe, and affordable water and wastewater service. In providing these essential services, the Authority must ensure compliance with federal and local environmental regulations, thus safeguarding the health of the population and protecting the environment. The Fiscal Plan aims to strike a balance across the interests of all stakeholders involved, including maintaining an affordable cost of services for its customers while continually improving and maintaining the reliability and quality of its service.

Even though PRASA has made some progress in stabilizing its finances, sustained underinvestment and a lack of comprehensive operational reforms has led to underperformance in many respects, including:

- High levels of water loss
- Inability to proactively perform system maintenance
- Under-delivery of critical CIP projects

In light of this, PRASA must take further steps to fully bridge its operational deficiencies to ensure true, long-term financial and operational sustainability.

PRASA's chief priority must be the provision of an essential service while punctually and comprehensively implementing the Fiscal Plan initiatives that will transform the course of water and wastewater services in Puerto Rico. While debt service reduction and rate increases have improved PRASA's economic health over the past several years, it has continued to fall short on fully implementing operational measures and delivering critical maintenance and capital projects on time and on budget. Should there be underperformance in Fiscal Plan implementation, the Oversight Board may rely on its powers and rights to take corrective actions, including the measures provided in PROMESA Sections 203 and 204.

Failure to fully implement the operational measures outlined in this Fiscal Plan would mean that PRASA would need to further rely on rate increases to achieve a balanced budget or risk ongoing structural deficits. Furthermore, not executing the Fiscal Plan threatens the safety and reliability of the Authority's infrastructure, thus putting Puerto Ricans at risk of poor water quality and diminished availability or access. Without sustained dedication to implementing all Fiscal Plan measures, and the willingness to pursue additional transformational changes to enhance system efficiency, simplicity, and resiliency in the future, the challenges that have held back the Authority will continue and PRASA will have lost a critical window to restore financial and operational sustainability.

Achieving a balanced budget will also put PRASA on a path to access short-term and long-term capital markets at reasonable rates to fund critical capital expenditures in a manner consistent with other water and wastewater utilities. Achieving access to capital markets at reasonable rates will provide PRASA with opportunities to expand its CIP to meet critical System health, safety, reliability and resilience requirements. Progress on these objectives will allow PRASA to move closer to attaining long-term sustainability.

To achieve sustainability and ensure funding is available for executing PRASA's critical CIP projects, full implementation of all measures outlined in this Fiscal Plan, including rate



adjustments and enhancements and all-expense-saving measures, will be necessary to prevent a sustained structural deficit throughout the lifetime of the Fiscal Plan. Provided that all Fiscal Plan measures are implemented in an efficient and timely manner, PRASA can achieve the Fiscal Plan's objectives of long-term financial and operational sustainability, thus enabling the sustained provision of reliable, affordable, and safe water and wastewater services to the people of Puerto Rico.



8 Appendix

Details on Consent Decree

The consent decree with USEPA and the settlement agreement with PRDOH require PRASA to implement remedial plans, develop and implement CIP projects to bring the System into compliance with regulatory requirements, and conduct evaluations concerning specific System's infrastructure and operational issues. PRASA currently estimates that the total cost (incurred, since inception and projected) of compliance with the existing consent decrees and agreements will be over \$1,700 million through fiscal year 2026.

Up until 2015, PRASA was subject to three consent decrees with USEPA and one settlement agreement with PRDOH to eliminate treatment plant non-compliance and unpermitted discharges of untreated sewage, and to improve the quality of potable water and sludge treatment systems (STSES). These agreements included the following:

1. **2003 Consent Decree (PRASA IV), U.S. v. PRASA, Commonwealth of Puerto Rico, and “Compañía de Aguas de Puerto Rico”, Inc., Civil Action No. 01-1709 (JAF)** – Addresses violations to the Section 301 and 402 of the Clean Water Act (CWA) and regulations and PRASA's NPDES permits with regards to certain PRASA's WWPSs.
2. **2006 Wastewater Consent Decree, U.S. v. PRASA and Commonwealth of Puerto Rico, Civil Action No. 06-1624 (SEC)** – Addresses violations to the Section 301 and 402 of the CWA and regulations promulgated there under, and PRASA's NPDES permits with regards to PRASA's WWTPs.
3. **2006 PRDOH Drinking Water Settlement Agreement, Civil Action KPE 2006-085818 as amended** – Addresses non-compliance and alleged violations with the Puerto Rico Potable Water Purity Protection Law, as amended (“Ley para Proteger la Pureza de las Aguas Potables de Puerto Rico, Ley Núm. 5 de 21 de Julio de 1977, según enmendada”), the Safe Drinking Water Act (SDWA) and applicable regulations, and the General Environmental Health Regulation (“Reglamento General de Salud Ambiental, Reglamento Núm. 6090 de 4 de febrero de 2000”).¹⁸ The Settlement Agreement was signed: March 15, 2007 and subsequently amended on June 16, 2008.⁶¹
4. **2010 USEPA STS Consent Decree, U.S. v. PRASA and Commonwealth of Puerto Rico** – Addresses alleged violations to the SDWA and the CWA specifically to the National Primary Drinking Water Regulations.

In light of the challenges faced by PRASA, resulting from the continued uncertainty and strain on the Government's economy and despite PRASA being in material compliance with the capital improvement requirements of the consent decrees and agreements, PRASA requested and negotiated amendments to the above-mentioned consent decrees. In 2012, PRASA and the Regulatory Agencies began discussions to modify certain requirements of the consent decrees and agreements to re-align compliance priorities and, in turn, help alleviate PRASA's financial

⁶¹ FY2016 and FY2017 Consulting Engineer's Report for The Puerto Rico Aqueduct And Sewer Authority, published by Arcadis in December of 2017.



burden. After an extensive negotiation process and under the terms agreed upon by PRASA and USEPA, on September 15, 2015, the U.S. Department of Justice (USDOJ) filed the 2015 USEPA Consent Decree executed among USEPA, PRASA and the Commonwealth of Puerto Rico in settlement of the matters addressed in a complaint brought against PRASA by USDOJ on behalf of USEPA also filed on such date.

On May 23, 2016, the 2015 Consent Decree between USEPA and PRASA was officially logged and accepted by the Court, placing an end to the extensive renegotiation process. The 2015 USEPA Consent Decree consolidates and supersedes the three previous USEPA's Consent Decrees with PRASA (i.e. PRASA IV: 2003 Consent Decree, 2006 Wastewater Consent Decree and 2010 USEPA STS Consent Decree).



Consolidated Action Plan

Initiative	Action items	Deadline	Owner
Headcount Cap	Implement headcount cap	July 1, 2020	PRASA
Uniform Healthcare	Implement new medical plan	July 1, 2020	PRASA
PMO Execution	Assign initiative owners for all Fiscal Plan initiatives	July 15, 2020	PRASA
Chemical Expense Reduction	Issue consolidated coagulant and flocculant procurement RFP	July 31, 2020	PRASA
Electricity Cost Reduction	Energy Office to target energy reduction goal in kWh per region and create structured plan	July 31, 2020	PRASA
PMO Execution	Establish project committees and execution teams and assign project executive leaders	July 31, 2020	PRASA
PMO Execution	Convene first Cross-functional steering committee meeting to kick-off PMO process	July 31, 2020	PRASA
Chemical Expense Reduction	Submit construction execution planning and timing for Carraizo Dam Oversight Board	August 15, 2020	PRASA
Electricity Cost Reduction	Submit proposed goals and action plan to Oversight Board	August 30, 2020	PRASA
Asset Management and Maintenance Plan	Revise organization structure for maintenance department	August 31, 2020	PRASA
Capital Delivery Optimization	Complete contract with PMC firm	August 31, 2020	PRASA
Chemical Expense Reduction	Submit purchasing strategy report with list of chemicals contracts that will be tendered in first half of FY21	August 31, 2020	PRASA
PMO Execution	Establish meeting cadences, reporting requirements, and initiative/project KPIs	August 31, 2020	PRASA
Physical Water Loss Reduction (Pressure Management)	Condition assessment and prioritization of pressure zones (39 in total) based on analysis	September 1, 2020	PRASA
Capital Delivery Optimization	Identify clear and achievable % of possible savings across activities with Oversight Board	September 15, 2020	PRASA, FOMB
Electricity Cost Reduction	Begin monthly tracking of energy reduction across regions	September 15, 2020	PRASA



Initiative	Action items	Deadline	Owner
Physical Water Loss Reduction (Leak Reduction)	PRASA to start reporting quarterly on progress of leaks located and addressed	September 15, 2020	PRASA
Asset Management and Maintenance Plan	Establish Planning Center of Excellence	September 30, 2020	PRASA
Physical Water Loss Reduction (Overall)	Complete procurement of Third Party Leak detection support	October 1, 2020	PRASA
Headcount Cap	Complete procurement process for productivity and rightsizing study	October 15, 2020	PRASA
Asset Management and Maintenance Plan	Transition to system of tracking actual time spent on maintenance activities	October 31, 2020	PRASA
Chemical Expense Reduction	Submit chemicals inventory program planning and timing to FOMB	October 31, 2020	PRASA
Chemical Expense Reduction	Submit purchasing strategy report with list of chemicals contracts that will be tendered in second half of FY21	November 1, 2020	PRASA
Christmas Bonus Elimination	Implement Christmas Bonus Elimination	November 1, 2020	PRASA
Asset Management and Maintenance Plan	Strengthen and optimize current data management	November 30, 2020	PRASA
Capital Delivery Optimization	Implement new CIP Tracking Tool	December 1, 2020	PRASA
Physical Water Loss Reduction (Master Meters)	Reporting on maintenance conducted for Master Meters	December 1, 2020	PRASA
Asset Management and Maintenance Plan	Implement master planning schedule	December 15, 2020	PRASA
Capital Delivery Optimization	Create and submit action plan to achieve and refine savings starting in FY22 to FY25 to Oversight Board	December 15, 2020	PRASA
Rate Adjustments	Complete procurement process for rate design study	December 15, 2020	PRASA
Capital Delivery Optimization	Discuss action plan with Oversight Board	January 15, 2021	PRASA, FOMB
Asset Management and Maintenance Plan	Create plan and target for incorporation of condition and performance of each asset in SAP	January 31, 2021	PRASA



Initiative	Action items	Deadline	Owner
Asset Management and Maintenance Plan	Discuss action plan with Oversight Board	February 1, 2021	PRASA, FOMB
Physical Water Loss Reduction (Master Meters)	Installation of Master Meter to be installed by FY2021 after received	February 1, 2021	PRASA
Headcount Cap	Complete comprehensive productivity and rightsizing study	February 28, 2021	PRASA
Physical Water Loss Reduction (Master Meters)	Data Validation of new meters installed during FY2021	March 1, 2021	PRASA
Headcount Cap	Submit key findings and proposed changes resulting from workforce planning and talent management study to Oversight Board	March 15, 2021	PRASA, FOMB
Physical Water Loss Reduction (Pressure Management)	Procurement, Stabilization & Repair occurs as WRO team identifies deficiencies in the field (for 39 zones)	March 15, 2021	PRASA
Headcount Cap	Discuss findings and proposed changes with Oversight Board	April 1, 2021	PRASA, FOMB
Physical Water Loss Reduction (Pressure Management)	Optimization post repairs and analysis of new field condition (for 39 zones)	April 30, 2021	PRASA
Physical Water Loss Reduction (Pressure Management)	Monitoring of controlled pressure zone and maintenance (for 39 zones)	June 15, 2021	PRASA
Emergency Response Plan and Climate Risk Preparedness	Update Vulnerability Study	June 30, 2021	PRASA
Rate Adjustments	Complete comprehensive review of current rate structure	June 30, 2021	PRASA
PMO Execution	Appoint permanent PMO Director	July 1, 2021	PRASA
Rate Adjustments	Submit proposed revised rate structure for Board approval	July 31, 2021	PRASA
Emergency Response Plan and Climate Risk Preparedness	Submit key finding to Oversight Board	August 15, 2021	PRASA, FOMB
Rate Adjustments	Publicize information on proposed rate design changes	October 1, 2021	PRASA



Initiative	Action items	Deadline	Owner
Emergency Response Plan and Climate Risk Preparedness	Complete and submit Emergency Response Plan to EPA	December 30, 2021	PRASA
Pension Reform	Implement Pension Reform	January 1, 2022	CW
Emergency Response Plan and Climate Risk Preparedness	Submit key findings and proposed changes resulting from plan to Oversight Board	February 15, 2022	PRASA, FOMB
Rate Adjustments	Implement revised rate design	July 1, 2022	PRASA, CW
Master Plan	Submit key findings and proposed changes resulting from Master Plan to Oversight Board	TBD	PRASA, FOMB
Master Plan	Incorporate findings from Master Plan into CIP	TBD	PRASA
Master Plan	Complete 2020 Master Plan	TBD	PRASA
Metering and Customer Service Optimization	P3 Committee approval	TBD	PRASA
Metering and Customer Service Optimization	PRASA Governing Board approval	TBD	PRASA
Metering and Customer Service Optimization	AAFAF approval	TBD	AAFAF
Metering and Customer Service Optimization	Oversight Board approval	TBD	FOMB



Additional Non-Financial Enabling Measures

Additional non-financial measures have been identified that are also important to further improving PRASA's operational performance.

Strategic Plan Update

In addition to the Fiscal Plan, PRASA will develop a strategy plan that focuses on strategies and measures to achieve PRASA's strategic objectives. PRASA is improving its Strategic Plan by incorporating the Fiscal Plan measures and aligning the utility's vision, mission, and strategic objectives across both platforms.

PRASA has developed a framework of strategic objectives that will guide programming priorities in the upcoming year:

1. **Water quality:** Provide high-quality and safe drinking water for Puerto Rico.
2. **Environmental Responsibility:** Protect the environment through effective management and operation of our wastewater treatment and collection system, managing our resources in an environmentally responsible manner
3. **Water sustainability:** Efficient use of resources while promoting water conservation.
4. **Customer Satisfaction:** Improve customer service experience
5. **Service Reliability:** Ensure integrity of the system to guarantee reliable, affordable, and safe water and wastewater treatment services.
6. **Personnel Development:** Provide a safe and rewarding work environment which promotes employees' skills development, safety, and maintaining productivity levels.
7. **Operational Efficiency:** Promote efficiency, reliability, and resiliency that will allow a service of excellence to PRASA's customers and exceed their expectations.
8. **Financial Sustainability:** Promote financial efficiency to either reduce operating costs or increase revenue, while providing customers with affordable water services.
9. **Innovation:** Continually search for innovation opportunities throughout operations with support and active coordination of the Information Technology Department.
10. **Accountability:** Transparently communicate performance and results.



These objectives must be embedded through specific measures to be described in the Strategic Plan and accountability must be established through Key Performance Indicators (KPIs) designed to validate the implementation of the measures throughout the organization. KPIs must measure the execution of the strategies analyzing the corporation's performance when compared to the expected results.

Increase Water Availability

Raw water is a natural resource essential for human life and maximize and preserve such resource is one of the key PRASA goals.



PRASA is evaluating options to increase and monitor its water availability based on its limited resources, including:

- **Reservoir Dredging:** Drinking water production process starts with the collection of raw water from the reservoirs around the Island. PRASA has included in its Resiliency projects around \$1 billion for reservoir dredging which must be subject to federal funds (FEMA/CDBG, others) availability.
- **Reservoirs levels monitoring:** After the Island's 2014 drought, PRASA developed a process to constantly monitor the level for most of the reservoirs. This allows PRASA to carry out the necessary operational adjustments to maintain the reservoir levels and mitigate the risk of a possible water rationing. PRASA must keep closely monitoring the reservoirs level to promptly activate its protocols.

Improve System Resiliency

The primary challenge to overcome in order to achieve a resilient future is the financial capacity to execute the required projects. But, at the same time, these projects must help to achieve and maintain financial sustainability, ensuring revenue stability and water quality.

The CIP must incorporate projects to improve resiliency such as:

- Improvements to infrastructure at water bodies (i.e. intakes)
- Continue structural safety of dams and reservoirs
- Optimize the metering system so that there's better knowledge of areas without service
- Water management measures to pursue water availability and reduce vulnerability to drought periods, providing for revenue stability

In addition to the critical projects that are necessary to build back PRASA's System to pre-hurricanes conditions, other projects are being considered as necessary to make the System resilient to potential future events. The *Build Back Better Plan for Puerto Rico (BBB Plan)* presented by the Government in the aftermath of the 2017 Hurricanes, included \$2.7B for water and sewer projects from which \$2.2B fall under PRASA's responsibility.

PRASA is also projecting an additional \$1.5B for other projects not included in the BBB Plan for a total of \$3.7B in resiliency projects.

The resiliency projects must be executed only if federal funding is obtained and as long there is enough contracting capacity in Puerto Rico to complete such projects. Therefore, no financial impact was included in the financial projections.

Table 8-1 provides a high-level overview of the resiliency projects.



TABLE 8-1: PROJECTED RESILIENCY PROJECTS

Priority	# of Projects	Estimated Cost (\$M)	Project Categories	Overall Resiliency
1	20	\$2,254	<ul style="list-style-type: none"> Improvement of potable water transfer capabilities 	<ul style="list-style-type: none"> Allows plants to impact more service areas
			<ul style="list-style-type: none"> Improvement of structural safety of dams/reservoirs 	<ul style="list-style-type: none"> Extends service life of infrastructure difficult or impossible to replace
			<ul style="list-style-type: none"> Relocation of Infrastructure in Flood Zones Sanitary trunk sewer repairs Removal of key systems from PREPA grid 	<ul style="list-style-type: none"> Reduces vulnerability and risk Reduces vulnerability and dependence on external factors not controlled by PRASA
2	9	\$1,110	<ul style="list-style-type: none"> Redesign of infrastructure in rivers Water availability increase 	<ul style="list-style-type: none"> Reduces vulnerability and risk
3	10	\$320	<ul style="list-style-type: none"> Improvement of water treatment capabilities 	<ul style="list-style-type: none"> Better preparedness for changes in raw water
			<ul style="list-style-type: none"> Remote operational capabilities 	<ul style="list-style-type: none"> Improves responsiveness for decision making and implementation

Facilities Automation

PRASA partially implemented a plant monitoring platform (SCADA). After Hurricanes Irma and Maria, many of the facilities' sensors and controls were affected and the level of visualization was reduced. The Authority's first step is to achieve pre-Hurricane level of visualization throughout its network

The current automation system approved by the DOH is defined as an Interim Automation Program, which does not allow for actual remote operations of the facilities. For full automation implementation requirements, PRASA requires DOH approvals on a case-by-case evaluation and technology implementation basis.

If approved full automation and control capabilities at PRASA's facilities can reduce tank overflows and water losses, reduce the manpower required to monitor the System, and provide information to more efficiently manage the System and assign maintenance resources.

Under its Resiliency projects list, PRASA is expecting to invest \$150M for remote operational capabilities at its facilities, subject to the availability of resiliency federal funds.



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Appendix IV

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INVESTOR LETTER

December 9, 2020

Puerto Rico Aqueduct and Sewer Authority
604 Avenida Barbosa
San Juan, Puerto Rico 00918

Banco Popular de Puerto Rico
Popular Plaza
San Juan, Puerto Rico 00918

Barclays Capital Inc.
BofA Securities, Inc.
c/o Barclays Capital Inc.
745 Seventh Avenue
New York, New York 10019

Ladies and Gentlemen:

The undersigned, authorized representative of _____ (the “Investor”), does hereby represent and agree, on behalf of the Investor, as follows:

1. The Investor hereby acknowledges that it is purchasing a principal amount of Puerto Rico Aqueduct and Sewer Authority, Revenue Refunding Bonds, Series 2020A (Senior Lien) and Puerto Rico Aqueduct and Sewer Authority Federally Taxable Revenue Refunding Bonds, Series 2020B (Senior Lien) (together, the “Bonds”), to be issued pursuant to the powers granted to Puerto Rico Aqueduct and Sewer Authority (the “Authority”) by Act No. 40 of the Legislative Assembly of Puerto Rico, approved May 1, 1945, and amended and reenacted, a resolution adopted by the governing board of the Authority on October 29, 2020 and a Master Agreement of Trust, dated as of March 1, 2008, as amended and restated as of February 15, 2012 and as further amended (the “Master Agreement of Trust”), including as amended and supplemented by an Eighth Supplemental Agreement of Trust, dated as of December 9, 2020 and approved by the governing board of the Authority on October 29, 2020 and December 9, 2020 (together with the Master Agreement of Trust, the “Trust Agreement”), each between the Authority and Banco Popular de Puerto Rico, as trustee (the “Trustee”). The issuance of the Bonds was also approved by Puerto Rico Fiscal Agency and Financial Advisory Authority on October 28, 2020 and by the Fiscal Oversight and Management Board for Puerto Rico on November 20, 2020.

2. The Investor is a “qualified institutional buyer” under and as defined Rule 144A of the Securities Act of 1933, as amended (the “1933 Act”), has sufficient knowledge and experience in financial and business matters, including purchase and ownership of revenue bonds of the type referred to in the Authority’s Limited Offering Memorandum, dated December 9, 2020, relating to the Bonds (the “Limited Offering Memorandum”), to be able to evaluate the merits and risks of the Bonds, and can bear the economic risk of its investment in the Bonds. The Bonds are a financially suitable investment for the Investor consistent with its investment policies, needs and objectives.

3. The Bonds are being acquired by the Investor for its own account and not with a present view to distributing the Bonds.

4. The Investor acknowledges that it has made its independent inquiry and analysis with respect to the Bonds and security therefor and that it has either been supplied with or been given access to information about the Authority, including unaudited financial statements and other financial and operating

information, and the Investor has had the opportunity to ask questions and receive answers, from knowledgeable employees of the Authority, concerning the Authority, the Systems (as defined in the Trust Agreement) and the Bonds, among other topics related to the Bonds.

5. The Investor acknowledges that an investment in the Bonds involves a high degree of risk and that the Investor has read and reviewed the Limited Offering Memorandum, including, without limitation, (i) the information provided in the Limited Offering Memorandum under “CERTAIN RISK FACTORS AND INVESTMENT CONSIDERATIONS” and (ii) the appendices to the Limited Offering Memorandum. The Investor acknowledges that the Authority has not published audited financial statements for any fiscal year since the audited financial statements for the Authority’s fiscal year ending June 30, 2017.

6. The Investor acknowledges that the Bonds may be sold by the Investor only in accordance with the terms and conditions of the Trust Agreement, including sales being limited to “qualified institutional buyers”, as defined in Rule 144A of the 1933 Act, and in minimum denominations of \$250,000 or and any multiple of \$5,000 in excess thereof, as set forth in the Trust Agreement.

7. By its execution of this Investor Letter, the Investor hereby (i) consents to (a) the amendment of the Master Agreement of Trust as set forth in the Second Amended and Restated Master Agreement of Trust, as defined in, and in the form attached as Appendix II to, the Limited Offering Memorandum and (b) upon satisfaction of the requirements of Section 9.02 of the Master Agreement of Trust, the execution by the Authority and the Trustee of the Second Amended and Restated Master Agreement of Trust in such form and (ii) acknowledges that upon the effective date of the Second Amended and Restated Master Agreement, the Bonds shall immediately be secured thereunder and payable in accordance with the terms thereof, without any further action of the Authority and the Trustee. This consent may be relied upon by any person giving a consent to such execution pursuant to Section 9.02(e) of the Trust Agreement.

[_____],
as Investor
By: _____
Its: _____

Appendix V

The Depository Trust Company (“*DTC*”), New York, NY, will act as securities depository for the 2020 Senior Bonds. The 2020 Senior Bonds will be issued as fully-registered bonds 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 2020 Senior Bond will be issued for each stated maturity of the 2020 Senior Bonds, each in the aggregate principal amount of such maturity, and will be deposited with *DTC*. If, however, the aggregate principal amount of any maturity exceeds \$500 million, one 2020 Senior Bond will be issued with respect to each \$500 million of principal amount of such maturity, and an additional 2020 Senior Bond will be issued with respect to any remaining principal amount of such maturity.

So long as Cede & Co. is the registered owner of the 2020 Senior Bonds, as nominee for *DTC*, references herein to Bondholders or owners of the 2020 Senior Bonds (other than under the caption TAX MATTERS) shall mean Cede & Co. and shall not mean the beneficial owners of the 2020 Senior Bonds. If, however, the aggregate principal amount of any issue exceeds \$500 million, one certificate will be issued with respect to each \$500 million of principal amount, and an additional certificate will be issued with respect to any remaining principal amount of such issue.

DTC, the world’s largest securities 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 issues, 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”). The *DTC* Rules applicable to its Participants are on file with the Securities and Exchange Commission. More information about *DTC* can be found at www.dtcc.com.

Purchases of 2020 Senior Bonds under the *DTC* system must be made by or through Direct Participants, which will receive a credit for the 2020 Senior Bonds on *DTC*’s records. The ownership interest of each actual purchaser of each 2020 Senior Bond (“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 2020 Senior 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 certificates representing their ownership interests in the 2020 Senior Bonds, except in the event that use of the book-entry system for the 2020 Senior Bonds is discontinued.

To facilitate subsequent transfers, the 2020 Senior 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 2020 Senior 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 2020 Senior Bonds; DTC's records reflect only the identity of the Direct Participants to whose accounts such 2020 Senior 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 2020 Senior Bonds may wish to take certain steps to augment the transmission to them of notices of significant events with respect to the 2020 Senior Bonds, such as redemptions, tenders, defaults, and proposed amendments to the 2020 Senior Bonds documents. For example, Beneficial Owners of 2020 Senior Bonds may wish to ascertain that the nominee holding the 2020 Senior 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 request that copies of notices be provided directly to them.

Redemption notices shall be sent to DTC. If less than all of the 2020 Senior Bonds within an issue are being redeemed, DTC's practice is to determine by lot the amount of the interest of each Direct Participant in such issue to be redeemed. See, "Notice of Redemption; Selection of 2020 Senior Bonds" under THE 2020 SENIOR BONDS for a discussion of pro rata pass-through of principal selection procedures in connection with a redemption in part of any maturity of the 2020 Senior Bonds.

Neither DTC nor Cede & Co. (nor any other DTC nominee) will consent or vote with respect to 2020 Senior Bonds unless authorized by a Direct Participant in accordance with DTC's MMI Procedures. Under its usual procedures, DTC mails an Omnibus Proxy to the Authority 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 2020 Senior 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 2020 Senior Bonds will be made to Cede & Co., or 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 Authority or the Trustee, on payable dates in accordance with their respective holdings shown on DTC's records. Payments by 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, the Trustee or the Authority, subject to any statutory or regulatory requirements as may be in effect from time to time. Payment of principal, redemption premium, if any, and interest to Cede & Co. (or such other nominee as may be requested by an authorized representative of DTC) is the responsibility of the Authority or the Trustee, 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.

The information in this section concerning DTC and DTC's book-entry system has been obtained from sources that the Authority believes to be reliable, but the Authority takes no responsibility for the accuracy thereof.

NONE OF THE AUTHORITY, THE TRUSTEE OR THE UNDERWRITERS WILL HAVE ANY RESPONSIBILITY OR OBLIGATION TO DIRECT PARTICIPANTS, INDIRECT PARTICIPANTS OR ANY BENEFICIAL OWNER WITH RESPECT TO (I) THE ACCURACY OF ANY RECORDS MAINTAINED BY DTC, ANY DIRECT PARTICIPANT OR INDIRECT PARTICIPANT; (II) THE PAYMENT BY DTC OR ANY DIRECT PARTICIPANT OR INDIRECT PARTICIPANT OF ANY AMOUNT WITH RESPECT TO THE PRINCIPAL OF, OR PREMIUM, IF ANY, OR INTEREST ON, THE 2020 SENIOR BONDS; (III) ANY NOTICE WHICH IS PERMITTED OR REQUIRED TO BE GIVEN TO BONDHOLDERS; (IV) ANY CONSENT GIVEN BY DTC OR OTHER ACTION TAKEN BY DTC AS A BONDHOLDER; OR (V) THE SELECTION BY DTC OR ANY DIRECT PARTICIPANT OR INDIRECT PARTICIPANT OF ANY BENEFICIAL OWNERS TO RECEIVE PAYMENT IN THE EVENT OF ANY PARTIAL REDEMPTION OF THE 2020 SENIOR BONDS.

Discontinuance of the Book-Entry Only System

DTC may discontinue providing its services as depository with respect to the 2020 Senior Bonds at any time by giving reasonable notice to the Authority or the Trustee. Under such circumstances, in the event that a successor depository is not obtained, 2020 Senior Bond certificates are required to be printed and delivered.

The Authority may decide to discontinue use of the system of book-entry only transfers through DTC (or a successor securities depository). In that event, 2020 Senior Bond certificates will be printed and delivered to DTC.

In the event that such book-entry only system is discontinued or terminated, the following provisions will apply: (i) payment of the principal of and the interest on the 2020 Senior Bonds will be made in lawful money of the United States of America; (ii) payment of the principal will be made at the corporate office of the Trustee in San Juan, Puerto Rico; (iii) interest on the 2020 Senior Bonds will be paid by check mailed to the respective addresses of the registered owners thereof as of the fifteen day of the month immediately preceding the interest payment date as

shown on the registration books of the Authority maintained by the Trustee; (iv) the 2020 Senior Bonds will be issued only as registered bonds without coupons in authorized denominations; and (v) the transfer of the 2020 Senior Bonds will be registrable and the 2020 Senior Bonds may be exchanged at the corporate office of the Trustee in San Juan, Puerto Rico upon the payment of any taxes or other governmental charges required to be paid with respect to such transfer or exchange.

Appendix VI

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Nixon Peabody LLP
Tower 46
55 West 46th Street
New York, NY 10036-4120
212-940-3000

December 17, 2020

Puerto Rico Aqueduct and Sewer Authority
San Juan, Puerto Rico

Ladies and Gentlemen:

We have examined a record of proceedings relating to the issuance by Puerto Rico Aqueduct and Sewer Authority (the “Authority”), a governmental instrumentality of the Commonwealth of Puerto Rico (the “Commonwealth”) created pursuant to Act No. 40 of the Legislature of Puerto Rico, approved May 1, 1945, as amended and reenacted (the “Act”), of its \$1,351,300,000 aggregate principal amount of Revenue Refunding Bonds, Series 2020A (Senior Lien) (the “Series A Bonds”) and \$18,775,000 aggregate principal amount of Federally Taxable Revenue Refunding Bonds, Series 2020B (Senior Bonds) (the “Series B Bonds”, and together with the Series A Bonds, the “Bonds”).

The Bonds are being issued pursuant to a Master Agreement of Trust, dated as of March 1, 2008, as amended and restated as of February 15, 2012, and as further amended and supplemented, including as supplemented by the Eighth Supplemental Agreement (defined below) (as so amended and supplemented, the “Master Trust Agreement”), by and between the Authority and Banco Popular de Puerto Rico, as trustee thereunder (the “Trustee”), and a series supplement thereto fixing the terms of the Bonds, dated as of December 9, 2020, by and between the Authority and the Trustee (the “Eighth Supplemental Agreement”). Capitalized terms used herein and not otherwise defined shall have the respective meanings ascribed thereto in the Master Trust Agreement.

The Authority is authorized to issue or incur Indebtedness, in addition to the Bonds, only upon the terms and conditions set forth in the Master Trust Agreement, and such Indebtedness, when issued or incurred, shall, with all the Bonds, be entitled to the equal benefit, protection and security of the provisions, covenants and agreements of the Master Trust Agreement.

All of the Bonds are dated, mature, are payable and bear interest in the manner and upon the terms set forth in the Master Trust Agreement. The Bonds are issuable in the form of fully registered bonds in denominations of \$250,000 each and multiples of \$5,000 thereof.

The Bonds will be initially registered in the name of Cede & Co., as registered owner and nominee for The Depository Trust Company, New York, New York, which will act as securities depository therefor.

As Bond Counsel we have examined (i) the Act, (ii) certified copies of the proceedings of the Authority authorizing the issuance of the Bonds, (iii) the Master Trust Agreement, (iv) the Eighth Supplemental Agreement and (v) one of the Bonds, as executed and authenticated. We have also examined originals or copies, certified or otherwise identified to our satisfaction, of such other instruments, certificates and documents as we have deemed necessary or appropriate for the purposes of rendering the opinions set forth below.

In such examinations, we have assumed the genuineness of all signatures, the authenticity of all documents tendered to us as originals and the conformity to original documents of all documents submitted to us as certified or photostatic copies. As to questions of fact material to our opinion we have relied upon the certified proceedings and other certifications of public officials furnished to us without undertaking to verify the same by independent investigation.

Based upon the foregoing, we are of the opinion, under existing law, as follows:

1. The Act is valid.
2. The proceedings of the Authority in connection with the authorizing, issuance and sale of the Bonds and the authorization, execution and delivery of the Master Trust Agreement have been validly and legally taken.
3. The Master Trust Agreement has been duly authorized, executed and delivered by the Authority and constitutes a legal, valid and binding obligation of the Authority enforceable in accordance with its terms.
4. The Act and such proceedings show lawful authority of the issuance and sale of the Bonds by the Authority.
5. The Bonds have been duly authorized, executed and delivered by the Authority and, except as described in the following paragraph, constitute legal, valid, binding and enforceable obligations of the Authority payable solely from the Authority Revenues and other available funds to the extent provided in the Master Trust Agreement, and are entitled to the benefit and security of the Master Trust Agreement.
6. The Bonds do not constitute a debt of the Commonwealth or of any of its municipalities or other political subdivisions, other than the Authority, and neither the Commonwealth nor any such municipality or other political subdivision, other than the Authority, is liable thereon.
7. The Internal Revenue Code of 1986 (the "Code") sets forth certain requirements which must be met subsequent to the issuance and delivery of the Series A Bonds for interest thereon to be and remain excluded from gross income for Federal income tax purposes. Noncompliance with such requirements could cause the interest on the Series A Bonds to be included in gross income for Federal income tax purposes retroactive to the date of issue of the Series A Bonds. Pursuant to the Master Trust Agreement, the Authority has

covenanted to comply with the applicable requirements of the Code in order to maintain the exclusion of the interest on the Series A Bonds from gross income for Federal income tax purposes pursuant to Section 103 of the Code. In addition, the Authority has made certain representations and certifications in the Master Trust Agreement. We have not independently verified the accuracy of those certifications and representations.

Under existing law, assuming compliance with the aforementioned tax covenants and the accuracy of the aforementioned representations and certifications, interest on the Series A Bonds is excluded from gross income for Federal income tax purposes under Section 103 of the Code. We are also of the opinion that such interest is not treated as a preference item in calculating the alternative minimum tax imposed under the Code.

8. Interest on the Bonds is exempt from state, Commonwealth and local income taxation.

Except as stated in paragraphs 7 and 8 above, we express no opinion as to any other Federal, state, Commonwealth or local tax consequences of the ownership or disposition of the Bonds. Furthermore, we express no opinion as to any Federal, state, Commonwealth or local tax law consequences with respect to the Bonds, or the interest thereon, if any action is taken with respect to the Bonds or the proceeds thereof upon the advice or approval of other bond counsel.

It is to be understood that the rights of the holders of the Bonds and the enforceability thereof and the Master Trust Agreement may be subject to bankruptcy, insolvency, reorganization, moratorium and other similar laws affecting creditors' rights heretofore or hereafter enacted to the extent constitutionally applicable and that their enforcement may also be subject to the exercise of judicial discretion in appropriate cases.

Respectfully submitted,

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Appendix VII

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**SECOND AMENDED AND RESTATED
MASTER AGREEMENT OF TRUST**

between

**PUERTO RICO
AQUEDUCT AND SEWER AUTHORITY**

and

**BANCO POPULAR DE PUERTO RICO,
as Trustee**

Dated as of _____, _____

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THIS MASTER AGREEMENT OF TRUST, dated as of the 1st day of March, 2008, as amended and restated as of _____, by and between Puerto Rico Aqueduct and Sewer Authority (the “Authority”) a public corporation and an autonomous governmental instrumentality of the Commonwealth of Puerto Rico, exercising essential governmental functions and created by the Aqueduct and Sewer Act of Puerto Rico hereinafter mentioned, and Banco Popular de Puerto Rico, as trustee (in such capacity, together with any successor in such capacity, herein called the “Trustee”), provides:

WHEREAS, in order to furnish the inhabitants of Puerto Rico an adequate water and sewerage service, the Legislature of Puerto Rico duly adopted Act No. 40, approved May 1, 1945, and by said Act created a governmental instrumentality of the Commonwealth of Puerto Rico by the name of the “Puerto Rico Aqueduct and Sewer Service”; and

WHEREAS, the Legislature of Puerto Rico duly adopted Act No. 163, approved May 3, 1949, known as the “Aqueduct and Sewer Act of Puerto Rico”, amending and reenacting said Act No. 40, approved May 1, 1945, and changing the name of the Puerto Rico Aqueduct and Sewer Service to “Puerto Rico Aqueduct and Sewer Authority” (said Act No. 163, as amended, hereinafter called the “Act”) and by the Act, the Authority is fully authorized and empowered:

(a) to have complete control and supervision of its properties and activities, including the power to make and enforce rules and regulations for the maintenance and operation thereof;

(b) to improve and extend the water and sewer facilities under its jurisdiction and to provide additional facilities of the same character;

(c) to borrow money and to issue its revenue bonds for any of its corporate purposes, including the following:

(i) to pay all or any part of the cost, as defined in the Act, of improvements to the Commonwealth Water System and to the Commonwealth Sewer System, as said systems are defined in the Act, as separate systems or as a single system for operating and financing purposes;

(ii) to fund, refund, purchase, pay or discharge any outstanding revenue bonds; and

(iii) to pay all proper costs of the Authority in connection with the issuance of the revenue bonds;

(d) to determine, fix, alter, charge or collect rates, fees, rentals, and other charges for the use of the facilities of the Authority, or for the water and sewerage services or other products or services sold, rendered or furnished by it; and

(e) to pledge all or any part of the revenues of the Authority to secure the payment of such revenue bonds; and

WHEREAS, the Authority has heretofore entered into a Trust Agreement, dated as of the first day of October, 1988, as amended, by and between the Authority and The Chase Manhattan Bank (National Association), as trustee (the “1988A Trust Agreement”) under which there have heretofore been issued revenue bonds of the Authority in the initial aggregate principal amount of \$400,001,438.40 for the purpose of paying a portion of the cost of the acquisition and construction of the Authority’s Systems (as defined in the 1988A Trust Agreement), of which revenue bonds \$365,186,438.40 is currently outstanding (the “1988A Bonds”); and

WHEREAS, the Authority has heretofore entered into a Trust Agreement, dated November 13, 1988, by and between the Authority and Banco Popular de Puerto Rico, as fiscal agent (the “1988AA Trust Agreement”) under which there have heretofore been issued revenue refunding bonds of the Authority in the initial aggregate principal amount of \$29,810,800 for the purpose of refinancing certain obligations incurred by the Authority to pay a portion of the cost of the acquisition and construction of the Systems, of which revenue bonds \$14,049,810.00 is currently outstanding (the “1988AA Bonds”); and

WHEREAS, the Authority on December 7, 1995 adopted Resolution No. 1583 (the “Original Guaranteed Resolution”) under which there have heretofore been issued revenue bonds of the Authority in the initial aggregate principal amount of \$400,340,000 (the “1995 Bonds”) for the purpose of refunding the 1988A Bonds and the 1988AA Bonds; and

WHEREAS, on March 7, 2008, the Authority amended and restated the Original Guaranteed Resolution (the “Amended and Restated Guaranteed Resolution”), under which the Authority expects to issue two additional series of revenue refunding bonds (the “2008 Guaranteed Bonds”) for the purpose of refunding the 1995 Bonds; and

WHEREAS, by virtue of Act No. 45 of the Legislature of Puerto Rico, approved July 28, 1994, the Legislature of Puerto Rico provided for the guaranty by the Commonwealth of Puerto Rico for the payment of the principal of and premium, if any, and interest on the 1988A Bonds and the 1988AA Bonds and any bonds or other obligations that may be issued by the Authority to refinance such bonds (collectively, the “guaranteed bonds”) to the extent the revenues, income or any other available funds of the Authority pledged for the payment of the principal of and premium, if any, and interest on the guaranteed bonds are insufficient to pay such principal, premium, if any, and interest when due or to maintain a reserve for such purpose, the bonds covered by such guaranty to be those specified by the Authority and containing a statement of such guaranty; and

WHEREAS, the Authority has determined to provide for the issuance of bonds of the Authority to refund the 1995 Bonds and for other lawful purposes of the Authority, said bonds to be payable from the Revenues (as hereinafter defined) of the Authority, subject and subordinate to the prior payment of the Bonds and Other System Indebtedness (each as hereinafter defined), and from moneys paid or advanced by the Secretary of the Treasury pursuant to said Act No. 45; now, therefore, and

WHEREAS, the Authority has determined to enter into this Agreement of trust to enable it to issue revenue bonds and incur other indebtedness to finance or refinance its capital

improvement requirements over time and to this end has determined to enter into this Agreement; and

WHEREAS, the Authority has determined that the revenue bonds to be issued under this Agreement and the certificate of authentication by the Trustee shall be, respectively, in substantially the forms attached as Exhibit A hereto, with such variations, omissions and insertions as are required or permitted by this Agreement; and

WHEREAS, by virtue of the Act, the Authority is authorized to issue its revenue bonds and incur other indebtedness as hereinafter provided, to enter into this Agreement and to do or cause to be done all of the acts and things herein provided or required to be done as hereinafter covenanted; and

WHEREAS, the execution and delivery of this Agreement have been duly authorized by a resolution of the governing board of the Authority; and

WHEREAS, all acts, conditions and things required by the Puerto Rican Federal Relations Act and the Constitution and laws of Puerto Rico, including the Act, and the rules and regulations of the Authority to happen, exist and be performed precedent to and in the execution and delivery of this Agreement, have happened, exist and have been performed as so required, in order to make this Agreement a valid, binding and legal trust agreement for the security of the bonds in accordance with its terms; and

WHEREAS, the Trustee has accepted the trusts created by this Agreement and in evidence thereof has joined in the execution hereof;

NOW, THEREFORE, THIS AGREEMENT WITNESSETH, that in consideration of the premises, of the acceptance by the Trustee of the trusts hereby created, and of the purchase and acceptance of each Series of Bonds issued hereunder, by the holders thereof, and for the purpose of fixing and declaring the general terms and conditions upon which the Bonds issued hereunder, are to be issued, authenticated, delivered, secured and accepted by all persons who shall from time to time be or become holders thereof, and to secure the payment of each Series of Bonds issued hereunder, at any time issued and Outstanding hereunder and the interest and premium, if any, thereon according to their tenor, purport and effect, and to grant certain rights to the applicable holders of Indebtedness and Enhancement Facility Providers, if any, and to secure the performance and observance of all of the covenants, agreements and conditions contained in such Indebtedness or Enhancement Facilities, the Authority has executed this Agreement and does hereby grant a security interest in, assign, transfer, pledge and grant and convey unto the Trustee and its successors and assigns forever, on the terms set forth herein, for the benefit of the holders of said Indebtedness and Enhancement Facility Providers, if any, until said Indebtedness and applicable Enhancement Facilities are no longer outstanding and no amounts are due under the related documents, the following property:

(a) Amounts on deposit from time to time, and any investment earnings thereon, in the Authority Revenue Fund, the Current Expense Fund, the Senior Bond Fund, the Senior Debt Service Reserve Fund, the Senior Subordinate Bond Fund, the Senior Subordinate Debt Service Reserve Fund, the Subordinate Bond Fund, the Subordinate Debt Service Reserve Fund, the Commonwealth Payments Fund, the Operating Reserve Fund, the Capital Improvement Fund, the Surplus Fund and in any other funds and accounts created pursuant hereto (other than any fund established for the purpose of setting aside moneys to be paid to the United States Treasury in satisfaction of any rebate obligations imposed by federal law), including the earnings thereon, subject to the provisions of this Agreement permitting the application thereof for the purposes and on the terms and conditions set forth herein;

(b) Amounts constituting Revenues pledged pursuant to Sections 2.11, 2.12, 2.13 and 2.14; **provided, however**, that any Revenues received from the Commonwealth of Puerto Rico on account of Commonwealth Guaranteed Indebtedness are not subject to the lien hereof and shall only be used for the purposes set forth in Section 5.12 hereof;

(c) Any and all other property of any kind from time to time hereafter by delivery or by writing of any kind specifically conveyed, pledged, assigned or transferred, as and for additional security hereunder for the Indebtedness, by the Authority or by anyone on its behalf or with its written consent in favor of the Trustee, which is hereby authorized to receive any and all such property at any and all times and to hold and apply the same subject to the terms hereof; and

(d) All right, title and interest of the Authority owned or hereafter acquired in and to proceeds from the sale of Bonds issued hereunder required to be deposited in the Construction Fund pursuant to the provisions of this Agreement (except as limited by the following provisos) and all right, title, and interest in and to the investments held in the Construction Fund (except as limited by the following provisos) pursuant to the provisions of this Agreement; **provided, however**, that the Authority may establish one or more separate accounts in the Construction Fund to be funded with proceeds of any particular Series of Bonds, which accounts and the proceeds of the particular Series of Bonds deposited therein (together with all investments thereof and investment income earned thereon) may be pledged solely to the payment of one or more designated Series of Bonds for any designated periods, or otherwise, all as permitted in Section 4.02 hereof and as shall be more fully provided in any Supplemental Agreement with respect to the proceeds of the Series of Bonds issued thereunder;

TO HAVE AND TO HOLD all said properties pledged, assigned and conveyed by the Authority hereunder, including all additional property which by the terms hereof has or may become subject to the encumbrance hereof, unto the Trustee and its successors in trust and its assigns forever, subject, however, to the rights reserved hereunder;

TO HAVE AND TO HOLD IN TRUST upon the terms and trusts herein set forth for the equal and proportionate benefit, security and protection of all Holders and related Enhancement Facility Providers from time to time of all Senior Indebtedness issued hereunder or issued under other documents and secured by the lien of this Agreement, without privilege, priority or distinction as to lien or otherwise of any of the Senior Indebtedness over any other Senior Indebtedness, except as otherwise provided herein, and on a basis subordinate and junior

thereto, upon the terms and trusts herein set forth for the equal and proportionate benefit, security and protection of all Holders and related Enhancement Facility Providers, from time to time of all Senior Subordinate Indebtedness and Subordinate Indebtedness, issued hereunder or issued under other documents and secured by the lien of this Agreement, without privilege, priority or distinction as to lien or otherwise of any of the Senior Subordinate Indebtedness and Subordinate Indebtedness over any of the others except as otherwise provided herein;

TO HAVE AND TO HOLD IN TRUST upon the terms and trusts herein set forth for the equal and proportionate benefit, security and protection of all Holders and related Enhancement Facility Providers from time to time of all Senior Subordinate Indebtedness issued hereunder or issued under other documents and secured by the lien of this Agreement, without privilege, priority or distinction as to lien or otherwise of any of the Senior Subordinate Indebtedness over any other Senior Subordinate Indebtedness, except as otherwise provided herein;

TO HAVE AND TO HOLD IN TRUST, upon the terms and trusts herein set forth for the equal and proportionate benefit, security and protection of all Holders and related Enhancement Facility Providers from time to time of all Subordinate Indebtedness issued hereunder or issued under other documents and secured by the lien of this Agreement without privilege, priority or distinction as to lien or otherwise of any of the Subordinate Indebtedness over any other Subordinate Indebtedness;

PROVIDED, HOWEVER, that if the Authority shall pay fully and promptly when due all liabilities, obligations and sums at any time secured hereby or provide for the payment thereof in accordance with the provisions hereof, and shall promptly, faithfully and strictly keep, perform and observe, or cause to be kept, performed and observed, all of its covenants, warranties and agreements contained herein and in the related documents, then and in such event, this Agreement shall be and become void and of no further force and effect; otherwise, the same shall remain in full force and effect, and upon the trusts and subject to the covenants and conditions hereafter set forth.

ARTICLE I

DEFINITIONS AND RULES OF CONSTRUCTION

Section 1.02 Definitions.

The following words as used in this Agreement shall have the following meanings unless a different meaning clearly appears from the context:

“Accreted Value” shall mean, as of any date of computation with respect to any Capital Appreciation Bond, an amount equal to the principal amount of such Bond plus the interest accrued on such Bond from the date of original issuance of such Bond to the periodic date specified in the Supplemental Agreement authorizing such Capital Appreciation Bond on which interest on such Bond is to be compounded (hereinafter, a “Periodic Compounding Date”) next preceding the date of computation or the date of computation if a Periodic Compounding Date, such interest to accrue at the interest rate per annum of the Capital Appreciation Bonds set forth

in the Supplemental Agreement authorizing such Bonds, compounded periodically on each Periodic Compounding Date. Plus, if such date of computation shall not be a Periodic Compounding Date, a portion of the difference between the Accreted Value as of the immediately preceding Periodic Compounding Date (or the date of original issuance if the date of computation is prior to the first Periodic Compounding Date succeeding the date of original issuance) and the Accreted Value as of the immediately succeeding Periodic Compounding Date, calculated based upon an assumption that, unless otherwise provided in the Supplemental Agreement authorizing such Capital Appreciation Bonds, Accreted Value accrues in equal daily amounts on the basis of a year consisting of twelve 30-day months.

“Account” shall mean any of the Accounts established under this Agreement.

“Agreement” shall mean this Master Agreement of Trust, as supplemented or amended by one or more Supplemental Agreements.

“Annual Budget” shall mean the budget by that name referred to in Section 7.02.

“Annual Debt Service” shall mean for any Outstanding Indebtedness (without duplication) the total amounts required to be deposited for principal of and interest on such Indebtedness, including mandatory sinking fund redemptions, and payments to reimburse Enhancement Facility Providers with respect to such Indebtedness, in the funds and accounts established in Section 5.01 in a specified Fiscal Year, but excluding any capitalized interest funded from proceeds of Indebtedness. For purposes of calculating such principal and interest, the following assumptions are to be used:

(a) In determining the principal due in a Fiscal Year, payment shall be assumed to be made in accordance with the amortization schedule then in effect for such Indebtedness (unless a different subsection of this definition applies for purposes of determining principal maturities or amortization), including any scheduled redemption of such specified Indebtedness at its then Accreted Value and, for such purpose, the redemption payment shall be deemed a principal payment;

(b) For Tender Indebtedness, the options or obligations of the holders of such Indebtedness to tender the same for purchase or payment prior to their stated maturity or maturities shall be treated as principal on the first date on which such holders may or are required to tender such Indebtedness, except that any such option or obligation shall not be treated as principal if such Indebtedness is rated in at least one of the three highest long-term rating categories or in the two highest short-term rating categories (without regard to any gradations in such categories) by a Rating Agency;

(c) For purposes of computing the Rate Covenant only, if Variable Rate Indebtedness has been outstanding for any period prior to the date of calculation, interest on such Indebtedness shall be calculated using the higher of (i) the average rate or rates which were assumed by the Authority in its Annual Budget corresponding to the period for which such Rate Covenant computation is being made, and (ii) the actual weighted average rate or rates borne by such Indebtedness during such period; **provided, however**, that if a Hedge Agreement is in effect which provides that the Authority is to pay to the Qualified Counterparty an amount

determined with reference to a fixed rate of interest on a notional amount equal to the principal of such Indebtedness, for purposes of determining the Annual Debt Service on such Variable Rate Indebtedness, it will be deemed to bear interest at such fixed rate of interest or such stated rate in accordance with such Hedge Agreement;

(d) For purposes of determining whether Bonds may be issued in compliance with the respective tests set forth in Sections 2.16, 2.17 or 2.18, the rate of interest to be borne by Variable Rate Indebtedness will be deemed to be 120% of the rate quoted in an index generally accepted in the securities industry for securities having ratings and maturity or tender dates comparable to that of the applicable Variable Rate Indebtedness as of the date of issuance thereof; **provided, however**, that if a Hedge Agreement is in effect which provides that the Authority is to pay to the Qualified Counterparty an amount determined with reference to a fixed rate of interest on a notional amount equal to the principal of such Indebtedness for purposes of determining the Annual Debt Service on such Variable Rate Indebtedness, it will be deemed to bear interest at such fixed rate of interest in accordance with such Hedge Agreement; and provided, further, however, that interest on such Indebtedness that is the subject of a Qualified Swap shall be deemed to be 120% of the higher of (i) the average rate or rates which were assumed by the Authority in its Annual Budget corresponding to the period for which such Rate Covenant computation is being made, and (ii) the actual weighted average rate or rates borne by such Indebtedness during such period;

(e) For purposes of determining the Debt Service Reserve Requirement, if any, attributable to Variable Rate Indebtedness, the rate of interest to be borne by such Variable Rate Indebtedness will be deemed to be 120% of the rate quoted as of its date of issuance in an index generally accepted in the securities industry for securities having ratings and maturity or tender dates comparable to that of such Indebtedness and in no event will Qualified Swaps be considered;

(f) For purposes of determining the annual amount payable in respect of Bond Anticipation Notes and any other Indebtedness designated by the Authority as a Refundable Principal Installment, such Indebtedness that is or would be a Refundable Principal Installment shall be treated on the date of calculation as if (i) from the date of issuance thereof the principal amount of such Indebtedness had been payable as part of equal annual installments of principal and interest over a period extending from the due date thereof through the 30th anniversary of the issue date of such Indebtedness and (ii) interest accrued at a rate equal to the rate quoted in the 30-year revenue bond index, or if different, the revenue bond index most closely related to the term of the Indebtedness, as applicable, published in *The Bond Buyer* no more than two weeks prior to the date of calculation, or if that index is no longer published, another similar index selected by the Authority;

(g) The Accreted Value of Capital Appreciation Bonds or the Appreciated Value of Deferred Income Bonds shall be included in the calculation of Annual Debt Service at the times and in the manner provided in subsection (a) of Section 2.19;

(h) Any interest paid or to be paid from a Crossover Escrow Account on Crossover Refunding Bonds and any principal of and premium to be paid from such Escrow

Account on Crossover Refunded Bonds shall be excluded from the calculation of Annual Debt Service;

(i) For any Indebtedness for which a binding commitment, letter of credit or other credit arrangement providing for the extension of such Indebtedness beyond its original maturity date exists, the computation of the Annual Debt Service payable on such Indebtedness shall, at the option of the Authority, be made on the assumption that such Indebtedness will amortize in accordance with such credit arrangement, as long as such credit arrangement is rated in one of the three highest long-term rating categories or in the highest short term rating category (without regard to any gradations within such categories) by a Rating Agency; and

(j) For purposes of computing the Rate Covenant and whether Bonds may be issued in compliance with respective tests set forth in Sections 2.16, 2.17 or 2.18, any termination payment due under a Qualified Swap or Hedge Agreement shall be included in the calculation of Annual Debt Service (assuming such amount will amortize as required under the applicable Qualified Swap or Hedge Agreement) to the extent such payment is not paid from the proceeds of Bonds or Other System Indebtedness.

“Appreciated Value” shall mean, with respect to any Deferred Income Bond, (a) as of any date of computation prior to the Current Interest Commencement Date, an amount equal to the principal amount of such Bond plus the interest accrued on such Bond from its date of original issuance to the Periodic Compounding Date next preceding the date of computation or the date of computation if a Periodic Compounding Date, such interest to accrue at the interest rate per annum of the Deferred Income Bonds set forth in the Supplemental Agreement authorizing such Bonds, compounded periodically on each Periodic Compounding Date as in such Agreement provided, plus, if such date of computation shall not be a Periodic Compounding Date, a portion of the difference between the Appreciated Value as of the immediately preceding Periodic Compounding Date (or the date of original issuance if the date of computation is prior to the first Periodic Compounding Date succeeding the date of original issuance) and the Appreciated Value as of the immediately succeeding Periodic Compounding Date, calculated based upon an assumption that, unless otherwise provided in the Supplemental Agreement authorizing such Deferred Income Bonds, Appreciated Value accrues in equal daily amounts on the basis of a year consisting of twelve 30-day months and (b) as of any date of computation on and after the Current Interest Commencement Date, the Appreciated Value on the Current Interest Commencement Date.

“Authority” shall mean Puerto Rico Aqueduct and Sewer Authority, a public corporation and an autonomous governmental instrumentality of the Commonwealth of Puerto Rico created by the Act.

“Authority Revenue Fund” shall mean the Authority Revenue Fund established in Section 5.01.

“Authorized Representative of the Authority” shall mean such person or persons as may be designated to act on behalf of the Authority by the Board.

“Beneficiaries” shall mean Bondholders, holders of Other System Indebtedness, Enhancement Facility Providers and the counterparties on any Qualified Swap or Hedge Agreement.

“Board” shall mean the Governing Board of the Authority as constituted from time to time pursuant to the Act, or, if said Board shall be abolished, the board, body or officer succeeding to the principal functions thereof or to whom the powers of the Authority shall be given by law.

“Bond Anticipation Notes” shall mean any obligations issued in anticipation of the issuance of Bonds.

“Bond Counsel” shall mean an attorney or firm of attorneys nationally recognized on the subject of municipal bonds.

“Bondholder” or **“Holder”** shall mean, as to Bonds, the person in whose name a Bond is registered and, as to Indebtedness other than Bonds, the lender or other entity to which the Authority is obligated with respect to such Indebtedness.

“Bond Insurance Policy” shall mean each financial guaranty insurance policy insuring the scheduled payment of principal and interest on a Series of Bonds.

“Bonds” shall mean any bonds, notes or other obligations issued from time to time pursuant to Article III, including Senior Bonds, Senior Subordinate Bonds, Subordinate Bonds or Bond Anticipation Notes, but not including Other System Indebtedness or Commonwealth Guaranteed Indebtedness.

“Business Day” shall mean a day on which banking business is transacted, but not including a Saturday, Sunday or legal holiday, or a day on which banking institutions are authorized by law to close in the city in which the Trustee has its principal corporate trust office or in the Commonwealth of Puerto Rico.

“Calculation Date” shall have the meaning set forth in Section 2.19(a).

“Capital Appreciation Bonds” shall mean any Bonds issued under this Agreement as to which interest is (a) compounded on the periodic compounding dates that are specified in the Supplemental Agreement authorizing such Capital Appreciation Bonds and (b) payable only at maturity, earlier redemption or other payment thereof pursuant to this Agreement or such Supplemental Agreement.

“Capitalized Interest Account” shall mean the Capitalized Interest Account established in Section 5.01.

“Capital Improvement Fund” shall mean the Capital Improvement Fund established in Section 5.01.

“Capital Improvement Fund Requirement” shall mean for each Fiscal Year, an amount equal to the greater of (a) the amount set forth in the Annual Budget for such Fiscal Year and (b) the amount recommended by the Consulting Engineer.

“Code” shall mean the Internal Revenue Code of 1986, as amended, including applicable regulations, rulings and revenue procedures promulgated or applicable thereunder.

“Commonwealth Guaranteed Indebtedness” shall mean the Authority’s Puerto Rico Aqueduct and Sewer Authority Bonds, Series 2008, Guaranteed by the Commonwealth of Puerto Rico, issued by the Authority pursuant to Resolution No. 1583, adopted by the Authority on December 7, 1995, as amended and restated as of March 7, 2008.

“Commonwealth Payments Fund” shall mean the Commonwealth Payments Fund established in Section 5.01.

“Consent” shall have the meaning set forth in Section 13.01(a).

“Construction” or **“construction”** shall mean construction, acquisition, renovation, repair, renewal, replacement and expansion or any combination of the foregoing.

“Construction Fund” shall mean the Construction Fund established in Sections 4.01 and 5.01.

“Consultant” shall mean any qualified and experienced firm or corporation retained by or on behalf of the Authority to perform the acts and duties required of a Consultant under the provisions of this Agreement, which may be, without limitation, a firm of independent certified public accountants, the Consulting Engineer or an independent insurance consultant, and which may include governmental or nongovernmental entities, acceptable to the Consulting Engineer or other Consultants depending on their skill and expertise for the specific acts and duties they are to perform under the provisions of this Agreement.

“Consulting Engineer” shall mean any qualified and experienced engineering firm or corporation retained by the Authority to perform the acts and duties required of the Consulting Engineer under the provisions of this Agreement.

“Cost of Improvements” shall mean the cost of construction of Improvements, including the cost of all labor, materials, machinery and equipment, the cost of all lands, structures, real or personal property, rights, rights-of-way, roads, easements, franchises and interest acquired or used for, or in connection with the Authority, any termination payments payable under any Qualified Swap or Hedge Agreements, the cost of engineering and legal services, the cost of preliminary surveys, plans and specifications, payments with respect to litigation, expenses of administration properly chargeable to such construction, legal, architectural and engineering expenses and fees, the cost of audits, the fees and expenses of Consultants, financing charges, taxes or other governmental charges lawfully assessed during construction, claims arising in connection with construction, premiums on insurance in connection with construction, interest on the Indebtedness or other obligations of the Authority issued to finance Costs of Improvements, during and for a reasonable period after completion of the acquisition, construction, reconstruction, repair, improvement or equipping of the

Improvement; the annual fees for any Enhancement Facility and tender agent fees and fees payable for remarketing Indebtedness during such period as may be specified in the resolution of the Board or the Supplemental Agreement authorizing the issuance of such Bonds and all other items of expense not elsewhere in this definition specified, incident to the financing or construction of any Improvements and the placing of the same in operation; **provided, however,** there shall be subtracted from Costs of Improvements amounts received or to be received by the Authority from the federal government, if such funds are (i) required to be used by the Authority to pay for Costs of Improvements or (ii) a reimbursement for prior Costs of Improvements paid by the Authority.

“Cost of Issuance Account” shall mean the Cost of Issuance Account established in Section 5.01.

“Costs of Issuance” means the items of cost or expense incurred in connection with the authorization, sale and issuance of Indebtedness, which items of expenses shall include, but not be limited to, document printing, reproduction and execution and delivery costs, filing and recording fees, costs of credit ratings, initial fees and charges of the Trustee or a Qualified Depository, legal fees and charges, professional consultants’ fees, fees and charges for execution, authentication, transportation and safekeeping of Bonds, premiums, fees and charges for insurance on Bonds, commitment fees or similar charges relating to an Enhancement Facility, a Qualified Swap or a Hedge Agreement, costs and expenses in connection with the refunding of Indebtedness or other obligations of the Authority, costs and expenses incurred pursuant to a remarketing agreement and other costs, charges and fees, including those of the Authority, in connection with the foregoing.

“Crossover Amount” shall mean the amount of money and Defeasance Obligations on deposit in a Crossover Escrow Account and which, together with investment income thereon, are held as provided in the definition of “Crossover Refunded Bond.”

“Crossover Date” shall mean the date on which the Crossover Amount on deposit in a Crossover Escrow Account shall be used to retire all Outstanding Crossover Refunded Bonds for which such Crossover Escrow Account was established.

“Crossover Escrow Account” shall mean an escrow account in which a Crossover Amount is deposited.

“Crossover Escrow Deposit Agreement” shall mean an escrow deposit or similar agreement under which a Crossover Escrow Account is created and administered.

“Crossover Refunded Bond” shall mean any Indebtedness deemed to be refunded from the proceeds of Crossover Refunding Bonds. Any Indebtedness shall be deemed to have been refunded from the proceeds of Crossover Refunding Bonds and shall be deemed to be Crossover Refunded Bonds if the Trustee shall have received and shall hold in the applicable Crossover Escrow Account in trust therefor and irrevocably committed thereto.

(a) moneys, together with any amounts described in paragraph (b) below, sufficient, or

(b) Defeasance Obligations, which shall not contain provisions permitting the redemption thereof at the option of the issuer, the principal of and interest on which when due, and without any reinvestment thereof, will provide moneys, together with any amounts described in paragraph (a) above, sufficient:

(i) for the payment of all principal of and premium, if any, on such Crossover Refunded Bonds as the same become due, whether at their maturity or redemption dates or otherwise, as the case may be, or if a default in payment shall have occurred on any maturity or redemption date, then for the payment of all principal of and premium on such Crossover Refunded Bonds to the date of the tender of payment; provided, that if any of those Crossover Refunded Bonds are to be redeemed prior to the maturity thereof, notice of that redemption shall have been duly given or irrevocable provision shall have been duly made for the giving of that notice, and

(ii) for the payment of interest (in whole or in part) on such Crossover Refunding Bonds.

Prior to the Crossover Date, the Crossover Amount may be pledged as security for the Crossover Refunding Bonds, such Crossover Refunded Bonds, or both. The moneys and proceeds of such Defeasance Obligations shall, to the extent needed, be used for the foregoing purposes or used to reimburse an Enhancement Facility Provider for amounts advanced by it for the foregoing purposes.

“Crossover Refunding” shall mean a transaction in which Crossover Refunding Bonds are issued to refund Crossover Refunded Bonds and in which a Crossover Amount is deposited in a Crossover Escrow Account.

“Crossover Refunding Bonds” shall mean Bonds, to the extent that any proceeds from the sale thereof shall, upon deposit in a Crossover Escrow Account, constitute a Crossover Amount.

“Current Expenses” shall mean the (i) reasonable and necessary current expenses, incurred by the Authority in the ordinary course of business, calculated on an accrual basis, of maintaining, repairing and operating the properties constituting the Systems or causing said maintenance, repair and operation provided, however, there shall be subtracted from Current Expenses the amounts received by the Authority from the federal government, if such funds are (i) required to be used by the Authority to pay for Current Expenses or (ii) a reimbursement for prior Current Expenses paid by the Authority; **provided, further**, Current Expenses shall exclude depreciation, reserves for allowances for doubtful accounts and other non-cash reserves or expenses.

Notwithstanding any accounting treatment to the contrary, the amount of any termination or similar payment under any interest rate swap or similar hedge agreement shall, if payable by the Authority, not be taken into account in computing Current Expenses to the extent the same is paid by or on behalf of the Authority from the proceeds of any Indebtedness.

“Current Expense Fund” shall mean the Current Expense Fund established in Section 5.01.

“Current Interest Commencement Date” shall mean, with respect to any particular Deferred Income Bonds, the date specified in the Supplemental Agreement authorizing such Deferred Income Bonds (which date must be prior to the maturity date for such Deferred Income Bonds) after which interest accruing on such Deferred Income Bonds shall be payable periodically on dates specified in such Supplemental Agreement with the first such payment date being the first such periodic date immediately succeeding such Current Interest Commencement Date.

“Debt Service Reserve Facility” shall mean (a) any irrevocable, unconditional letter of credit issued by a bank or savings and loan association whose long-term uncollateralized debt obligations are rated in one of the two highest long-term rating categories (without regard to any gradations within such categories) by at least two Rating Agencies, and (b) any insurance policy providing substantially equivalent liquidity as an instrument described in clause (a) and which is issued by a municipal bond or other insurance company, the obligations insured by which are rated in one of the two highest long-term rating categories (without regard to any gradations within such categories) by at least two Rating Agencies and which is used, to the extent permitted hereunder, to fund all or a portion of the applicable Debt Service Reserve Requirement, provided that (i) the term of the Debt Service Reserve Facility is at least 36 months, (ii) the only condition to a drawing under the Debt Service Reserve Facility is insufficient amounts in the applicable fund or account held by the Trustee to which such Facility relates when needed to pay debt service on the applicable Bonds or the expiration of such Facility and (iii) the provider of the Debt Service Reserve Facility shall notify the Authority and the Trustee at least 24 months prior to the expiration of such Facility.

“Debt Service Reserve Requirement” shall mean with respect to each Account, if any, within the Senior Debt Service Reserve Fund, if any, the Senior Subordinate Debt Service Reserve Fund or the Subordinate Debt Service Reserve Fund, as applicable, as of any particular date of computation an amount equal to (a) the amount set forth in the Supplemental Agreement authorizing the issuance of a particular Series of Bonds, or (b) if not otherwise specified in a Supplemental Agreement authorizing the issuance of a particular Series of Bonds, the lesser of (i) maximum Annual Debt Service on the Outstanding Bonds secured by such Account, payable in any Fiscal Year for the related Bonds, (ii) ten percent (10%) of the proceeds of the Outstanding Bonds secured by such Account calculated in accordance the Code and (iii) 125% of the average Annual Debt Service for the payment of the principal of and interest on the Outstanding Bonds secured by such Account.

“Deferred Income Bonds” shall mean any Bonds as to which interest accruing prior to the Current Interest Commencement Date is (a) compounded periodically on the dates specified in the Supplemental Agreement authorizing such Deferred Income Bonds and (b) payable only at redemption or other payment thereof pursuant to such Supplemental Agreement.

“Defeasance Obligations” shall mean any non-callable and non-prepayable obligations described in clauses (a), (b) or (c) of the definition of Investment Obligations.

“Deposit Date” shall mean the last Business Day of each month.

“Disbursement Schedule” shall mean the schedule by that name referred to in Section 7.02.

“Enhancement Facility” shall mean any letter of credit, standby purchase agreement, line of credit, policy of bond insurance, surety bond, guarantee or similar instrument, or any other agreement, securing, providing liquidity for, supporting or enhancing outstanding Indebtedness, including any Bond Insurance Policy, Debt Service Reserve Facility, Operating Reserve Facility or any combination of the foregoing, or any agreement relating to the reimbursement thereof, whether or not such instrument or agreement has been drawn upon, obtained by the Authority.

“Enhancement Facility Provider” shall mean the provider or issuer of any Enhancement Facility.

“Event of Default” shall mean any of the events enumerated in Section 8.01.

“Executive President” shall mean the Executive President of the Authority or any other person designated by the Board or by the Authority’s legislation or by the bylaws of the Authority to perform the functions of the Executive President.

“Fiduciary” shall mean (a) the Trustee and (b) a Qualified Depository or any other bank or trust company designated as trustee, fiscal agent, administrative agent or other fiduciary for Outstanding Other System Indebtedness.

“Fiscal Year” shall mean the period commencing on the first day of July of any year and ending on the last day of June of the following year or any other twelve-month period designated by the Board.

“Fitch” shall mean Fitch Ratings, New York, New York, or its successors or assigns.

“Force Majeure Event” shall mean any of the following events. to the extent that such event is beyond the reasonable control of the Authority; an act of God, accident, riot, war, terrorist act, epidemic, pandemic, quarantine, civil commotion, earthquake or natural catastrophe.

“Government Certificates” shall mean certificates or other instruments representing proportionate ownership of Government Obligations, which Government Obligations are held by a bank or trust company organized under the laws of the United States of America or any of its states or territories in the capacity of custodian of such certificates or instruments.

“Government Obligations” shall mean (a) direct obligations of, or obligations the payment of the principal of and interest on which are unconditionally guaranteed by, the United States of America; (b) Government Certificates, under which the owner of the investment is the real party in interest and has the right to proceed directly and individually against the obligor on the underlying obligations described in said clause (a) and which underlying obligations are not available to satisfy any claim of the custodian or any person claiming through the custodian or to whom the custodian may be obligated; and (c) evidences of ownership of proportionate interests in future interest or principal payments on obligations specified in clauses (a) and (b) above held by a bank (including the Trustee) or trust company as custodian, under which the owner of the

investment is the real party in interest and has the right to proceed directly and individually against the underlying obligations described in said clauses (a) and (b) and which underlying obligations are not available to satisfy any claim of the custodian or any person claiming through the custodian or to whom the custodian may be obligated.

“Guaranty Act” shall mean Act No. 45 of the Legislature of Puerto Rico, approved July 28, 1994, as amended.

“Hedge Agreement” shall mean an interest rate swap or other hedging agreement, arrangement or security however denominated, with or guaranteed by a Qualified Counterparty and expressly identified pursuant to its terms as being entered into in connection with and in order to hedge interest rate fluctuations on all or a portion of any Bonds where (a) interest on such Indebtedness or such portion of such Indebtedness is payable at a variable rate of interest for any future period of time or is calculated at a varying rate per annum, and (b) a fixed rate is specified as payable by the Authority in such agreement, or such Indebtedness, taken together with such agreement, results in a net fixed rate payable by the Authority for such period of time (the “Hedge Fixed Rate”), assuming the Authority and the Qualified Counterparty(ies) with whom the Authority has entered into the agreement make all payments required to be made by the terms of the agreement. If the required rating of a Qualified Counterparty is lowered below the minimum rating level specified herein for such Qualified Counterparty and collateral has not been posted as required by such Hedge Agreement, such Hedge Agreement shall no longer constitute a “Hedge Agreement” hereunder.

“Improvements” shall mean such betterments, renewals and replacements of the Systems or any part thereof, and such additions and extensions thereto, as may be necessary or desirable to keep the same in proper condition for the safe, efficient and economic operation thereof and for the interconnection thereof where feasible to integrate into the Systems any unit or part thereof, and shall include such water and sewer projects as may be authorized to be constructed or acquired under the provisions of the Act, and such betterments, renewals and replacements of such properties and such additions and extensions thereto as may be necessary or desirable for continuous and efficient service by or on behalf of the Authority to the public.

“Indebtedness” shall mean, collectively, Bonds, Other System Indebtedness and Commonwealth Guaranteed Indebtedness.

“Insurance Consultant” shall mean any qualified and experienced firm or corporation retained by the Authority to perform the act and duties of an Insurance Consultant required by the provisions of this Agreement.

“Interest Accrual” shall mean for any period the amount of interest on Indebtedness that would accrue during such period if such interest accrued ratably on the basis of a year consisting of twelve (12) thirty-day months. Unless otherwise provided by resolution of the Authority or a Supplemental Agreement, the monthly accrual in respect of interest on Indebtedness shall commence on the later to occur of the date of issue of the applicable Indebtedness and the date that is six months prior to the due date of such interest and shall end on the first day of the month following the relevant Deposit Date. In the case of Variable Rate Indebtedness, the Interest Accrual shall be calculated based on the sum of the interest accrued through the Business Day

preceding the relevant Deposit Date and the interest (calculated at the rate on such Indebtedness on the Business Day preceding the Deposit Date plus one percent (1%)) that would accrue on such Indebtedness from the Deposit Date to the later to occur of the first day of the next calendar month and any interest payment date on such Indebtedness occurring prior to the next Deposit Date.

“Interest Payment Date” shall mean each date on which interest on Indebtedness or any portion thereof is scheduled to be due and payable, as provided in the Supplemental Agreement, resolution or other document authorizing the issuance of such Indebtedness.

“Investment Obligations” shall mean any of the following, to the extent that the same is legal for the investment of public funds under the laws of the Commonwealth of Puerto Rico:

- (a) Government Obligations;
- (b) Obligations issued or guaranteed by any of the following:
 - (i) Federal Home Loan Bank System,
 - (ii) Export-Import Bank of the United States,
 - (iii) Federal Financing Bank,
 - (iv) Government National Mortgage Association,
 - (v) Federal Home Loan Mortgage Company,
 - (vi) Federal Housing Administration,
 - (vii) Private Export Funding Corp.,
 - (viii) Federal National Mortgage Association,
 - (ix) Federal Farm Credit Bank,
 - (x) Resolution Funding Corporation, and
 - (xi) Rural Economic Community Development Administration (formerly, Farmers Home Administration).

or any indebtedness issued or guaranteed by any instrumentality or agency of the United States;

(c) Refunded municipal obligations rated in the highest long-term rating category by at least one Rating Agency (without regard to any gradations within such category) and meeting the following conditions:

(i) (A) such obligations are not to be redeemed prior to maturity or the trustee therefor has been given irrevocable instructions concerning their call for redemption, and (B) the issuer of such obligations has covenanted not to redeem such obligations other than as set forth in such instructions;

(ii) such obligations are secured by Government Obligations that may be applied only to interest, principal, and premium payments on such obligations;

(iii) the principal of or interest on such Government Obligations (plus any cash held in escrow with respect to such obligations) are sufficient to meet the liabilities of such obligations;

- (iv) such Government Obligations are held by an escrow agent or trustee; and
- (v) such Government Obligations are not available to satisfy any other claims, including those against said trustee or escrow agent;

(d) Direct and general, long-term obligations of any state of the United States of America, the District of Columbia or the Commonwealth of Puerto Rico (each a “State”), to the payment of which the full faith and credit of such State is pledged and that are rated in any of the three highest long-term rating categories or in the highest short-term rating category (without regard to any gradations within such categories) by at least two Rating Agencies;

(e) Direct and general, short-term obligations of any State, to the payment of which the full faith and credit of such State are pledged and that are rated in either of the two highest short-term rating categories (without regard to any gradations within such categories) by at least two Rating Agencies;

(f) Interest-bearing demand or time deposits with, or interests in money market portfolios issued by, State banks or trust companies, national banking associations or savings and loan associations that are members of the Federal Deposit Insurance Corporation (“FDIC”), including the Trustee or any of its affiliates. Such deposits or interests must be (i) continuously and fully insured by FDIC or (ii) fully secured by Government Obligations or obligations described in clause (b) of this definition (“Clause (b) Securities”) or (iii) secured by surety company bonds held by the Trustee which, when executed, shall be for an amount equal to the amount of such interest-bearing demand or time deposits that are not secured by (i) or (ii) above. Such Government Obligations or Clause (b) Securities must have a market value at all times at least equal to the principal amount of the deposits or interests. The Government Obligations or Clause (b) Securities must be held by a third party (who shall not be the provider of the collateral), or by any Federal Reserve Bank or depository, as custodian for the institution issuing the deposits or interests. Such third party shall have a perfected first lien in the Government Obligations or Clause (b) Securities serving as collateral, and such collateral is to be free from all other third party liens;

(g) Repurchase agreements entered into with a Qualified Counterparty. The repurchase agreement shall be in respect of Government Obligations or Clause (b) Securities. The repurchase agreement securities and, to the extent necessary, Government Obligations or Clause (b) Securities, plus accrued interest, shall be maintained in an amount equal to at least 100% of the amount invested in the repurchase agreements. In addition, the provisions of the repurchase agreement shall meet the following additional criteria;

- (A) An Authority designated third party (who shall not be the provider of the collateral selected by the Authority) has possession of the repurchase agreement securities and the Government Obligations or Clause (b) Securities;

- (B) Failure by the repurchase agreement provider to cure any deficiency in the requisite collateral levels within two (2) Business Days will require the person having possession of the securities to liquidate the securities immediately; and
- (C) The repurchase agreement provider represents to grant the person having possession of the securities a perfected, first priority security interest in the securities;

(h) Money market accounts of any state or federal bank, including the Trustee or any of its affiliates, or bank whose holding parent company is rated in any of the three highest long-term rating categories or the highest short-term rating category (without regard to any gradations within such categories) by at least two Rating Agencies;

(i) Investment agreements the issuer or guarantor of which is a Qualified Counterparty;

(j) Any debt or fixed income security the issuer of which is rated in any of the three highest long-term rating categories or the highest short-term rating category (without regard to any gradations within such categories) by at least two Rating Agencies;

(k) Demand deposits, including interest-bearing money market accounts trust deposits, time deposits or bankers acceptances (in each case having maturities of not more than 360 days) of a domestic bank (including the Trustee or any of its affiliates), including a branch office of a foreign bank, which branch office is located in the United States, provided that such bank at the time of purchase, has a short-term bank deposit rating of “prime-1” or better by Moody’s and a rating of “A-1” or better by S&P; and

(l) Money market mutual funds, including, without limitation any mutual fund for which the Trustee or any of its affiliates serves as investment manager, administrator, shareholder servicing agent, and/or custodian or sub custodian, notwithstanding that (i) the Trustee or such affiliate receives fees from such funds for services rendered, (ii) the Trustee or such affiliate charges and collects fees for services rendered pursuant to this Agreement which fees are separate from the fees received from such funds, and (iii) services performed for such funds and pursuant to this Agreement may at times duplicate those provided to such funds by the Trustee or such affiliate.

“Moody’s” shall mean Moody’s Investors Service, New York, New York, or its successors or assigns.

“Net Revenues” shall mean, for any particular period, the amount of the excess of Revenues over Current Expenses for such period.

“1995 Resolution Trustee” shall mean the Fiscal Agent under the Authority’s Resolution No. 1583, adopted December 7, 1995 and as amended and restated as of March 1, 2008.

“Operating Reserve Facility” shall mean any irrevocable, unconditional letter of credit or revolving line of credit issued by a bank or savings and loan association whose long-term uncollateralized debt obligations are rated in any of the three highest long-term rating categories or in the two highest short-term rating categories (without regard to any gradations within such categories) by at least two Rating Agencies and which Facility is used, to the extent permitted hereunder, to fund all or a portion of the Operating Reserve Requirement.

“Operating Reserve Fund” shall mean the Operating Reserve Fund established in Section 5.01.

“Operating Reserve Requirement” shall mean \$150,000,000 until March 1, 2013, and thereafter (a) if there is an Operating Reserve Facility on deposit in the Operating Reserve Fund, shall mean for the term of such Operating Reserve Facility (without regard to any renewal provisions contained therein) an amount equal to at least ninety (90) days of Current Expenses determined on the first day of the Fiscal Year in which such Operating Reserve Facility is delivered or renewed as set forth in the Annual Budget for such Fiscal Year or (b) if funded from Revenues, shall mean an amount equal to not less than ninety (90) days of Current Expenses determined annually based on the Current Expenses relating to the Fiscal Year of such calculation as set forth in the Annual Budget for such Fiscal Year.

“Opinion of Counsel” or “Opinion” shall mean an opinion of any attorney or firm of attorneys reasonably acceptable to the Trustee, who may be counsel for the Authority but shall not be an employee of either the Authority or the Trustee.

“Other System Indebtedness” shall mean any obligation of the Authority, including Qualified Swaps and Hedge Agreements and any termination payments thereunder but not including Bonds, that the Authority is required, or has elected, to treat as payable on a parity with Bonds with respect to the pledge of Revenues.

“Outstanding” shall mean Indebtedness that has been duly issued and delivered under this Agreement or under other documents and has not been (a) canceled or surrendered to the Trustee or a comparable fiduciary for cancellation or (b) deemed to have been paid as provided in Article XI or under similar provisions of such different documents, has not had other obligations issued in exchange therefor or had its principal become due and moneys sufficient for its payment deposited with the Trustee as provided in Section 2.09, or otherwise so treated under comparable issuance documents.

In determining whether holders of a requisite aggregate principal amount of the Outstanding Indebtedness have concurred in any request, demand, authorization, direction, notice, consent or waiver under this Agreement or other applicable documents, words referring to or connoting “principal of” or “principal amount of” Outstanding Indebtedness shall include the Accreted Value or similar value of Indebtedness as of the immediately preceding interest compounding or similar date for such Indebtedness. Indebtedness that is owned by or for the benefit of the Authority shall be disregarded and deemed not to be Outstanding for the purpose of any such determination.

“Principal Accrual” shall mean for any period the amount of principal or sinking fund installment on Indebtedness that would accrue during such period if such principal or sinking fund installment accrued ratably on the basis of a year consisting of twelve (12) thirty-day months. Unless otherwise provided by resolution of the Authority or a Supplemental Agreement, the monthly accrual in respect of the principal of Indebtedness or sinking fund installment for a Term Bond shall commence on the first day of the twelfth month preceding the due date of such principal or sinking fund installment and shall end on the first day of the month succeeding the relevant Deposit Date.

“Qualified Counterparty” shall mean (at the time of delivery of the applicable Investment Obligation or the execution of the applicable Hedge Agreement or Qualified Swap) (a) a bank, trust company, savings and loan association, national banking association, insurance company or other financial services company, including the Trustee or any of its affiliates, whose senior long term debt obligations, other senior unsecured long term obligations, financial program rating, counterparty rating or claims paying ability are rated in any of the three highest long-term rating categories (without regard to any gradations within such categories) by a Rating Agency or any institution listed as a primary government securities dealer in the Federal Reserve Bank of New York and (b) in the case of Hedge Agreements and Qualified Swaps, a person whose obligations are guaranteed by a person whose senior long term debt obligations, other senior unsecured long term obligations, financial program rating, counterparty rating or claims paying ability, are rated in any of the three highest long-term rating categories (without regard to any gradations within such categories) by a Rating Agency, or whose obligation, if any, to make payment to the Authority upon the termination of the subject Hedge Agreement or Qualified Swap is fully collateralized by Investment Obligations described in clauses (a), (b) or (c) of the definition of Investment Obligations; **provided, however**, that such obligation shall be deemed to be fully collateralized if the Investment Obligations shall have a market value, determined periodically in accordance with such Hedge Agreement or Qualified Swap, that is not less than 100% of the amount of any termination payment. If the required rating of a Qualified Counterparty is lowered below the minimum rating level specified herein for such Qualified Counterparty and collateral has not been posted as required by such Hedge Agreement, such Qualified Counterparty shall no longer constitute a “Qualified Counterparty” hereunder.

“Qualified Depository” or **“Depositaries”** shall mean one or more banks or trust companies meeting the requirements of Section 10.13 and designated or permitted to be designated by the Secretary of the Treasury of the Commonwealth as a depository for funds of agencies and instrumentalities of the Commonwealth of Puerto Rico, which have been designated as depositaries of the Authority by resolution of the Board remaining in full force and effect. A certified copy of each resolution of the Board designating a Qualified Depository or Depositaries shall be filed with the Trustee.

“Qualified Swap” shall mean a contract pursuant to which a Qualified Counterparty has agreed to make payments to the Authority during a particular period equal to the interest payable on specified Indebtedness or on a specified nominal amount at the actual rate or rates or, if on a nominal amount at a stated rate or rates, payable thereon and, in consideration therefor, the Authority agrees to make payments to the Qualified Counterparty equal to the interest required to be paid on the specified Indebtedness or stated to be due on the nominal amount during the period calculated as if the specified Indebtedness or nominal amount bore an assumed rate (fixed or variable) of interest specified in the contract.

“Rate Covenant” shall mean the obligation of the Authority to fix, charge, collect and revise rates, fees and other charges for the use of and the services furnished by the Systems sufficient to meet the requirements of Section 7.01(a).

“Rate Stabilization Account” shall mean the account within the Surplus Fund established in Section 5.01 hereof.

“Rating Agency” or **“Rating Agencies”** shall mean Fitch, Moody’s, S&P or any other nationally recognized securities rating agency.

“Refundable Principal Installment” shall mean the Bond Anticipation Notes or any other Indebtedness, the principal of which the Authority intends to pay with moneys which are not Revenues, provided that such intent shall have been expressed in the Supplemental Agreement or other document authorizing such Indebtedness and provided further that such Indebtedness shall be a Refundable Principal Installment only through the date which is thirty (30) days prior to the date on which such Indebtedness comes due or such earlier time as the Authority has determined to pay such Indebtedness with moneys which are not Revenues.

“Reserve Determination Date” shall mean (a) each Interest Payment Date for Bonds, or (b) any other date established in writing by an Authorized Representative of the Authority for the valuation of obligations on deposit in any Senior Debt Service Reserve Account or Senior Subordinate Debt Service Reserve Account.

“Revenues” shall mean all moneys received by or on behalf of the Authority, including (a) the moneys derived by or on behalf of the Authority from the sale of water produced, treated or distributed by, or the collection, transmission, treatment or disposal of sewage by the Systems, (b) any proceeds of use and occupancy insurance on the Systems or any part thereof, (c) except as provided in the following sentence, any income from the investments made under this Agreement, (d) except as provided in the following sentence, any governmental grants or appropriations available to pay the principal of and interest on obligations of the Authority, (e) except as provided in the following sentence, any governmental grants or appropriations available to pay Current Expenses of the Authority, including grants or appropriations received by the Authority and specifically made for reimbursing the Authority for such payments, (f) any special assessments, including assessments in the nature of impact fees, (g) amounts, if any, paid from the Rate Stabilization Account into the Authority Revenue Fund in any Fiscal Year minus the amounts, if any, paid from Revenues deposited into the Rate Stabilization Account during the same Fiscal Year; (h) regularly scheduled payments received under any Qualified Swap or Hedge Agreement during such period; and (i) any amounts received by the Authority from any

source of funding that does not otherwise constitute Revenues as reimbursement for Costs of Improvements paid by the Authority in the current or the immediately preceding three fiscal years from Revenues. In no event shall Revenues include (i) income from the investment of moneys on deposit to the credit of the Construction Fund, proceeds of insurance (except use and occupancy insurance) or condemnation awards (which are required to be deposited directly to the credit of the Capital Improvement Fund), (ii) proceeds of sales of property constituting a part of the Systems (which are required to be deposited directly to the credit of the Capital Improvement Fund), (iii) any amounts received from the Commonwealth of Puerto Rico on account of Commonwealth Guaranteed Obligations (which is required to be deposited in the Commonwealth Payments Fund), (iv) the proceeds of Bonds or other Indebtedness, (v) any termination or similar payment under any interest rate swap or similar hedge agreement received by the Authority (which are required to be deposited directly to the credit of the Capital Improvement Fund), (vi) any separate revitalization charge or fee imposed pursuant to Act 68-2018 or similar mandatory non-bypassable charge imposed by law to secure securitization bonds and (vii) any funds received by the Authority from the federal government (i) required to be used to pay Current Expenses or Cost of Improvements or (ii) as a reimbursement for prior Current Expenses or Costs of Improvements paid by the Authority.

“S&P” shall mean S&P Global Ratings, a division of The McGraw Hill Companies, Inc., New York, New York, or its successors or assigns.

“Secretary” shall mean the Secretary or Assistant Secretary of the Authority from time to time, or if there is no secretary or assistant secretary, then any person designated by the Board or by the by-laws of the Authority to perform the functions of the Secretary.

“Senior Bond Fund” shall mean the Senior Bond Fund established in Section 5.01.

“Senior Bonds” shall mean Bonds issued pursuant to Section 2.16.

“Senior Debt Service Reserve Fund” shall mean the Senior Debt Service Reserve Fund established in Section 5.01.

“Senior Indebtedness” shall mean, collectively, Senior Bonds and any Other System Indebtedness secured on a parity therewith.

“Senior Interest Account” shall mean the Senior Interest Account in the Senior Bond Fund established in Section 5.01.

“Senior Principal Account” shall mean the Senior Principal Account in the Senior Bond Fund established in Section 5.01.

“Senior Sinking Fund Account” shall mean the Senior Sinking Fund Account in the Senior Bond Fund established in Section 5.01.

“Senior Subordinate Bond Fund” shall mean the Senior Subordinate Bond Fund established in Section 5.01.

“Senior Subordinate Bonds” shall mean Bonds issued pursuant to Section 2.17.

“Senior Subordinate Debt Service Reserve Fund” shall mean the Senior Subordinate Debt Service Reserve Fund established in Section 5.01.

“Senior Subordinate Indebtedness” shall mean, collectively, Senior Subordinate Bonds and any Other System Indebtedness secured on a parity therewith.

“Senior Subordinate Interest Account” shall mean the Senior Subordinate Interest Account in the Senior Subordinate Bond Fund established in Section 5.01.

“Senior Subordinate Principal Account” shall mean the Senior Subordinate Principal Account in the Senior Subordinate Bond Fund established in Section 5.01.

“Senior Subordinate Sinking Fund Account” shall mean the Senior Subordinate Sinking Fund Account in the Senior Subordinate Bond Fund established in Section 5.01.

“Series” or **“Series of Bonds”** shall mean a separate series of Bonds issued under this Agreement and a Supplemental Agreement.

“Series 2008 Bonds” shall mean the initial series of Bonds issued under this Agreement.

“Subordinate Bond Fund” shall mean the Subordinate Bond Fund established in Section 5.01.

“Subordinate Bonds” shall mean Bonds issued pursuant to Section 2.18.

“Subordinate Debt Service Reserve Fund” shall mean the Subordinate Debt Service Reserve Fund established in Section 5.01.

“Subordinate Indebtedness” shall mean, collectively, Subordinate Bonds and any Other System Indebtedness secured on a parity therewith.

“Subordinate Interest Account” shall mean the Subordinate Interest Account in the Subordinate Bond Fund established in Section 5.01.

“Subordinate Principal Account” shall mean the Subordinate Principal Account in the Subordinate Bond Fund established in Section 5.01.

“Subordinate Sinking Fund Account” shall mean the Subordinate Sinking Fund Account in the Subordinate Bond Fund established in Section 5.01.

“Subordinated Obligations” shall have the meaning set forth in Section 12.01.

“Supplemental Agreement” shall mean any Agreement supplementing or modifying the provisions of this Agreement entered into by the Authority and the Trustee pursuant to Sections 9.01 or 9.02.

“Surplus Fund” shall mean the Surplus Fund established in Section 5.01.

“**Systems**” shall mean collectively, the existing water supply, treatment and distribution system and the existing sewage collection, transmission, treatment and disposal system owned or operated by or on behalf of the Authority, together with all Improvements, and shall include any rights of service, leasehold interests or other contractual rights of the Authority in said Systems and any Improvements.

“**Tender Indebtedness**” shall mean any Indebtedness a feature of which is an option or obligation on the part of the Holders of such Indebtedness to tender all or a portion of such Indebtedness to a fiduciary for purchase or redemption prior to the stated maturity date of such Indebtedness, which may include Variable Rate Indebtedness with such a feature.

“**Term Bonds**” shall mean any Bonds stated to mature on a specified date and required to be redeemed in part prior to maturity according to a sinking fund schedule.

“**Trustee**” shall mean Banco Popular de Puerto Rico or its successors serving as such hereunder.

“**Trustee’s Fees and Expenses**” shall mean an initial acceptance fee and an annual administrative fee plus expenses in accordance with an agreement between the Trustee and the Authority, as the same may be renegotiated from time to time.

“**Variable Rate Indebtedness**” shall mean any Indebtedness the interest rate on which is not established at the time of incurrence at a fixed or constant rate, provided that (a) the maximum interest rate on such Indebtedness and the maximum rate payable to any Enhancement Facility Provider with respect to such Indebtedness shall be specified at the time of issuance of such Indebtedness; (b) the Enhancement Facility shall cause such Indebtedness to be rated by a Rating Agency in the two highest long-term or one of the two highest short-term rating categories (without regard to any gradations within such categories) of such Rating Agency; (c) any obligation of the Authority to reimburse such Enhancement Facility Provider shall (i) amortize in equal annual installments of principal and interest over a term of no less than the shorter of ten years and stated final maturity of such Variable Rate Indebtedness or (ii) be payable solely from amounts on deposit in the Subordinate Debt Service Fund, and (d) any two or more Series of Bonds that are issued on the same date, the interest on which when such Series are considered in the aggregate shall be a fixed or constant rate, shall not be considered Variable Rate Indebtedness.

Section 1.03 Rules of Construction.

Unless the context clearly indicates to the contrary, the following rules shall apply to the construction of this Agreement:

(a) Words importing the singular number shall include the plural number and vice versa.

(b) Words importing the redemption or calling for redemption of Bonds shall not be deemed to refer to or connote the payment of Bonds at their stated maturity.

(c) All references herein to particular Articles or Sections are references to Articles or Sections of this Agreement.

(d) The headings herein and Table of Contents to the Agreement are solely for convenience of reference and shall not constitute a part of this Agreement nor shall they affect its meaning, construction or effect.

(e) All references herein to the payment of Bonds are references to payment of principal of and premium, if any, and interest on Bonds.

ARTICLE II

EXECUTION, AUTHENTICATION, DELIVERY REGISTRATION AND FORM OF BONDS

Section 2.01 Form and Details of Bonds.

Unless otherwise provided in the applicable Supplemental Agreement, the Bonds shall be substantially in the form set forth in Exhibit A hereto, shall bear an appropriate series designation, shall be issuable only as registered Bonds without coupons, in denominations of \$5,000 and multiples thereof, and shall be appropriately numbered. The Bonds shall be issued in fully registered form.

The Bonds of a Series shall be payable, with respect to interest, principal and premium, if any, in any coin or currency of the United States of America which at the time of payment is legal tender for public and private debts (or other coin or currency provided for in the applicable Supplemental Agreement). The principal of Bonds shall be payable only to the Holder or his legal representative at the principal corporate trust office of the Trustee and at such other office or agency of any paying agent as the Board may designate from time to time upon the presentation and surrender of the Bonds (except as otherwise contemplated in Section 2.05 hereof).

The Bonds of each Series shall be dated as provided in the applicable Supplemental Agreement; shall bear interest, which may be fixed or variable, at the rates provided in such Supplemental Agreement, from the Interest Payment Date next preceding the date on which they are authenticated, unless authenticated on an Interest Payment Date, in which event they shall bear interest from such Interest Payment Date, or unless authenticated before the first Interest Payment Date in which event they shall bear interest from their date; **provided, however**, that if at the time of authentication of any Bond interest is in default, such Bond shall bear interest from the date to which interest has been paid. Unless otherwise provided in the applicable Supplemental Agreement, interest on the Bonds shall be computed on the basis of a three hundred sixty (360) day year of twelve (12) thirty (30) day months.

Capital Appreciation Bonds shall bear interest as described under the defined term Accreted Value, payable only upon redemption or maturity thereof, and Deferred Income Bonds shall bear interest as described under the defined term Appreciated Value, payable from and after the Interest Commencement Date or upon the prior redemption thereof.

Prior to the issuance of Variable Rate Indebtedness, the applicable Supplemental Agreement shall specify, without limitation, the interest rate calculation methods and any conversion features, and any Enhancement Facility which may be drawn upon to make principal and interest payments on the Variable Rate Indebtedness. The Variable Rate Indebtedness may provide that the Holder of any such Bond may demand payment of principal and interest within a stated period after delivering notice to a designated agent for the Authority and providing a copy of the notice with the tender of the Variable Rate Indebtedness to such agent. The designated agent for the Authority, in accordance with the terms of a remarketing agreement, may provide for the resale or redelivery of the Variable Rate Indebtedness on behalf of the Authority at a price provided for in such agreement. If the Variable Rate Indebtedness shall not be resold or redelivered within a stated period, the agent for the Authority may be authorized to draw upon a previously executed Enhancement Facility for payment of interest and principal for a particular Series of Variable Rate Indebtedness to which such Enhancement Facility shall pertain. The particular form or forms of such demand provisions, the period or periods for payment of principal and interest after delivery of notice, the appointment of the agent for the Authority, the terms and provisions for the remarketing agreement, and the terms and provisions of the Enhancement Facility shall be as set forth in the applicable Supplemental Agreement.

The Bonds shall be lettered and numbered in such manner and shall be in the denominations provided in the applicable Supplemental Agreement. Unless otherwise specified in the applicable Supplemental Agreement, in the event that interest is not punctually paid or duly provided for, such interest shall forthwith cease to be payable to the Holder shown on the registration books held by the Trustee at the close of business on the fifteenth (15th) day of the calendar month preceding such Interest Payment Date and may be paid to the person in whose name Bonds are registered at the close of business on a special record date to be fixed by the Trustee, on a special payment date designated by the Trustee, notice having been given by the Trustee to the Holders not less than ten (10) days prior to such special record date or may be paid at any time in any other lawful manner not inconsistent with the requirements of any securities exchange on which Bonds may be listed and upon such notice as may be required by such exchange, or as more fully provided for in the applicable Supplemental Agreement.

Section 2.02 Execution of Bonds.

Unless otherwise provided in the applicable Supplemental Agreement, the Bonds shall be signed in the name of the Authority by the manual or facsimile signature of the Executive President, and the Authority's seal shall be affixed thereto or a facsimile thereof printed thereon, attested by the manual or facsimile signature of the Secretary of the Authority. In case any officer whose signature or a facsimile of whose signature shall appear on any Bond shall cease to be such officer before the delivery of such Bond, such signature or such facsimile shall nevertheless be valid and sufficient for all purposes the same as if he had remained in office until such delivery. Any Bond may bear the facsimile signature of or may be signed by such persons as at the actual time of the execution thereof shall be the proper officers to sign such Bond although at the date of such Bond such persons may not have been such officers.

Section 2.03 Authentication of Bonds.

Unless otherwise provided in the applicable Supplemental Agreement, the Bonds shall

bear a certificate of authentication and shall not be valid until the Trustee shall have executed the certificate of authentication and inserted the date of authentication thereon. The Trustee shall authenticate each Bond with the signature of an authorized officer or employee, but it shall not be necessary for the same person to authenticate all of the Bonds or all of the Bonds of any Series. Only such authenticated Bonds shall be entitled to any right or benefit under this Agreement, and such certificate on any Bond issued hereunder shall be conclusive evidence that the Bond has been duly issued and is secured by the provisions hereof.

Section 2.04 Registration and Transfer of Bonds; Persons Treated as Owners.

(a) All Bonds issued under this Agreement shall be negotiable, subject to the provisions for registration and registration of transfer thereof contained herein or in the Bonds.

(b) The Trustee shall maintain registration books with respect to each Series of Bonds at the offices of the Trustee and shall provide for the registration, registration of transfer and exchange of any Bond of such Series under such reasonable regulations as the Trustee may prescribe.

(c) Each Bond shall be registered and the transfer of such Bond shall be registered only upon the registration books maintained by the Trustee, by the Bondholder thereof in person or by his attorney duly authorized in writing, upon presentation and surrender thereof together with a written instrument of transfer satisfactory to the Trustee duly executed by the registered Bondholder or his duly authorized attorney. Upon surrender for registration of transfer of any such Bond, the Authority shall cause to be executed and the Trustee shall authenticate and deliver, in the name of the transferee, one or more new Bonds of the same Series, interest rate, maturity, principal amount and date as the surrendered Bond, as fully registered Bonds only.

(d) The Trustee shall treat the registered owner as the person exclusively entitled to payment of principal, premium, if any, and interest and the exercise of all other rights and powers of the owner on the registration books, except that interest payments shall be made to the person shown as owner on the fifteenth day of the month preceding each Interest Payment Date.

Section 2.05 Exchange of Bonds; Charges for Exchange of Bonds.

Bonds, upon presentation and surrender thereof to the Trustee together with written instructions satisfactory to the Trustee, duly executed by the registered Bondholder or his attorney duly authorized in writing, may be exchanged for an equal aggregate principal amount of fully registered Bonds of the same Series and tenor.

Any exchange of Bonds shall be at the expense of the Authority, except that the Trustee may charge the person requesting such exchange the amount of any tax or other governmental charge required to be paid with respect thereto.

Section 2.06 Temporary Bonds.

Prior to the preparation of Bonds in definitive form, the Authority may issue temporary

Bonds in the form of registered bonds without coupons in such denominations, or in the form of a single registered bond without coupons in a denomination equal to the aggregate principal amount of such definitive bonds of such Series, with payment record attached for the notation of payments of principal and interest, without presentation and surrender of such single registered bond, as the Authority may direct, substantially of the tenor herein set forth and with such appropriate omissions, insertions and variations as may be required.

Until definitive bonds of any Series are ready for delivery, any temporary bond may, if so provided by the Authority by resolution, be exchanged at the corporate trust office of the Trustee, without charge to the Holder thereof, for an equal aggregate principal amount of temporary registered bonds without coupons of authorized denominations, of like tenor, of the same Series and maturity and bearing interest at the same rate. The Authority shall promptly prepare, execute and deliver to the Trustee Bonds in definitive form and thereupon, upon surrender of Bonds in temporary form, the Trustee shall authenticate and deliver in exchange therefor Bonds in definitive form of the same Series and maturity having an equal aggregate principal amount. Until so exchanged, the temporary Bond or Bonds of any Series shall in all respects be entitled to the same benefit and security of this Agreement as the corresponding definitive Bonds of such Series to be issued and authenticated hereunder. No charge of any kind shall be made against the Holder upon an exchange of a temporary bond for a definitive Bond.

Section 2.07 Mutilated, Lost or Destroyed Bonds.

If any Bond has been mutilated, lost or destroyed, the Authority shall cause to be executed, and the Trustee shall authenticate and deliver, a new Bond of like date, number and tenor in exchange and substitution for and upon the cancellation of such mutilated Bond or in lieu of and in substitution for such lost or destroyed Bond; **provided, however,** that the Authority and the Trustee shall so execute and deliver any new Bond only if the Holder has paid the reasonable expenses and charges of the Authority and the Trustee in connection therewith and, in the case of a lost or destroyed Bond, (a) has filed with the Authority and the Trustee evidence satisfactory to them that such Bond was lost or destroyed and of his ownership thereof, and (b) has furnished indemnity satisfactory to them. If any such Bond has matured, or is about to mature, instead of issuing a new Bond the Trustee may pay the same without surrender thereof.

Upon the issuance of any new Bond under this Section, the Authority may require the payment of a sum sufficient to cover any tax or other governmental charge that may be imposed in relation thereto and any other expenses (including the fees and expenses of the Trustee) connected therewith.

Section 2.08 Cancellation and Disposition of Bonds.

All Bonds that have been surrendered for registration of transfer or exchange pursuant to Sections 2.04 and 2.05, paid (whether at maturity, by sinking fund redemption, acceleration, call for redemption or otherwise), or delivered by the Authority to the Trustee for cancellation shall not be reissued, and the Trustee shall, unless otherwise directed by the Authority, shred or otherwise destroy such Bonds. The Trustee shall deliver to the Authority a certificate of any such shredding or other destruction.

Section 2.09 Non-Presentation of Bonds.

(a) If any Bond is not presented for payment when the principal thereof becomes due (whether at maturity, by sinking fund redemption, upon acceleration or call for redemption or otherwise), all liability of the Authority to the Holder thereof for the payment of such Bond shall be completely discharged if moneys sufficient to pay such Bond and the interest due thereon shall be held by the Trustee for the benefit of such Holder, and thereupon it shall be the duty of the Trustee to hold such moneys, subject to subsection (b) below, without liability for interest thereon, for the benefit of such Holder, who shall thereafter be restricted exclusively to such moneys for any claim of whatever nature on his part under this Agreement or on, or with respect to, such Bond.

(b) Notwithstanding anything in this Agreement to the contrary, any cash, Government Obligations or Government Certificates deposited with the Trustee for the payment of the principal of and premium, if any, and interest on any Series of Bonds remaining unclaimed for more than one year after the principal of such Series of Bonds has become due and payable shall be paid to the Authority and shall be held by the Authority in trust for the benefit of Holders of such Bonds in a separate account for seven years and thereafter in the general fund of the Authority. After such moneys have been paid to the Authority, the Holders of such Bonds shall be entitled to look only to the Authority, and all liability of the Trustee with respect to such amounts shall cease.

Section 2.10 Purposes of Bonds.

Bonds may be issued to pay Cost of Improvements and to provide funds for any other lawful purposes, including (a) to refund any obligations of the Authority, (b) to fund reserves, (c) to pay Costs of Issuance of such Bonds, (d) to pay for capitalized interest or (e) for a combination of such purposes.

Section 2.11 Parity of Senior Indebtedness; Pledge of Revenues and Certain Funds and Accounts.

(a) This Agreement constitutes a continuing, irrevocable pledge of Revenues to secure payment of all amounts due with respect to all Senior Indebtedness that may from time to time be issued or incurred and Outstanding, including but not limited to the principal of and premium, if any, and interest thereon, subject only to the right of the Authority to make application thereof, or to direct the Trustee to make application thereof, to pay Current Expenses as set forth in Section 5.02 and 8.06 of this Agreement and for the other purposes as provided herein; **provided, however**, that any Revenues received from the Commonwealth of Puerto Rico on account of Commonwealth Guaranteed Indebtedness are not subject to the lien hereof and shall only be used for the purposes set forth in Section 5.12 hereof.

(b) Senior Indebtedness shall be issued pursuant to a Supplemental Agreement or evidenced by other documents and shall be equally and ratably secured by the pledge of Revenues under this Agreement, without preference, priority or distinction over any other issue of Senior Indebtedness; **provided, however**, that the moneys in any Senior Debt Service Reserve Account shall only secure the Series of Senior Bonds to which such Account

relates, and provided, further, that any Senior Bonds may have additional security pledged to its payment. In no event will moneys in any Senior Debt Service Reserve Account be available to pay Other System Indebtedness secured on a parity with Senior Bonds. The Senior Bond Fund, the Construction Fund (but only to the extent of moneys derived from the proceeds of Senior Indebtedness on deposit therein), the Current Expense Fund, the Operating Reserve Fund, the Capital Improvement Fund and the Surplus Fund shall be trust funds and are hereby pledged equally and ratably to the payment of the principal of and interest on all Senior Indebtedness, subject only to the right of the Authority to make application thereof, or to direct the Trustee to make application thereof, to pay Current Expenses from funds on deposit in the Current Expense Fund as set forth in Sections 5.02 and 8.06 of this Agreement and for the other purposes as provided herein.

(c) In connection with the issuance or incurrence of Senior Indebtedness, the Authority, as provided in the applicable Supplemental Agreement or evidenced in other documentation, may create additional accounts and subaccounts within any fund or account established by this Agreement. Moneys in any account of the Senior Bond Fund relating to particular Senior Indebtedness shall only secure such Senior Indebtedness.

(d) Nothing herein shall be construed, however, as (a) requiring that any Senior Indebtedness bear interest at the same rate or in the same manner as any other Senior Bonds, have the same, or an earlier or later, maturity, or be subject to redemption prior to maturity on the same basis as any other Senior Indebtedness, (b) prohibiting the Authority from entering into financial arrangements designed to assure that moneys will be available for the payment of certain Senior Indebtedness when due, or (c) prohibiting the Authority from pledging moneys or assets of the Authority other than those pledged herein for the benefit of certain Senior Indebtedness.

(e) The lien and trust hereby created are for the benefit of the Holders of Senior Indebtedness and any Beneficiaries relating thereto and for their additional security until all the Senior Indebtedness have been paid or defeased in accordance with Article XI or if such Indebtedness was not incurred hereunder, in accordance with similar provisions of the controlling document.

Section 2.12 Parity of Senior Subordinate Indebtedness; Pledge of Revenues and Certain Funds and Accounts.

(a) This Agreement constitutes a continuing, irrevocable pledge of Revenues to secure payment of all amounts due with respect to all Senior Subordinate Indebtedness that may from time to time be issued or incurred and Outstanding, including but not limited to the principal of and premium, if any, and interest thereon subject and subordinate to the right of the Authority to make application thereof, or to direct the Trustee to make application thereof, to pay Current Expenses from funds on deposit in the Current Expense Fund as set forth in Sections 5.02 and 8.06 of this Agreement and for other purposes as provided herein and to the pledge of Revenues to secure payment of the principal and premium, if any, and interest on all Senior Indebtedness Outstanding; **provided, however**, that any Revenues received from the Commonwealth of Puerto Rico on account of Commonwealth Guaranteed Indebtedness are not subject to the lien hereof and shall only be used for the purposes set forth in Section 5.12 hereof.

(b) Senior Subordinate Indebtedness shall be issued pursuant to a Supplemental Agreement or evidenced by other documents and shall be equally and ratably secured by the pledge of Revenues under this Agreement, without preference, priority or distinction over any other issue of Senior Subordinate Indebtedness; **provided, however**, that the moneys in any Senior Subordinate Debt Service Reserve Account shall only secure the Series of Senior Subordinate Bonds to which such Account relates, and provided, further, that any Series of Senior Subordinate Bonds may have additional security pledged to its payment. In no event will moneys in any Senior Subordinate Debt Service Reserve Account be available to pay Other System Indebtedness secured on a parity with Senior Subordinate Bonds. The Senior Subordinate Bond Fund (but only to the extent of moneys derived from the proceeds of Senior Subordinate Indebtedness on deposit therein), the Current Expense Fund, the Operating Reserve Fund, the Capital Improvement Fund and the Surplus Fund are hereby pledged equally and ratably to the payment of the principal of and interest on all Senior Subordinate Indebtedness, subject only and subordinate to the pledge of Revenues to secure payment of the principal of and premium, if any, and interest on all Senior Indebtedness Outstanding and to the right of the Authority to make application thereof, or to direct the Trustee to make application thereof, to pay Current Expenses from funds on deposit in the Current Expense Fund as set forth in Section 5.02 and 8.06 of this Agreement and for the other purposes as provided herein.

(c) In connection with the issuance or incurrence of Senior Subordinate Indebtedness, the Authority, as provided in the applicable Supplemental Agreement or evidenced in other documentation, may create additional accounts and subaccounts within any fund or account established by this Agreement. Moneys in any account of the Senior Subordinate Bond Fund relating to particular Senior Subordinate Indebtedness shall only secure such Senior Subordinate Indebtedness.

(d) Nothing herein shall be construed, however, as (a) requiring that any Senior Subordinate Indebtedness bear interest at the same rate or in the same manner as any other Senior Subordinate Indebtedness, have the same, or an earlier or later, maturity date, or be subject to redemption prior to maturity on the same basis as any other Senior Subordinate Indebtedness, (b) prohibiting the Authority from entering into financial arrangements designed to assure that moneys will be available for the payment of certain Senior Subordinate Indebtedness when due, or (c) prohibiting the Authority from pledging moneys or assets of the Authority other than those pledged herein for the benefit of certain Senior Subordinate Indebtedness.

(e) The lien and trust hereby created are for the benefit of the Holders of Senior Subordinate Indebtedness and any Beneficiaries relating thereto and for their additional security until all the Senior Subordinate Indebtedness have been paid or defeased in accordance with Article XI or if such Indebtedness was not incurred hereunder, in accordance with similar provisions of the controlling document.

Section 2.13 Parity of Subordinate Indebtedness; Pledge of Revenues and Certain Funds and Accounts.

(a) This Agreement constitutes a continuing, irrevocable pledge of Revenues to secure payment of all amounts due with respect to all Subordinate Indebtedness that may from time to time be issued or incurred and Outstanding, including but not limited to the principal of

and premium, if any, and interest thereon subject and subordinate to the right of the Authority to make application thereof, or to direct the Trustee to make application thereof, to pay Current Expenses from funds on deposit in the Current Expense Fund as set forth in Sections 5.02 and 8.06 of this Agreement and for other purposes provided herein and to the pledge of Revenues to secure payment of the principal of and premium, if any, and interest on all Senior Indebtedness and Senior Subordinate Indebtedness Outstanding; **provided, however,** that any Revenues received from the Commonwealth of Puerto Rico on account of Commonwealth Guaranteed Indebtedness are not subject to the lien hereof and shall only be used for the purposes set forth in Section 5.12 hereof.

(b) Subordinate Indebtedness shall be issued pursuant to a Supplemental Agreement or evidenced by other documents and shall be equally and ratably secured by the pledge of Revenues under this Agreement, without preference, priority or distinction over any other issue of Subordinate Indebtedness; **provided, however,** that the moneys in any Subordinate Debt Service Reserve Account shall only secure the Series of Subordinate Bonds to which such Account relates, and provided, further, that any Series of Subordinate Bonds may have additional security pledged to its payment. In no event will moneys in any Subordinate Debt Service Reserve Account be available to pay Other System Indebtedness secured on a parity with Subordinate Bonds. The Subordinate Bond Fund, the Construction Fund (but only to the extent of moneys derived from the proceeds of Subordinate Bonds on deposit therein), the Current Expense Fund, the Operating Reserve Fund, the Capital Improvement Fund and the Surplus Fund are hereby pledged equally and ratably to the payment of the principal of and interest on all Subordinate Indebtedness, subject only and subordinate to the pledge of Revenues to secure payment of the principal of and premium, if any, and interest on all Senior Indebtedness and Senior Subordinate Indebtedness Outstanding and to the right of the Authority to make application thereof, or to direct the Trustee to make application thereof, to pay Current Expenses from funds on deposit in the Current Expense Fund as set forth in Sections 5.02 and 8.06 of this Agreement and for the other purposes as provided herein.

(c) In connection with the issuance or incurrence of Subordinate Indebtedness, the Authority, as provided in the applicable Supplemental Agreement or evidenced in other documentation, may create additional accounts and subaccounts within any fund or account established by this Agreement. Moneys in any account of the Subordinate Bond Fund relating to particular Subordinate Indebtedness shall only secure such Subordinate Indebtedness.

(d) Nothing herein shall be construed, however, as (a) requiring that any Subordinate Indebtedness bear interest at the same rate or in the same manner as any other Subordinate Indebtedness, have the same, or an earlier or later, maturity, or be subject to mandatory, optional or extraordinary redemption prior to maturity on the same basis as any other Subordinate Indebtedness, (b) prohibiting the Authority from entering into financial arrangements designed to assure that moneys will be available for the payment of certain Subordinate Indebtedness when due, or (c) prohibiting the Authority from pledging moneys or assets of the Authority other than those pledged herein for the benefit of certain Subordinate Indebtedness.

(e) The lien and trust hereby created are for the benefit of the Holders of Subordinate Indebtedness and any Beneficiaries relating thereto and for their additional security

until all the Subordinate Indebtedness shall have been paid or defeased in accordance with Article XI or if such Indebtedness was not incurred hereunder, in accordance with similar provisions of the controlling document.

Section 2.14 Parity of Commonwealth Guaranteed Indebtedness; Pledge of Revenues.

Revenues are hereby pledged equally and ratably to the payment of principal of and interest on all Commonwealth Guaranteed Indebtedness, subject and subordinate to the right of the Authority to make application thereof, or to direct the Trustee to make application thereof, to pay Current Expenses from funds on deposit in the Current Expense Fund as set forth in Sections 5.02 and 8.06 of this Agreement and for the other purposes as provided herein and to the liens securing Senior Indebtedness, Senior Subordinate Indebtedness and Subordinate Indebtedness; **provided, however**, that any Revenues received from the Commonwealth of Puerto Rico on account of Commonwealth Guaranteed Indebtedness are not subject to the lien hereof and shall only be used for the purposes set forth in Section 5.12 hereof. The lien and trust hereby created are for the benefit of the Holders of Commonwealth Guaranteed Indebtedness, and for their additional security until all Commonwealth Guaranteed Indebtedness have been paid or its payment has been duly provided for.

Section 2.15 Conditions for Issuing Bonds.

On or prior to the issuance and authentication of any Series of Bonds by the Trustee, the Authority shall file with the Trustee the following:

- (a) In the case of the initial Series of Bonds issued hereunder:
 - (1) An original executed counterpart of this Agreement;
 - (2) A certified copy of a resolution of the Board of the Authority authorizing the execution and delivery of this Agreement; and
 - (3) An Opinion or Opinions of Counsel, subject to customary exceptions and qualifications, substantially to the effect that this Agreement has been duly authorized, executed and delivered to the Trustee and is a valid, binding and enforceable obligation of the Authority.
- (b) An original executed counterpart of a Supplemental Agreement which (1) shall, in addition to any other provisions otherwise mandated by this Agreement, include: (A) whether such Bonds are being issued as Senior Bonds, Senior Subordinate Bonds or Subordinate Bonds; (B) provisions authorizing the issuance, fixing the principal amount and setting forth the details of such Bonds, including their date, the interest rate or rates and the manner in which the Bonds are to bear and pay interest, the principal and Interest Payment Dates of the Bonds, the purposes for which such Bonds are being issued, the manner of numbering of such Bonds, the Series designation, the denominations, the maturity dates and principal maturities, the principal amounts required to be redeemed pursuant to any mandatory redemption provisions or the manner for determining such principal amounts, any provisions for optional or extraordinary redemption before maturity, any provisions regarding the Senior Debt Service

Reserve Account, Senior Subordinate Debt Service Reserve Account, or Subordinate Debt Service Reserve Account and whether the interest on such Bonds shall be excluded from gross income for Federal income tax purposes under Section 103 of the Code or subject to Federal income taxation; and (C) provisions for the application of the proceeds of such Bonds; and (2) may include: (A) provisions for Enhancement Facilities and for other Funds and Accounts to be established with respect to such Bonds; (B) provisions necessary or expedient for the issuance of Variable Rate Indebtedness or other manner of bearing interest, including remarketing provisions, Enhancement Facility provisions and provisions for establishing the variable rate and converting to a fixed rate; (C) provisions for entering into Qualified Swaps or Hedge Agreements, guarantees or other arrangements to limit interest rate risks; and (D) such other provisions as the Authority may deem appropriate.

(c) A certified copy of applicable resolution(s) of the Board authorizing the execution and delivery of a Supplemental Agreement, the issuance, sale, award, execution and delivery of such Bonds and, in the case of a Series of Bonds issued to refund Indebtedness, calling for redemption or payment of the Indebtedness to be refunded, fixing any redemption date and authorizing any required notice of redemption in accordance with the provisions of this Agreement.

(d) A certificate signed by the Executive President of the Authority and dated the date of such issuance, to the effect that:

(1) Upon the issuance of such Series of Bonds, the balance to the credit of each Account within each Debt Service Reserve Fund will not be less than the Debt Service Reserve Requirement corresponding thereto; provided, that if the Authority has elected upon the issuance of a Series of Bonds to fund the applicable Debt Service Reserve Account in accordance with Section 5.04(a), 5.06(a) or 5.08(a), such Account shall be deemed to be funded at the applicable requirement therefor so long as the deposits required by Sections 5.02(c)(ii), (iv) and (vi) have been made;

(2) Upon and immediately following such issuance, no Event of Default has occurred which has not been cured or waived, and no event or condition exists which, with the giving of notice or lapse of time or both, would become an Event of Default and

(3) All required approvals, limitations, conditions and provisions precedent to the issuance of such Series of Bonds have been obtained, observed, met and satisfied.

(e) An Opinion of Counsel, subject to customary exceptions and qualifications, substantially to the effect that the Supplemental Agreement for such Series of Bonds has been duly authorized, executed and delivered, is binding on the Authority and complies in all respects with the requirements of this Agreement.

(f) An opinion of Bond Counsel, subject to customary exceptions and qualifications, substantially to the effect that the issuance of such Bonds has been duly authorized, that such Bonds are valid and binding limited obligations of the Authority, and with

respect to Bonds to be issued on a tax-exempt basis that the interest on such Bonds is excludable from gross income for purposes of Federal income taxation under Section 103 of the Code.

(g) Except upon the issuance of the Series 2008 Bonds, if the Bonds are issued to refund any obligations of the Authority, the following:

(1) evidence that the Authority has made provision as required by this Agreement or other similar agreement relating to the obligations being refunded for the payment or redemption of all obligations to be refunded;

(2) the certificates required in Sections 2.16 or 2.17 or in clauses (a) and (b) of Section 2.18, as applicable, provided that the Authority need not deliver said certificates if the Executive President delivers a certificate to the effect that (i) the Annual Debt Service on such refunding Bonds for each applicable Fiscal Year following the issuance thereof is not greater than the Annual Debt Service for each such Fiscal Year on the obligations to be refunded; or (ii) the maximum aggregate Annual Debt Service for any Fiscal Year thereafter on the Indebtedness Outstanding after the issuance of such refunding Bonds is not greater than the maximum aggregate Annual Debt Service for any Fiscal Year thereafter on the Indebtedness Outstanding prior to the issuance of such refunding Bonds. For purposes of this clause (2), applicable Fiscal Year shall mean any Fiscal Year in which such refunding Bonds are Outstanding.

(h) A request and authorization of the Authority, signed by an Authorized Representative of the Authority, to the Trustee to authenticate and deliver such Bonds to the purchasers upon payment by such purchasers to the Trustee for the account of the Authority of the purchase price thereof plus accrued interest, if any, to the date of delivery.

None of the requirements in this Section may be waived without the consent of the Holders of not less than a majority in aggregate principal amount of the Outstanding Senior Bonds.

Section 2.16 Special Provisions Relating to the Issuance of Senior Bonds.

Except for the Series 2008 Bonds or as provided in Section 2.15(g) above, if the Bonds to be issued are to be issued as Senior Bonds, the Authority shall also file with the Trustee a certificate dated the date of initial issuance of such Senior Bonds, signed by the Executive President and approved by a Consultant, setting forth:

(i) the amount of the Net Revenues for any twelve (12) consecutive calendar months out of the eighteen (18) calendar months immediately preceding the date of issuance of such Senior Bonds; provided that such amount shall be adjusted to give effect for such twelve (12) month period to any increases or decreases in rates, fees, rentals or other charges for which all legal conditions to effectiveness have been met on the date of issuance of such Senior Bonds;

(ii) the amount of the maximum aggregate Annual Debt Service for any Fiscal Year thereafter on the Senior Indebtedness then Outstanding, the Senior

Bonds to be issued and any other Senior Indebtedness to be issued or incurred simultaneously therewith;

(iii) the amount of the maximum aggregate Annual Debt Service for any Fiscal Year thereafter on all Bonds and Other System Indebtedness then Outstanding, the Senior Bonds proposed to be issued and any other Bonds and Other System Indebtedness to be issued or incurred simultaneously therewith, plus amounts required to be deposited in the Senior Debt Service Reserve Fund, the Senior Subordinate Debt Service Reserve Fund and the Subordinate Debt Service Reserve Fund pursuant to Section 5.02;

(iv) the percentage derived by dividing the amount in item (i) above by the amount shown in item (ii) above, which percentage shall not be less than 120%; and

(v) the percentage derived by dividing the amount in item (i) above by the amount shown in item (iii) above, which percentage shall not be less than 100%.

Section 2.17 Special Provisions Relating to the Issuance of Senior Subordinate Bonds.

Except as provided in Section 2.15(g) above, if the Bonds to be issued are to be issued as Senior Subordinate Bonds, the Authority shall also file with the Trustee a certificate dated the date of initial issuance of such Senior Subordinate Bonds, signed by the Executive President and approved by a Consultant, setting forth:

(i) the amount of the Net Revenues for any twelve (12) consecutive calendar months out of the eighteen (18) calendar months immediately preceding the date of issuance of such Senior Subordinate Bonds; provided that such amount shall be adjusted to give effect for such twelve (12) month period to any increases or decreases in rates, fees, rentals or other charges for which all legal conditions to effectiveness have been met on the date of issuance of such Senior Subordinate Bonds;

(ii) the amount of the maximum aggregate Annual Debt Service for any Fiscal Year thereafter on the Senior Indebtedness and the Senior Subordinate Indebtedness then Outstanding, the Senior Subordinate Bonds to be issued and any other Senior or Senior Subordinate Indebtedness to be issued or incurred simultaneously therewith;

(iii) the amount of the maximum aggregate Annual Debt Service for any Fiscal Year thereafter on all Bonds and Other System Indebtedness then Outstanding, the Senior Subordinate Bonds proposed to be issued and any other Bonds and Other System Indebtedness to be issued or incurred simultaneously therewith, plus amounts required to be deposited in the Senior Debt Service Reserve Fund, the Senior Subordinate Debt Service Reserve Fund and the Subordinate Debt Service Reserve Fund pursuant to Section 5.02;

(iv) the percentage derived by dividing the amount in item (i) above by the amount shown in item (ii) above, which percentage shall not be less than 110%; and

(v) the percentage derived by dividing the amount in item (i) above by the amount shown in item (iii) above, which percentage shall not be less than 100%.

Section 2.18 Special Provisions Relating to the Issuance of Subordinate Bonds.

Except as provided in Section 2.15(g) above, if the Bonds to be issued are to be issued as Subordinate Bonds, the Authority shall also file with the Trustee the following:

(a) a certificate dated the date of initial issuance of such Subordinate Bonds, signed by the Executive President and approved by a Consultant, setting forth:

(i) the amount of the Net Revenues for any twelve (12) consecutive calendar months out of the eighteen (18) calendar months immediately preceding the date of issuance of such Subordinate Bonds; provided that such amount shall be adjusted to give effect for such twelve (12) month period to any increases or decreases in rates, fees, rentals or other charges for which all legal conditions to effectiveness have been met on the date of issuance of such Subordinate Bonds;

(ii) the amount of the maximum aggregate Annual Debt Service for any Fiscal Year thereafter on the Bonds and Other System Indebtedness then Outstanding, the Subordinate Bonds proposed to be issued and any Bonds or Other System Indebtedness to be issued or incurred simultaneously therewith, plus amounts required to be deposited to the Senior Debt Service Reserve Fund, the Senior Subordinate Debt Service Reserve Fund and the Subordinate Debt Service Reserve Fund pursuant to Section 5.02;

(iii) the percentage derived by dividing the amount in item (i) above by the amount shown in item (ii) above, which percentage shall not be less than 100%; or

(b) a certificate dated the date of original issuance of such Subordinate Bonds, signed by a Consultant, setting forth:

(i) the amount of the projected Net Revenues for each of the three (3) full Fiscal Years following the issuance of such Subordinate Bonds;

(ii) the amount of the maximum aggregate Annual Debt Service for any Fiscal Year thereafter on all Bonds and Other System Indebtedness then Outstanding, the Subordinate Bonds proposed to be issued and any other Bonds and Other System Indebtedness to be issued or incurred simultaneously therewith, plus amounts required to be deposited in the Senior Debt Service Reserve Fund, the Senior Subordinate Debt Service Reserve Fund and the Subordinate Debt Service Reserve Fund pursuant to Section 5.02; and

(iii) the percentage derived by dividing the amount in item (i) above by the amount shown in item (ii) above, which percentage shall not be less than 100% in each year.

Section 2.19 Special Provisions Relating to Capital Appreciation Bonds and Deferred Income Bonds

(a) The Accreted Value of Capital Appreciation Bonds or the Appreciated Value of Deferred Income Bonds becoming due at maturity or by virtue of a sinking fund installment shall be included in the calculations of accrued and unpaid and accruing interest or principal installments made under the definitions of Annual Debt Service only from and after the date (the "Calculation Date") which is one year prior to the date on which such Accreted Value or Appreciated Value, as the case may be, becomes so due, and the principal and interest portions of such Accreted Value or Appreciated Value shall be deemed to accrue in equal daily installments from the Calculation Date to such due date.

(b) For the purposes of (i) receiving payment of the redemption price if a Capital Appreciation Bond is redeemed prior to maturity, or (ii) receiving payment of a Capital Appreciation Bond if the principal of Bonds is declared immediately due and payable following an Event of Default, as provided in Section 8.03, or (iii) computing the principal amount of Bonds held by the Holder of a Capital Appreciation Bond in giving to the Authority any notice, consent, request, or demand pursuant to this Agreement for any purpose whatsoever, the principal amount of such Capital Appreciation Bond shall be deemed to be its then current Accreted Value.

(c) For the purposes of (i) receiving payment of the redemption price if a Deferred Income Bond is redeemed prior to maturity, or (ii) receiving payment of a Deferred Income Bond if the principal of Bonds is declared immediately due and payable following an Event of Default, as provided in Section 8.03, or (iii) computing the principal amount of Bonds held by the Holder of a Deferred Income Bond in giving to the Authority any notice, consent, request, or demand pursuant to the provisions hereof for any purpose whatsoever, the principal amount of a such Deferred Income Bond shall be deemed to be its then current Appreciated Value.

Section 2.20 Other System Indebtedness.

(a) The Authority may incur or refinance Other System Indebtedness, including entering into Qualified Swaps or Hedge Agreements, or any agreements with Enhancement Facility Providers, provided that: (1) the documents relating to the Other System Indebtedness (A) acknowledge that such debt (i) constitutes Other System Indebtedness under this Agreement and (ii) is subject to the applicable terms and conditions hereof, (B) specify the amounts and due dates of Annual Debt Service with respect to the Other System Indebtedness, and (C) provide for all notices given thereunder to be given to the Trustee, (2) the Authority designates such Other System Indebtedness as Senior Indebtedness, Senior Subordinate Indebtedness or Subordinate Indebtedness and certifies that, except with respect to Qualified Swap and Hedge Agreements, the requirements of Sections 2.16, 2.17 or 2.18, as appropriate, have been met as if the Other System Indebtedness was an additional Series of Bonds, (3) the

Trustee receives written notice of the issuance of the Other System Indebtedness and the material terms and conditions thereof, and the Trustee shall register the lender or holder as owner thereof as such on its books and records, and (4) the Trustee receives an Opinion of Counsel that the documents creating the Other System Indebtedness have been duly authorized, executed and delivered on behalf of the Authority and constitute valid, binding and enforceable obligations. In connection with the incurrence of any Other System Indebtedness other than Qualified Swaps or Hedge Agreements, the Fiduciary or Beneficiary therefor shall enter into an intercreditor arrangement with the Fiduciaries and/or Beneficiaries for any Outstanding Other System Indebtedness, the terms of which shall be determined at the time of incurrence of such Other System Indebtedness.

(b) The Authority shall fulfill its obligations under all contracts or agreements creating Other System Indebtedness as they may exist from time to time.

(c) The Trustee hereby agrees to provide to each Fiduciary for, and Holder of (as applicable), Other System Indebtedness (1) copies of all notices required under this Agreement to be delivered by the Trustee to Holders of Bonds and any written notice delivered by the Trustee to the Authority pursuant to Section 8.04 of this Agreement declaring the entire unpaid principal of the Bonds due and payable, (2) copies of all notices from Holders of Bonds received by the Trustee in accordance with the provisions of this Agreement, (3) notice of the resignation of the Trustee hereunder at least thirty (30) days prior to the effective date of any such resignation, (4) notice that the Trustee has received an instrument or concurrent instruments or other notice of the removal of the Trustee in accordance with the provisions of this Agreement within thirty (30) days of receiving such an instrument or instruments and (5) notice that the Trustee has appointed a co-trustee in accordance with the provisions of the Agreement. The Trustee shall not, however, be subject to any liability to any Fiduciary or Holder by reason of its failure to provide any such notice.

ARTICLE III

REDEMPTION OF BONDS

Section 3.01 Redemption Provisions to be Fixed by Supplemental Agreements.

The Bonds of any Series shall be subject to mandatory, extraordinary or optional redemption prior to maturity on such dates and under such conditions as may be provided in the Supplemental Agreement authorizing the issuance of such Series of Bonds. The Bonds of any Series to be called for redemption shall be selected as provided in the applicable Supplemental Agreement. The Trustee shall treat each Bond of a denomination greater than the minimum denomination authorized in the applicable Supplemental Agreement as representing the number of Bonds as can be obtained by dividing the principal amount of such Bond by such minimum denomination.

Section 3.02 Notice of Redemption.

Unless otherwise provided in the applicable Supplemental Agreement, the Trustee shall send notice of the call for redemption, not less than thirty (30) nor more than forty-five (45) days

prior to the redemption date, (a) by registered or certified mail or overnight express delivery, to the Holder of each Bond to be redeemed at the address as it appears on the registration books kept by the Trustee, (b) by registered or certified mail or overnight express delivery, to all organizations registered with the Securities and Exchange Commission as securities depositories, and (c) to each nationally recognized municipal securities information repository designated as such by the Securities and Exchange Commission. Such notice shall specify: (i) the Bonds to be redeemed which shall be identified by the designation of the Bonds, the maturity dates and interest rates of the Bonds to be redeemed and the date such Bonds were issued; (ii) the numbers and other distinguishing marks of the Bonds to be redeemed, including CUSIP numbers; (iii) the redemption date; (iv) the redemption price; (v) of each such Bond, the principal amount thereof to be redeemed; (vi) that such Bonds will be redeemed at the principal corporate trust office of the Trustee, giving the address thereof and the name and telephone number of a representative of the Trustee to whom inquiries may be directed; (vii) that no representation is made as to the correctness of the CUSIP number either as printed on the Bonds or as contained in such notice and that an error in a CUSIP number as printed on such Bond or as contained in such notice shall not affect the validity of the proceedings for redemption; and (viii) if the Authority's obligation to redeem the Bonds is subject to one or more conditions, a statement to the effect that describes the condition to such redemption. In preparing and delivering such notice, the Trustee shall take into account, to the extent applicable, the prevailing tax exempt securities industry standards and any regulatory statement of any federal or state administrative body having jurisdiction over the Authority or the tax exempt securities industry, including Release No. 34-23856 of the Securities and Exchange Commission or any subsequent amending or superseding release.

Failure to give any notice specified in clause (a) of the previous paragraph or any defect therein, shall not affect the validity of any proceedings for the redemption of any other Bond. Failure to give any notice specified in clause (b) or (c) of the previous paragraph, or any defect therein, shall not affect the validity of any proceedings for the redemption of any Bonds.

Any notice mailed or provided herein shall conclusively be presumed to have been given whether or not actually received by any Bondholder.

Notice of any optional redemption may be canceled by the Authority prior to the designated redemption date by giving written notice of such cancellation to all parties who were given notice of redemption in the same manner as the notice was given.

Section 3.03 Bonds Payable on Redemption Date; Interest Ceases to Accrue.

On or before the date fixed for redemption, moneys shall be deposited with the Trustee to pay the principal of and premium, if any, and interest accrued to the redemption date on the Bonds called for redemption. Upon the happening of the conditions of this Section, the Bonds or portions thereof duly called for redemption shall cease to bear interest from and after the redemption date, shall no longer be entitled to the benefits provided by this Agreement and shall not be deemed to be Outstanding under the provisions of this Agreement.

Section 3.04 Selection of Bonds to be Redeemed. Unless otherwise required by any Supplemental Agreement, in the event of redemption of less than all the Outstanding Bonds of the same Series and maturity, the particular Bonds or portions thereof to be redeemed shall be

selected by the Trustee in such manner as the Trustee in its discretion may deem fair, except that to the extent practicable, the Trustee shall select Bonds for redemption such that no Bond remaining Outstanding shall be of a denomination of less than \$5,000. In the event of redemption of less than all the Outstanding Bonds of the same Series stated to mature on different dates, the principal amount of such Series of Bonds to be redeemed shall be applied in any order of maturity of the Outstanding Series of Bonds to be redeemed that the Authority may elect upon receipt of an opinion of Bond Counsel that such redemption would not result in the interest payable on such Bonds being included in gross income for federal income tax purposes to the Holders thereof under the Code. The portion of Bonds of any Series to be redeemed in part shall be in the principal amount of the minimum authorized denomination thereof or some integral multiple thereof and, in selecting Bonds of a particular Series for redemption, the Trustee shall treat each such Bond as representing that number of Bonds of such Series which is obtained by dividing the principal amount of such registered Bond by the minimum denomination (referred to below as a "unit") then issuable rounded down to the integral multiple of such minimum denomination. If it is determined that one or more, but not all, of the units of principal amount represented by any such Bond is to be called for redemption, then, upon notice of intention to redeem such unit or units, the Holder of such Bond shall forthwith surrender such Bond to the Trustee for (a) payment to such Holder of the redemption price of the unit or units of principal amount called for redemption and (b) delivery to such Holder of a new Bond or Bonds of such Series in the aggregate unpaid principal amount of the unredeemed balance of the principal amount of such Bond. New Bonds of the same Series and maturity representing the unredeemed balance of the principal amount of such Bond shall be issued to the registered Holder thereof, without charge therefor. If the Holder of any such Bond of a denomination greater than a unit shall fail to present such Bond to the Trustee for payment and exchange as aforesaid, such Bond shall, nevertheless, become due and payable on the date fixed for redemption to the extent of the unit or units of principal amount called for redemption (and to that extent only).

Section 3.05 Purchase of Bonds.

The Authority may purchase or cause to be purchased any Bonds of any particular Series or maturity in lieu of redemption of such Bonds (in which event any Bonds so purchased shall be cancelled and shall cease to bear interest as provided in Sections 2.08 and 4.03) or for any other purpose pursuant to written instructions given by the Authority to the Trustee. Such purchases shall be made in such manner as directed by the Authority. The Authority or the Trustee shall pay the purchase price of such Bonds together with accrued interest thereon from such funds as may be available therefor pursuant to this Agreement, any Supplemental Agreement, or as otherwise may be made available by the Authority.

ARTICLE IV

CONSTRUCTION FUND

Section 4.01 Construction Fund.

A special fund is hereby created and designated the “Puerto Rico Aqueduct and Sewer Authority Construction Fund” (herein called the “Construction Fund”) which shall be held by the Trustee.

There shall be deposited with the Trustee to the credit of the Construction Fund (i) the amounts required to be deposited under the resolution of the Board authorizing the issuance of particular Series of Bonds or the applicable Supplemental Agreement and (ii) at the election of the Board, any moneys of the Authority that may properly be deposited to the credit of said Fund, or the proceeds of any grants received from any source, to be used for the purpose of paying the Cost of Improvements. All earnings on moneys in each Account and subaccount shall be credited to such Account and subaccount and in accordance with Section 6.01(a).

The moneys in the Construction Fund shall be held in trust, separate and apart from all other funds of the Authority and applied only to the payment of the Costs of Issuance of the Bonds, interest during construction and for such period thereafter as the Authority shall determine and the Cost of Improvements (in accordance with and subject to the limitations of this Article), and, pending such application, such moneys shall be subject to a lien and charge in favor of the Holders of the Bonds and for the further security of such Holders until paid out as herein provided.

The Authority may establish additional Accounts and subaccounts within the Construction Fund as may be provided in said Supplemental Agreement which Accounts and the proceeds of the particular Series of Bonds deposited therein (together with all investments thereof and investment income earned thereon), unless otherwise provided in the applicable Supplemental Agreement, are pledged solely to the payment of such particular Series of Bonds. Deposits shall be made to the credit of the Construction Fund and any Accounts and subaccounts as provided in such Supplemental Agreement.

Section 4.02 Payment From Construction Fund.

(a) Payment or reimbursement from the Construction Fund of the Cost of Improvements shall be made by the Trustee upon written approval of an Authorized Representative of the Authority stating the name of the payee, the purpose of each payment in terms sufficient for identification, the amount of each payment and that such cost constitutes a Cost of Improvement hereunder.

(b) Payment of Costs of Issuance shall be made by the Trustee upon receipt of, and in accordance with, a certificate signed by an Authorized Representative of the Authority stating the name of the payee, the purpose of each payment in terms sufficient for identification, and the amount of each such payment.

(c) Payment of interest on Bonds during construction and for such period thereafter as aforesaid shall be made by the Trustee upon receipt of, and in accordance with, the written direction of an Authorized Representative of the Authority instructing the Trustee to transfer such amount from the Construction Fund to the applicable Interest Account.

(d) When the construction of any Improvement for which a Series of Bonds was issued shall have been completed, which fact shall be evidenced to the Trustee by a certificate stating the date of such completion, signed by the Executive President and approved by the Consulting Engineer, the balance in the Construction Fund not reserved by the Authority for the payment of any remaining part of any Cost of Improvements or for any other purpose for which moneys to the credit of the Construction Fund may be expended shall be transferred to the credit of the Capital Improvement Fund, or at the option of the Authority, to the credit of the Sinking Fund for the payment of principal of Bonds or retained in the Construction Fund for other Improvements.

ARTICLE V

FUNDS AND ACCOUNTS

Section 5.01 Establishment of Certain Funds and Accounts.

(a) There are hereby established the following funds and accounts to be held by the Trustee, each of which Fund shall include “Puerto Rico Aqueduct and Sewer Authority” in its designation:

(i) Authority Revenue Fund

(ii) Construction Fund, in which there shall be established a Capitalized Interest Account and a Costs of Issuance Account;

(iii) Senior Bond Fund, in which there shall be established a Senior Interest Account, a Senior Principal Account and a Senior Sinking Fund Account, and a separate subaccount in each such Account with respect to each issue of Senior Indebtedness;

(iv) Senior Debt Service Reserve Fund, if any, in which there shall be established a Senior Debt Service Reserve Account, if any, for each Series of Senior Bonds, or multiple Series of Bonds, as specified by the applicable Supplemental Agreement or Supplemental Agreements, as applicable;

(v) Senior Subordinate Bond Fund, in which there shall be established a Senior Subordinate Interest Account, a Senior Subordinate Principal Account and a Senior Subordinate Sinking Fund Account, and a separate subaccount in each such Account with respect to each issue of Senior Subordinate Indebtedness;

(vi) Senior Subordinate Debt Service Reserve Fund, in which there shall be established a Senior Subordinate Debt Service Reserve Account for each

Series of Senior Subordinate Bonds as required by the applicable Supplemental Agreement;

(vii) Subordinate Bond Fund, in which there shall be established a Subordinate Interest Account, a Subordinate Principal Account and a Subordinate Sinking Fund Account, and a separate subaccount in each Account with respect to each issue Subordinate Indebtedness;

(viii) Subordinate Debt Service Reserve Fund, if any, in which there shall be established a Subordinate Debt Service Reserve Account, if any, for each Series of Subordinate Bonds, or multiple Series of Subordinate Bonds, as specified by the applicable Supplemental Agreement or Supplemental Agreements, as applicable;

(ix) Operating Reserve Fund;

(x) Capital Improvement Fund;

(xi) Commonwealth Payments Fund; and

(xii) Surplus Fund in which there shall be established a Rate Stabilization Account.

(b) There is hereby established the Current Expense Fund to be held by the Authority or by a Qualified Depository on behalf of the Authority.

Section 5.02 Disposition of Revenues

(a) The Authority shall deposit, or cause to be deposited, all Revenues in the Authority Revenue Fund. Unless and until an Event of Default specified in Section 8.01(a), (b), (c), (d) or (e) hereof shall have occurred, the Authority shall apply the amounts on deposit in the Current Expense Fund to the payment of Current Expenses. Revenues consisting of governmental grants or appropriations available to pay Current Expenses of the Authority, shall be deposited in the Current Expense Fund. Revenues consisting of grants or appropriations received by the Authority for the purpose of paying of principal of and interest on Bonds or Other System Indebtedness shall be deposited in the applicable debt service fund. Revenues consisting of amounts received from the Commonwealth on account of Commonwealth Guaranteed Indebtedness shall be deposited directly in the Commonwealth Payments Fund, are not subject to the lien of the Trust Agreement and shall only be applied to the payment of principal and interest on Commonwealth Guaranteed Indebtedness.

(b) Beginning on the first Business Day of each month, the Trustee shall transfer the amount on deposit in the Authority Revenue Fund, in the following order of priority, but if the amounts so transferred shall be insufficient (after taking into account all prior deposits) to make any deposit as set forth below in this subsection, the Trustee shall only be required to deposit the amount then remaining after such prior deposits:

(i) To the Current Expense Fund, the amount required to be deposited therein pursuant to Section 5.03;

(ii) To the Senior Bond Fund, the amount required to be deposited therein pursuant to Section 5.04(a);

(iii) To the Senior Debt Service Reserve Fund, the amount required to be deposited therein pursuant to Section 5.05(a);

(iv) To the Senior Subordinate Bond Fund, the amount required to be deposited therein pursuant to Section 5.06(a);

(v) To the Senior Subordinate Debt Service Reserve Fund, the amount required to be deposited therein pursuant to Section 5.07(a);

(vi) To the Subordinate Bond Fund, the amount required to be deposited therein pursuant to Section 5.08(a);

(vii) To the Subordinate Debt Service Reserve Fund, the amount required to be deposited therein pursuant to section 5.09(a);

(viii) To the Operating Reserve Fund, the amount required to restore the balance on deposit therein to the Operating Reserve Requirement and to pay interest on and reimbursement obligations due with respect to an Operating Reserve Facility in accordance with Section 5.10(a);

(ix) To the Capital Improvement Fund, the amount required to be deposited therein pursuant to Section 5.11(a);

(x) To the Commonwealth Payments Fund, the amount required to be deposited therein pursuant to Section 5.12(a); and

(xi) To the Surplus Fund, any remaining balance.

(c) The Trustee shall provide the Authority with a monthly certificate setting forth that, to the extent that amounts on deposit in the Authority Revenue Fund were sufficient therefor, the transfers required by clauses (i) through (x) of subsection (b) above have been made and the respective balances of such Funds and Accounts. If the amount so deposited on or before any Deposit Date to the credit of the foregoing Funds, Account and subaccounts shall be less than the respective required amounts for such month, said requirements therefor shall nevertheless be cumulative and the amount of any deficiency on any Deposit Date shall be added to the amount otherwise required to be deposited in each month thereafter until such time as such deficiency shall have been eliminated; **provided, however**, that any deficiency in the amounts required to be deposited in the Commonwealth Payments Fund pursuant to clause (x) of subsection (b) above to pay the Interest Accrual and the Principal Accrual on Commonwealth Guaranteed Indebtedness on any applicable Interest Payment Date or principal payment date shall not be cumulative and shall be deemed to be eliminated as of such Interest Payment Date or principal payment date. In accordance with the provisions of Section 10.02 hereof, in the event that by any Deposit Date there are insufficient moneys to make in full the deposit to the Commonwealth Payments Fund for such month as required by clause (x) of subsection (b) above, the Trustee shall provide notice of such insufficiency to the Consulting Engineer, other

Consultants, if any, and to the Puerto Rico Fiscal Agency and Financial Advisory Authority. In no event will failure to make the transfers required by subsection (b) of this Section 5.02 be an Event of Default hereunder if such failure is due to insufficient moneys therefor.

Section 5.03 Current Expense Fund.

(a) In accordance with Section 5.02, beginning on the first Business Day of the month, the Trustee shall transfer to the Current Expense Fund, Revenues in an amount equal to the amount set forth in the Disbursement Schedule delivered on the most recent Deposit Date to pay Current Expenses of the Systems for the current month and, at the sole discretion of the Authority, up to two additional months. Amounts on deposit in the Current Expense Fund shall be available to pay Current Expenses.

Section 5.04 Senior Bond Fund.

(a) Deposits to the Senior Bond Fund. In accordance with Section 5.02 (except that no distinction or preference shall exist in making the following deposits into the Senior Interest Account, the Senior Principal Account or the Senior Sinking Fund Account of the Senior Bond Fund, in each case, such accounts being on a parity with each other as to the deposits therein under said Section 5.02), beginning on the first Business Day of a month, after making the deposit required by Section 5.02(b)(i), the Trustee shall make the following deposits:

(1) to the subaccounts established for each issue of Senior Indebtedness in the Senior Interest Account, (i) an amount of Revenues equal to the Interest Accrual on all the outstanding Senior Indebtedness to and including the last day of the next calendar month; (ii) the amount of any payments or reimbursements due in the next ensuing month to each Enhancement Facility Provider to the extent such payment or reimbursement obligation constitutes Senior Indebtedness hereunder; and (iii) the amount of any payments due in the next ensuing month under any Hedge Agreement or Qualified Swap secured on a parity with Senior Indebtedness; provided, further, that any such deposits shall be adjusted to give credit for any other available money then in such interest account or subaccount or otherwise available and designated to be used for such purpose; and

(2) to the subaccounts established for each issue of Senior Indebtedness in the Senior Principal Account and Senior Sinking Fund Account, an amount of Revenues equal to the Principal Accrual on the outstanding Senior Indebtedness to and including the last day of the next calendar month; **provided, however,** such deposits shall be adjusted to give credit for any other available money then in the principal or sinking fund account or subaccount or otherwise available and designated to be used for such purpose.

(b) Use of Moneys in Senior Bond Fund. (1) On or before each Interest Payment Date, the Trustee shall pay to the Holders of Senior Indebtedness from funds on deposit in the Senior Interest Account, the amount required for the payment of the interest becoming due on Senior Indebtedness on such Interest Payment Date; **provided, however,** if the Trustee is not the Fiduciary for such Senior Indebtedness, the Trustee will withdraw from the Senior Interest Account and transfer to the Fiduciary therefor not later than one (1) Business Day prior to the applicable Interest Payment Date the amount required for the payment of interest becoming due

on the Senior Indebtedness for which such Fiduciary so serves. On or before the date on which (x) regularly scheduled payments under a Hedge Agreement or Qualified Swap are due or (y) payments or reimbursements to an Enhancement Facility Provider are to be made, in each case relating to Senior Indebtedness, the Trustee shall pay to the persons entitled thereto from funds on deposit in the Senior Interest Account the corresponding amounts owing to such persons on such date.

(2) On or before each payment date, the Trustee shall pay to the Holders of Senior Indebtedness from funds on deposit in the Senior Principal Account, the amount required for the payment of principal becoming due on and any termination payment due in respect of Senior Indebtedness on such payment date and with respect to Senior Indebtedness as to which the Trustee is not the Fiduciary therefor, the Trustee shall pay to each such Fiduciary not later than one (1) Business Day prior to the applicable payment date from funds on deposit in the Senior Principal Account the corresponding amounts required for the payment of principal becoming due on and any termination payment due in respect of such Senior Indebtedness.

(3) On or before each mandatory redemption date, the Trustee shall pay to the Holders of Senior Indebtedness from funds on deposit in the Senior Sinking Fund Account, the amount required for the payment of mandatory sinking fund installments becoming due on Senior Indebtedness on such mandatory redemption payment date and with respect to Senior Indebtedness as to which the Trustee is not the Fiduciary therefor, the Trustee shall pay to each such Fiduciary not later than one (1) Business Day prior to the applicable mandatory redemption payment date from funds on deposit in the Senior Sinking Fund Account the corresponding amounts required for the payment of mandatory sinking fund installments becoming due on such Senior Indebtedness.

(4) Any amount in the Senior Sinking Fund Account not applied in accordance with subsection (c) below to the purchase of Senior Indebtedness by the forty-fifth (45th) day prior to the next date on which such Senior Indebtedness is so redeemable shall be applied to the redemption of such Senior Indebtedness on such redemption date. Any amounts deposited in the Senior Sinking Fund Account and not applied within twelve (12) months of their date of deposit to the purchase or redemption of Senior Indebtedness (except if held in accordance with Section 11.01 hereof) shall be transferred to the Senior Interest Account. The Senior Indebtedness to be purchased or redeemed shall be selected by the Trustee in the manner provided in Section 3.04 hereof. Amounts in the Senior Sinking Fund Account to be applied to the redemption of Senior Indebtedness shall be paid to the respective Trustee or Fiduciary on or before the redemption date and applied by them on such redemption date to the payment of the redemption price of the Senior Indebtedness being redeemed.

(c) Notwithstanding the provisions of clause (3) of paragraph (b) of this Section, the Authority may, at any time but in no event less than forty-five (45) days prior to the date on which a mandatory sinking fund installment is scheduled to be due on Senior Indebtedness, direct the Trustee or Fiduciary to purchase, with money on deposit in the Senior Sinking Fund Account, at a price not in excess of par plus interest accrued and unpaid to the date of such purchase, term bonds to be redeemed on such date. At the direction of the Authority, any term bond so purchased may be cancelled upon receipt thereof by the Trustee or the Fiduciary and evidence of such cancellation shall be given to the Authority. The principal amount of each

term bond so canceled shall be credited against the sinking fund installment due on such date as long as such term bond is canceled by the Trustee or Fiduciary prior to the date on which notice of redemption is given.

(d) In the event the amount on deposit in the Senior Interest Account on any Interest Payment Date exceeds the amount required to pay interest on the Senior Indebtedness on such Interest Payment Date, the Authority shall, if the amount on deposit in any Senior Debt Service Reserve Account is less than the applicable Debt Service Reserve Requirement, instruct the Trustee to transfer such excess to such Senior Debt Service Reserve Account to the extent of such deficiency, and otherwise retain any remaining excess in the Senior Interest Account or instruct the Trustee to transfer any such remaining excess to the Senior Principal Account or Senior Sinking Fund Account to be credited against subsequent required deposits thereto, as determined by the Authority.

(e) In the event the amount on deposit in the Senior Principal Account or Senior Sinking Fund Account on any principal or mandatory redemption payment date exceeds the amount required on such date to pay Senior Indebtedness at maturity or pursuant to mandatory sinking fund requirements, the Authority shall, if the amount on deposit in any Senior Debt Service Reserve Account is less than the applicable Debt Service Reserve Requirement, instruct the Trustee to transfer such excess to such Senior Debt Service Reserve Account to the extent of such deficiency, and otherwise retain such excess in the Senior Principal Account or Senior Sinking Fund Account, as the case may be, or instruct the Trustee to transfer such excess to the Senior Interest Account to be credited against subsequent required deposits thereto, as determined by the Authority.

(f) In the event the balance on deposit in the Senior Principal Account, the Senior Sinking Fund Account or the Senior Interest Account is insufficient for the purposes thereof, the Trustee shall deposit in such Accounts such amounts as may be necessary therefor first, from other legally available funds transferred by the Authority to the Trustee not subject to the lien of this Agreement; second, from the Surplus Fund; third, from the Commonwealth Payments Fund; fourth, from the Capital Improvement Fund; fifth, from the Operating Reserve Fund and last, from the applicable Senior Debt Service Reserve Account pursuant to Section 5.05.

Section 5.05 Senior Debt Service Reserve Fund.

(a) In each month the Trustee shall deposit to each Account in the Senior Debt Service Reserve Fund (i) beginning on the first Business Day of such month, after making the deposit required by Sections 5.02(b)(i) and (b)(ii), an amount of Revenues equal to (x) 1/60 of the amount (or such greater amount specified in the Supplemental Agreement authorizing any Senior Bonds), if any, necessary to restore the amount on deposit therein to the related Debt Service Reserve Requirement in the event of an increase in the applicable Debt Service Reserve Requirement upon the issuance of additional Senior Bonds, and (y) except as provided in paragraph (c) below, 1/12 of the amount, if any, necessary to restore the amount on deposit therein to the related Debt Service Reserve Requirement in the event of any other deficiency and (ii) the amount of proceeds of any Senior Bonds as required by the applicable Supplemental Agreement.

(b) Amounts in each Account in the Senior Debt Service Reserve Fund shall be used to pay debt service on the related Series of Senior Bonds on the dates such debt service is due when insufficient funds for that purpose are available in the Senior Bond Fund, after making any transfers pursuant to Section 5.04(f) and all cash and investments in an Account in the Senior Debt Service Reserve Fund shall be used, together with other amounts available for such purpose hereunder, to provide for payment in full of the related Series of Senior Bonds when the aggregate of such amounts is sufficient for such purpose. Amounts in each Account of the Senior Debt Service Reserve Fund shall be pledged to the Holders of the applicable Series of Senior Bonds to which such Account relates. In no event shall amounts on deposit in the Senior Debt Service Reserve Fund be used to pay principal of, interest on, or any other amounts due with respect to, Other System Indebtedness.

(c) In lieu of or in addition to cash or investments, at any time the Authority may cause to be deposited to the credit of any Senior Debt Service Reserve Account, a Debt Service Reserve Facility in the stated amount equal to all or a portion of the applicable Debt Service Reserve Requirement, irrevocably payable to the Trustee, as beneficiary for the Holders of the Senior Bonds to which such Account relates. If (x) the Authority receives an expiration notice and the applicable Enhancement Facility Provider does not extend the expiration date of a Debt Service Reserve Facility, (y) the Authority receives notice of the termination of a Debt Service Reserve Facility, or (z) the Authority receives notice that the applicable Enhancement Facility Provider of a Debt Service Reserve Facility no longer has the required credit rating, the Authority immediately shall (i) provide a substitute Debt Service Reserve Facility, (ii) deposit a sum equal to the Debt Service Reserve Requirement to the credit of the Senior Debt Service Reserve Account to which such Debt Service Reserve Facility relates (A) in equal monthly installments over the next succeeding 12 months in the case of receipt of an expiration notice, (B) prior to the termination date in the case of receipt of a termination notice, or (C) immediately in the case of such reduction in credit rating, or (iii) instruct the Trustee to draw on such Debt Service Reserve Facility (A) 12 months prior to expiration of the Debt Service Reserve Facility in the case of receipt of an expiration notice, (B) prior to the termination date in the case of receipt of a termination notice, or (C) immediately in the case of such reduction in credit rating and deposit the proceeds of such drawing to the credit of the Senior Debt Service Reserve Account to which such Debt Service Reserve Facility relates.

If a disbursement is made pursuant to a Debt Service Reserve Facility, the Authority shall either (i) reinstate such Facility in full or (ii) deposit to the credit of the Senior Debt Service Reserve Account a sum equal to the amount of the disbursement made under such Facility in accordance with its provisions.

(d) On or within five days after each Reserve Determination Date, the Trustee shall determine whether the balance on deposit in each Senior Debt Service Reserve Account was, as of the Reserve Determination Date, at least equal to the applicable Debt Service Reserve Requirement. In making such determination, any obligations in a Senior Debt Service Reserve Account shall be valued in accordance with Section 6.01.

In the event the amount on deposit in a Senior Debt Service Reserve Account exceeds the applicable Debt Service Reserve Requirement, the Trustee shall transfer such excess as directed in writing by an Authorized Representative of the Authority, such direction to be accompanied

by an Opinion of Bond Counsel that such transfer will not adversely affect the exclusion (if applicable) from gross income of interest on the respective Series of Senior Bonds to which such excess relates (i) to the subaccount of the Senior Principal Account corresponding to such Series of Senior Bonds, (ii) to fund the Operating Reserve Fund until the balance therein equals the Operating Reserve Requirement, or (iii) to the Authority to be used to pay all or any portion of the Costs of Improvements designated by the Authority and approved by Bond Counsel. If an Authorized Representative of the Authority calls for a Reserve Determination Date in connection with the refunding and/or defeasance of a Series of Senior Bonds, then the Trustee is authorized to take such refunding and/or defeasance into account in valuing the Senior Debt Service Reserve Account securing such Series of Senior Bonds and is further authorized to apply the amount of any surplus arising from such valuation to reduce the amount of the refunding Bonds and/or to provide for the refunding or defeasance of the Series of Senior Bonds in such manner as such Authorized Representative may direct.

(e) In connection with any issuance of Senior Bonds, the Authority may, in the applicable Supplemental Agreement, provide that no deposit to the Senior Debt Service Reserve Fund shall be made for or with respect to such additional Senior Bonds, in which case: (i) the lien of and pledge on the Senior Debt Service Reserve Fund shall not extend to or be for the benefit of the Holders of such Senior Bonds, and (ii) the Annual Debt Service on such Senior Bonds shall not be taken into account in determining the applicable Debt Service Reserve Requirement.

In the event that a Supplemental Agreement so provides, then such Supplemental Agreement may also provide for the creation of a special reserve account solely for the Senior Bonds to which such Supplemental Agreement relates, separate from the Senior Debt Service Reserve Fund, and may provide for the deposit therein, at the time of issuance or from time to time thereafter, of an amount specified in the applicable Supplemental Agreement as the required reserve for such Senior Bonds, or may require the Authority to deposit to the credit of such special reserve account a Debt Service Reserve Facility to enhance the security for such Senior Bonds in lieu of a funded reserve account.

Section 5.06 Senior Subordinate Bond Fund.

(a) Deposits to the Senior Subordinate Bond Fund. In accordance with Section 5.02 (except that no distinction or preference shall exist in making the following deposits into the Senior Subordinate Interest Account, the Senior Subordinate Principal Account or the Senior Subordinate Sinking Fund Account of the Senior Subordinate Bond Fund, in each case, such accounts being on a parity with each other as to the deposits therein under said Section 5.02), beginning on the first Business Day of the month, after making the deposits required by Sections 5.02(b)(i) through (iii), the Trustee shall make the following deposits:

(1) to the subaccounts established for each issue of Senior Subordinate Indebtedness in the Senior Subordinate Interest Account, (i) an amount of Revenues equal to the Interest Accrual on all the outstanding Senior Subordinate Indebtedness to and including the last day of the next calendar month; (ii) the amount of any payments or reimbursements due in the next ensuing month to each Enhancement Facility Provider to the extent such payment or reimbursement obligation constitutes Senior Subordinate Indebtedness hereunder; (iii) the

amount of any payments due in the next ensuing month under any Hedge Agreement or Qualified Swap secured on a parity with Senior Subordinate Indebtedness; provided, further, that any such deposits shall be adjusted to give credit for any other available money then in such interest account or subaccount or otherwise available and designated to be used for such purpose; and

(2) to the subaccounts established for each issue of Senior Subordinate Indebtedness in the Senior Subordinate Principal Account and Senior Subordinate Sinking Fund Account, an amount of Revenues equal to the Principal Accrual on the outstanding Senior Subordinate Indebtedness to and including the last day of the next calendar month; **provided, however**, such deposits shall be adjusted to give credit for any other available money then in the principal or sinking fund account or subaccount or otherwise available and designated to be used for such purpose.

(b) Use of Moneys in Senior Subordinate Bond Fund. (1) On or before each Interest Payment Date, the Trustee shall pay to the Holders of Senior Subordinate Indebtedness from funds on deposit in the Senior Subordinate Interest Account, the amount required for the payment of the interest becoming due on Senior Subordinate Indebtedness on such Interest Payment Date; **provided, however**, if the Trustee is not the Fiduciary for such Senior Subordinate Indebtedness, the Trustee will withdraw from the Senior Subordinate Interest Account and transfer to the Fiduciary therefor not later than one (1) Business Day prior to the applicable Interest Payment Date the amount required for the payment of interest becoming due on the Senior Subordinate Indebtedness to which the Fiduciary so serves. On or before the date on which (x) regularly scheduled payments under a Hedge Agreement or Qualified Swap are due or (y) payments or reimbursements to an Enhancement Facility Provider are to be made, in each case relating to Senior Subordinate Indebtedness, the Trustee shall pay to the persons entitled thereto from funds on deposit in the Senior Subordinate Interest Account the corresponding amounts owing to such persons on such date.

(2) On or before each payment date, the Trustee shall pay to the Holders of Senior Subordinate Indebtedness from funds on deposit in the Senior Subordinate Principal Account, the amount required for the payment of principal becoming due on and any termination payment due in respect of Senior Subordinate Indebtedness on such payment date and with respect to Senior Subordinate Indebtedness as to which the Trustee is not the Fiduciary therefor, the Trustee shall pay to each such Fiduciary not later than one (1) Business Day prior to the applicable payment date from funds on deposit in the Senior Subordinate Principal Account the corresponding amounts required for the payment of principal becoming due on and any termination payment due in respect of such Senior Subordinate Indebtedness.

(3) On or before each mandatory redemption date, the Trustee shall pay to the Holders of Senior Subordinate Indebtedness from funds on deposit in the Senior Subordinate Sinking Fund Account, the amount required for the payment of mandatory sinking fund installments becoming due on Senior Subordinate Indebtedness on such mandatory redemption payment date and with respect to Senior Subordinate Indebtedness as to which the Trustee is not the Fiduciary therefor, the Trustee shall pay to each such Fiduciary not later than one (1) Business Day prior to the applicable mandatory redemption payment date from funds on deposit in the Senior Subordinate Sinking Fund Account the corresponding amounts required for

the payment of mandatory sinking fund installments becoming due on such Senior Subordinate Indebtedness.

(4) Any amount in the Senior Subordinate Sinking Fund Account not applied in accordance with subsection (c) below to the purchase of Senior Subordinate Indebtedness by the forty-fifth (45th) day prior to the next date on which such Senior Subordinate Indebtedness is so redeemable shall be applied to the redemption of such Senior Subordinate Indebtedness on such redemption date. Any amounts deposited in the Senior Subordinate Sinking Fund Account and not applied within twelve (12) months of their date of deposit to the purchase or redemption of Senior Subordinate Indebtedness (except if held in accordance with Section 11.01 hereof) shall be transferred to the Senior Subordinate Interest Account. The Senior Subordinate Indebtedness to be purchased or redeemed shall be selected by the Trustee in the manner provided in Section 3.04 hereof. Amounts in the Senior Subordinate Sinking Fund Account to be applied to the redemption of Senior Subordinate Indebtedness shall be paid to the respective Trustee or Fiduciary on or before the redemption date and applied by them on such redemption date to the payment of the redemption price of the Senior Subordinate Indebtedness being redeemed.

(c) Notwithstanding the provisions of this Section, the Authority may, at any time but in no event less than forty-five (45) days prior to the date on which a mandatory sinking fund installment is scheduled to be due on Senior Subordinate Indebtedness, direct the Trustee or Fiduciary to purchase, with money on deposit in the Senior Subordinate Sinking Fund Account, at a price not in excess of par plus interest accrued and unpaid to the date of such purchase, term bonds to be redeemed on such date. At the direction of the Authority, any term bond so purchased may be cancelled upon receipt thereof by the Trustee or the Fiduciary and evidence of such cancellation shall be given to the Authority. The principal amount of each term bond so canceled shall be credited against the sinking fund installment due on such date as long as such term bond is canceled by the Trustee or Fiduciary prior to the date on which notice of redemption is given.

(d) In the event the amount on deposit in the Senior Subordinate Interest Account on any Interest Payment Date exceeds the amount required to pay interest on the Senior Subordinate Indebtedness on such Interest Payment Date, the Authority shall, if the amount on deposit in any Senior Subordinate Debt Service Reserve Account is less than the applicable Debt Service Reserve Requirement, instruct the Trustee to transfer such excess to such Senior Subordinate Debt Service Reserve Account to the extent of such deficiency, and otherwise retain any remaining excess in the Senior Subordinate Interest Account or instruct the Trustee to transfer any such remaining excess to the Senior Subordinate Principal Account or Senior Subordinate Sinking Fund Account to be credited against subsequent required deposits thereto, as determined by the Authority.

(e) In the event the amount on deposit in the Senior Subordinate Principal Account or Senior Subordinate Sinking Fund Account on any principal or mandatory redemption payment date exceeds the amount required on such date to pay Senior Subordinate Indebtedness at maturity or pursuant to mandatory sinking fund requirements, the Authority shall, if the amount on deposit in any Senior Subordinate Debt Service Reserve Account is less than the applicable Debt Service Reserve Requirement, instruct the Trustee to transfer such excess to

such Senior Subordinate Debt Service Reserve Account to the extent of such deficiency, and otherwise retain such excess in the Senior Subordinate Principal Account or Senior Subordinate Sinking Fund Account, as the case may be, or instruct the Trustee to transfer such excess to the Senior Subordinate Interest Account to be credited against subsequent required deposits thereto, as determined by the Authority.

(f) In the event the balance on deposit in the Senior Subordinate Principal Account, the Senior Subordinate Sinking Fund Account or the Senior Subordinate Interest Account is insufficient for the purposes thereof, the Trustee shall deposit in such Accounts such amounts as may be necessary therefor, after any transfer required by Section 5.04(f), first, from other legally available funds transferred by the Authority to the Trustee not subject to the lien of this Agreement; second, from the Surplus Fund; third, from the Commonwealth Payments Fund; fourth, from the Capital Improvement Fund; fifth, from the Operating Reserve Fund and last, from the applicable Senior Subordinate Debt Service Reserve Account pursuant to Section 5.07.

Section 5.07 Senior Subordinate Debt Service Reserve Fund.

(a) In each month, the Trustee shall deposit to each Account in the Senior Subordinate Debt Service Reserve Fund (i) beginning on the first Business Day of such month, after making the deposits required by Sections 5.02(b)(i) through (iv) Revenues in an amount equal to (x) 1/60 of the amount (or such greater amount specified in the Supplemental Agreement authorizing any Senior Subordinate Bonds), if any, necessary to restore the amount on deposit therein to the related Debt Service Reserve Requirement in the event of an increase in the applicable Debt Service Reserve Requirement upon the issuance of additional Senior Subordinate Bonds, and (y) except as provided in paragraph (c) below, 1/12 of the amount, if any, necessary to restore the amount on deposit therein to the related Debt Service Reserve Requirement in the event of any other deficiency and (ii) the amount of proceeds of any Senior Subordinate Bonds as required by the applicable Supplemental Agreement.

(b) Amounts in each Account in the Senior Subordinate Debt Service Reserve Fund shall be used to pay debt service on the related Series of Senior Subordinate Bonds on the dates such debt service is due when insufficient funds for that purpose are available in the Senior Subordinate Bond Fund, after making any transfers pursuant to Section 5.06(f) and all cash and investments in an Account in the Senior Subordinate Debt Service Reserve Fund shall be used, together with other amounts available for such purpose hereunder, to provide for payment in full of the related Series of Senior Subordinate Bonds when the aggregate of such amounts is sufficient for such purpose. Amounts in each Account of the Senior Subordinate Debt Service Reserve Fund shall be pledged to Holders of the Senior Subordinate Bonds to which such Account relates. In no event shall amounts on deposit in the Senior Subordinate Debt Service Reserve Fund be used to pay principal of, interest on or any other amounts due with respect to Other System Indebtedness.

(c) In lieu of or in addition to cash or investments, at any time the Authority may cause to be deposited to the credit of any Senior Subordinate Debt Service Reserve Account, a Debt Service Reserve Facility, in the stated amount equal to all or a portion of the applicable Debt Service Reserve Requirement, irrevocably payable to the Trustee, as beneficiary for the Holders of the Senior Subordinate Bonds to which such Account relates. If (x) the

Authority receives an expiration notice and the applicable Enhancement Facility Provider does not extend the expiration date of a Debt Service Reserve Facility, (y) the Authority receives notice of the termination of a Debt Service Reserve Facility, or (z) the Authority receives notice that the Enhancement Facility Provider of a Debt Service Reserve Facility no longer has the required credit rating, the Authority immediately shall (i) provide a substitute Debt Service Reserve Facility, (ii) deposit a sum equal to the applicable Debt Service Reserve Requirement to the credit of the Senior Subordinate Debt Service Reserve Account to which such Debt Service Reserve Facility relates (A) in equal monthly installments over the next succeeding 12 months in the case of receipt of an expiration notice, (B) prior to the termination date in the case of receipt of a termination notice, or (C) immediately in the case of such reduction in credit rating, or (iii) instruct the Trustee to draw on such Debt Service Reserve Facility (A) 12 months prior to expiration of the Debt Service Reserve Facility in the case of receipt of an expiration notice, (B) prior to the termination date in the case of receipt of a termination notice, or (C) immediately in the case of such reduction in credit rating and deposit the proceeds of such drawing to the credit of the Senior Subordinate Debt Service Reserve Account to which such Debt Service Reserve Facility relates.

If a disbursement is made pursuant to a Debt Service Reserve Facility, the Authority shall either (i) reinstate such Facility in full or (ii) deposit to the credit of the Senior Subordinate Debt Service Reserve Account a sum equal to the amount of the disbursement made under such Facility in accordance with its provisions.

(d) On or within five days after each Reserve Determination Date, the Trustee shall determine whether the balance on deposit in each Senior Subordinate Debt Service Reserve Account was, as of the Reserve Determination Date, at least equal to the applicable Debt Service Reserve Requirement. In making such determination, any obligations in a Senior Subordinate Debt Service Reserve Account shall be valued in accordance with Section 6.01.

In the event the amount on deposit in a Senior Subordinate Debt Service Reserve Account exceeds the applicable Debt Service Reserve Requirement, the Trustee shall transfer such excess as directed in writing by an Authorized Representative of the Authority, such direction to be accompanied by an Opinion of Bond Counsel that such transfer will not adversely affect the exclusion (if applicable) from gross income of interest on the respective Series of Senior Subordinate Bonds to which such excess relates, (i) to the subaccount of the Senior Subordinate Principal Account corresponding to such Series of Senior Subordinate Bonds, (ii) to Fund the Operating Reserve Fund until the balance thereof equals the Operating Reserve Requirement, or (iii) to the Authority to be used to pay all or any portion of the Costs of Improvements designated by the Authority and approved by Bond Counsel. If an Authorized Representative of the Authority calls for a Reserve Determination Date in connection with the refunding and/or defeasance of a Series of Senior Subordinate Bonds, then the Trustee is authorized to take such refunding and/or defeasance into account in valuing the Senior Subordinate Debt Service Reserve Account securing such Series of Senior Subordinate Bonds and is further authorized to apply the amount of any surplus arising from such valuation to reduce the amount of the refunding bonds and/or to provide for the refunding or defeasance of the Series of Senior Subordinate Bonds in such manner as such Authorized Representative may direct.

(e) In connection with any issuance of Senior Subordinate Bonds, the Authority may, in the applicable Supplemental Agreement, provide that no deposit to the Senior Subordinate Debt Service Reserve Fund shall be made for or with respect to such additional Senior Subordinate Bonds, in which case: (i) the lien of and pledge on the Senior Subordinate Debt Service Reserve Fund shall not extend to or be for the benefit of the Holders of such Senior Subordinate Bonds, and (ii) the Annual Debt Service on such Senior Subordinate Bonds shall not be taken into account in determining the applicable Debt Service Reserve Requirement.

In the event that a Supplemental Agreement so provides, then such Supplemental Agreement may also provide for the creation of a special reserve account solely for the Senior Subordinate Bonds to which such Supplemental Agreement relates, separate from the Senior Subordinate Debt Service Reserve Fund, and may provide for the deposit therein, at the time of issuance or from time to time thereafter, of an amount specified in the applicable Supplemental Agreement as the required reserve for such Senior Subordinate Bonds, or may require the Authority to deposit to the credit of such special reserve account a Debt Service Reserve Facility to enhance the security for such Senior Subordinate Bonds in lieu of a funded reserve account.

Section 5.08 Subordinate Bond Fund.

(a) Deposits to the Subordinate Bond Fund. In accordance with Section 5.02 (except that no distinction or preference shall exist in making the following deposits into the Subordinate Interest Account, the Subordinate Principal Account or the Subordinate Sinking Fund Account of the Subordinate Bond Fund, in each case, such accounts being on a parity with each other as to the deposits therein under said Section 5.02), beginning on the first Business Day of the month, after making the deposits required by Sections 5.02(b)(i) through (v), the Trustee shall make the following deposits:

(1) to the subaccounts established for each issue of Subordinate Indebtedness in the Subordinate Interest Account, (i) an amount of Revenues equal to the Interest Accrual on all the outstanding Subordinate Indebtedness to and including the last day of the next calendar month; (ii) the amount of any payments or reimbursements due in the next ensuing month to each Enhancement Facility Provider to the extent such payment or reimbursement obligation constitutes Subordinate Indebtedness hereunder; and (iii) the amount of any payments due in the next ensuing month under any Hedge Agreement or Qualified Swap secured on a parity with Subordinate Indebtedness; provided, further, that any such deposits shall be adjusted to give credit for any other available money then in such interest account or subaccount or otherwise available and designated to be used for such purpose; and

(2) to the subaccounts established for each issue of Subordinate Indebtedness in the Subordinate Principal Account and Subordinate Sinking Fund Account, an amount of Revenues equal to the Principal Accrual on the outstanding Subordinate Indebtedness to and including the last day of the next calendar month; **provided, however**, such deposits shall be adjusted to give credit for any other available money then in the principal or sinking fund account or subaccount or otherwise available and designated to be used for such purpose.

(b) Use of Moneys in Subordinate Bond Fund. (1) On or before each Interest Payment Date, the Trustee shall pay to the Holders of Subordinate Indebtedness from funds on

deposit in the Subordinate Interest Account, the amount required for the payment of the interest becoming due on Subordinate Indebtedness on such Interest Payment Date; **provided, however,** if the Trustee is not the Fiduciary for such Subordinate Indebtedness, the Trustee will withdraw from the Subordinate Interest Account and transfer to the Fiduciary therefor not later than one (1) Business Day prior to the applicable Interest Payment Date the amount required for the payment of interest becoming due on the Subordinate Indebtedness to which the Fiduciary so serves. On or before the date on which (x) regularly scheduled payments under a Hedge Agreement or Qualified Swap are due or (y) payments or reimbursements to an Enhancement Facility Provider are to be made, in each case relating to Subordinate Indebtedness, the Trustee shall pay to the persons entitled thereto from funds on deposit in the Subordinate Interest Account the corresponding amounts owing to such persons on such date.

(2) On or before each payment date, the Trustee shall pay to the Holders of Subordinate Indebtedness from funds on deposit in the Subordinate Principal Account, the amount required for the payment of principal becoming due on and any termination payment due in respect of Subordinate Indebtedness on such payment date and with respect to Subordinate Indebtedness as to which the Trustee is not the Fiduciary therefor, the Trustee shall pay to each such Fiduciary not later than one (1) Business Day prior to the applicable payment date from funds on deposit in the Subordinate Principal Account the corresponding amounts required for the payment of principal becoming due on and any termination payment due in respect of such Subordinate Indebtedness.

(3) On or before each mandatory redemption date, the Trustee shall pay to the Holders of Subordinate Indebtedness from funds on deposit in the Subordinate Sinking Fund Account, the amount required for the payment of mandatory sinking fund installments becoming due on Subordinate Indebtedness on such mandatory redemption payment date and with respect to Subordinate Indebtedness as to which the Trustee is not the Fiduciary therefor, the Trustee shall pay to each such Fiduciary not later than one (1) Business Day prior to the applicable mandatory redemption payment date from funds on deposit in the Subordinate Sinking Fund Account the corresponding amounts required for the payment of mandatory sinking fund installments becoming due on such Subordinate Indebtedness.

(4) Any amount in the Subordinate Sinking Fund Account not applied in accordance with subsection (c) below to the purchase of Subordinate Indebtedness by the forty-fifth (45th) day prior to the next date on which such Subordinate Indebtedness is so redeemable shall be applied to the redemption of such Subordinate Indebtedness on such redemption date. Any amounts deposited in the Subordinate Sinking Fund Account and not applied within twelve (12) months of their date of deposit to the purchase or redemption of Subordinate Indebtedness (except if held in accordance with Section 11.01 hereof) shall be transferred to the Subordinate Interest Account. The Subordinate Indebtedness to be purchased or redeemed shall be selected by the Trustee in the manner provided in Section 3.04 hereof. Amounts in the Subordinate Sinking Fund Account to be applied to the redemption of Subordinate Indebtedness shall be paid to the respective Trustee or Fiduciary on or before the redemption date and applied by them on such redemption date to the payment of the redemption price of the Subordinate Indebtedness being redeemed.

(c) Notwithstanding the provisions of this Section, the Authority may, at any time but in no event less than forty-five (45) days prior to the date on which a mandatory sinking fund installment is scheduled to be due on Subordinate Indebtedness, direct the Trustee or Fiduciary to purchase, with money on deposit in the Subordinate Sinking Fund Account, at a price not in excess of par plus interest accrued and unpaid to the date of such purchase, term bonds to be redeemed on such date. At the direction of the Authority, any term bond so purchased may be cancelled upon receipt thereof by the Trustee or the Fiduciary and evidence of such cancellation shall be given to the Authority. The principal amount of each term bond so canceled shall be credited against the sinking fund installment due on such date as long as that such term bond is canceled by the Trustee or Fiduciary prior to the date on which notice of redemption is given.

(d) In the event the amount on deposit in the Subordinate Interest Account on any Interest Payment Date exceeds the amount required to pay interest on the Subordinate Indebtedness on such Interest Payment Date, the Authority shall, if the amount on deposit in any Subordinate Debt Service Reserve Account is less than the applicable Debt Service Reserve Requirement, instruct the Trustee to transfer such excess to such Subordinate Debt Service Reserve Account to the extent of such deficiency, and otherwise retain any remaining excess in the Subordinate Interest Account or instruct the Trustee to transfer any such remaining excess to the Subordinate Principal Account or Subordinate Sinking Fund Account to be credited against subsequent required deposits thereto, as determined by the Authority.

(e) In the event the amount on deposit in the Subordinate Principal Account or Subordinate Sinking Fund Account on any principal or mandatory redemption payment date exceeds the amount required on such date to pay Subordinate Indebtedness at maturity or pursuant to mandatory sinking fund requirements, the Authority shall, if the amount on deposit in any Subordinate Debt Service Reserve Account is less than the applicable Debt Service Reserve Requirement, instruct the Trustee to transfer such excess to such Subordinate Debt Service Reserve Account to the extent of such deficiency, and otherwise retain such excess in the Subordinate Principal Account or Subordinate Sinking Fund Account, as the case may be, or instruct the Trustee to transfer such excess to the Subordinate Interest Account to be credited against subsequent required deposits thereto, as determined by the Authority.

(f) In the event the balance on deposit in the Subordinate Principal Account, the Subordinate Sinking Fund Account or the Subordinate Interest Account is insufficient for the purposes thereof, the Trustee shall deposit in such Accounts such amounts as may be necessary therefor after any transfers required by Section 5.04(f) and 5.06(f), first, from other legally available funds transferred by the Authority to the Trustee not subject to the lien of this Agreement; second, from the Surplus Fund; third, from the Commonwealth Payments Fund; fourth, from the Capital Improvement Fund; fifth, from the Operating Reserve Fund, and last, from the applicable Subordinate Debt Service Reserve Account pursuant to Section 5.09.

Section 5.09 Subordinate Debt Service Reserve Fund.

(a) In each month, the Trustee shall deposit to each Account in the Subordinate Debt Service Reserve Fund (i) beginning on the first Business Day of the month, after making the deposits required by Sections 5.02(b)(i), through (vi), an amount of Revenues

equal to (x) 1/60 of the amount (or such greater amount specified in the Supplemental Agreement authorizing such additional Subordinate Bonds), if any, necessary to restore the amount on deposit therein to the related Debt Service Reserve Requirement in the event of an increase in the applicable Debt Service Reserve Requirement upon the issuance of additional Subordinate Bonds, and (y) except as provided in paragraph (c) below, 1/12 of the amount, if any, necessary to restore the amount on deposit therein to the related Debt Service Reserve Requirement in the event of any other deficiency and (ii) the amount of proceeds of any Subordinate Bonds as required by the applicable Supplemental Agreement.

(b) Amounts in each Account in the Subordinate Debt Service Reserve Fund shall be used to pay debt service on the related Series of Subordinate Bonds on the dates such debt service is due when insufficient funds for that purpose are available in the Subordinate Bond Fund, after making any transfers pursuant to Section 5.08(f) and all cash and investments in an Account in the Subordinate Debt Service Reserve Fund shall be used, together with other amounts available for such purpose hereunder, to provide for payment in full of the related Series of Subordinate Bonds when the aggregate of such amounts is sufficient for such purpose. Amounts in each Account of the Subordinate Debt Service Reserve Fund shall be pledged to Holders of the Subordinate Bonds to which such Account relates. In no event shall amounts on deposit in the Senior Subordinate Debt Service Reserve Fund be used to pay principal of, interest on or any other amounts due with respect to Other System Indebtedness.

(c) In lieu of or in addition to cash or investments, at any time the Authority may cause to be deposited to the credit of any Subordinate Debt Service Reserve Account, a Debt Service Reserve Facility, in the stated amount equal to all or a portion of the applicable Debt Service Reserve Requirement, irrevocably payable to the Trustee, as beneficiary for the Holders of the Subordinate Bonds to which such Account relates. If (x) the Authority receives an expiration notice and the applicable Enhancement Facility Provider does not extend the expiration date of a Debt Service Reserve Facility, (y) the Authority receives notice of the termination of a Debt Service Reserve Facility, or (z) the Authority receives notice that the Enhancement Facility Provider of a Debt Service Reserve Facility no longer has the required credit rating, the Authority immediately shall (i) provide a substitute Debt Service Reserve Facility, (ii) deposit a sum equal to the applicable Debt Service Reserve Requirement to the credit of the Subordinate Debt Service Reserve Account to which such Debt Service Reserve Facility relates (A) in equal monthly installments over the next succeeding 12 months in the case of receipt of an expiration notice, (B) prior to the termination date in the case of receipt of a termination notice, or (C) immediately in the case of such reduction in credit rating, or (iii) instruct the Trustee to draw on such Debt Service Reserve Facility (A) 12 months prior to expiration of the Debt Service Reserve Facility in the case of receipt of an expiration notice, (B) prior to the termination date in the case of receipt of a termination notice, or (C) immediately in the case of such reduction in credit rating and deposit the proceeds of such drawing to the credit of the Subordinate Debt Service Reserve Account to which such Debt Service Reserve Facility relates.

If a disbursement is made pursuant to a Debt Service Reserve Facility, the Authority shall either (i) reinstate such Facility in full or (ii) deposit to the credit of the Subordinate Debt Service Reserve Account a sum equal to the amount of the disbursement made under such Facility in accordance with its provisions.

(d) On or within five days after each Reserve Determination Date, the Trustee shall determine whether the balance on deposit in each Subordinate Debt Service Reserve Account was, as of the Reserve Determination Date, at least equal to the applicable Debt Service Reserve Requirement. In making such determination, any obligations in a Subordinate Debt Service Reserve Account shall be valued in accordance with Section 6.01.

In the event the amount on deposit in a Subordinate Debt Service Reserve Account exceeds the applicable Debt Service Reserve Requirement, the Trustee shall transfer such excess as directed by an Authorized Representative of the Authority, such direction to be accompanied by an Opinion of Bond Counsel that such transfer will not adversely affect the exclusion (if applicable) from gross income of interest on the respective Series of Subordinate Bonds to which such excess relates, (i) to the subaccount of the Subordinate Principal Account corresponding to such Series of Subordinate Bonds, (ii) to Fund the Operating Reserve Fund until the balance therein is equal to the Operating Reserve Requirement, or (iii) to the Authority to be used to pay all or any portion of the Costs of Improvements designated by the Authority and approved by Bond Counsel. If an Authorized Representative of the Authority calls for a Reserve Determination Date in connection with the refunding and/or defeasance of a Series of Subordinate Bonds, then the Trustee is authorized to take such refunding and/or defeasance into account in valuing the Subordinate Debt Service Reserve Account securing such Series of Subordinate Bonds and is further authorized to apply the amount of any surplus arising from such valuation to reduce the amount of the refunding bonds and/or to provide for the refunding or defeasance of the Series of Subordinate Bonds in such manner as such Authorized Representative may direct.

(e) In connection with any issuance of Subordinate Bonds, the Authority may, in the applicable Supplemental Agreement, provide that no deposit to the Subordinate Debt Service Reserve Fund shall be made for or with respect to such additional Subordinate Bonds, in which case: (i) the lien of and pledge on the Subordinate Debt Service Reserve Fund shall not extend to or be for the benefit of the Holders of such Subordinate Bonds, and (ii) the Annual Debt Service on such Subordinate Bonds shall not be taken into account in determining the applicable Debt Service Reserve Requirement.

In the event that a Supplemental Agreement so provides, then such Supplemental Agreement may also provide for the creation of a special reserve account solely for the Subordinate Bonds to which such Supplemental Agreement relates, separate from the Subordinate Debt Service Reserve Fund, and may provide for the deposit therein, at the time of issuance or from time to time thereafter, of an amount specified in the applicable Supplemental Agreement as the required reserve for such Subordinate Bonds, or may require the Authority to deposit to the credit of such special reserve account a Debt Service Reserve Facility to enhance the security for such Subordinate Bonds in lieu of a funded reserve account.

Section 5.10 Operating Reserve Fund.

(a) In each month the Trustee shall deposit to the Operating Reserve Fund (i) beginning on the first Business Day of the month, after making the deposits required by Sections 5.02(b)(i) through (vii), an amount of Revenues equal to that which is necessary to make the balance on deposit therein equal to the Operating Reserve Requirement and to pay interest on

and reimbursement obligations due with respect to an Operating Reserve Facility. Earnings on moneys held in the Operating Reserve Fund shall be retained therein.

(b) Amounts on deposit in the Operating Reserve Fund shall be available (i) to be requisitioned by the Authority to pay Current Expenses, (ii) to pay any termination payment due under a Qualified Swap or Hedge Agreement, (iii) to pay interest or any reimbursement obligation due with respect to an Operating Reserve Facility, and (iv) subject to the provisions of Sections 5.04(f), 5.06(f) and 5.08(f), to pay interest and principal on the Bonds to the extent that moneys on deposit in the Senior Bond Fund, the Senior Subordinate Bond Fund or the Subordinate Bond Fund are insufficient to make the required interest and principal payments, prior to any withdrawal from the Senior Debt Service Reserve Fund, the Senior Subordinate Debt Service Reserve Fund or the Subordinate Debt Service Reserve Fund. In accordance with the provisions of Section 10.02 hereof, in the event that (i) there is no deposit required to be made to the Commonwealth Payments Fund and (ii) amounts on deposit in the Operating Reserve Fund are transferred to pay a termination payment or to fund a deficiency in the Senior Bond Fund, the Senior Subordinate Bond Fund or the Subordinate Bond Fund, the Trustee shall provide notice of such transfer to the Consulting Engineer, the Puerto Rico Fiscal Agency and Financial Advisory Authority, any other Consultants identified by the Authority, if any.

(c) In lieu of or in addition to cash or investments, at any time the Authority may cause to be deposited to the credit of the Operating Reserve Fund, an Operating Reserve Facility, in the stated amount equal to all or a portion of the applicable Operating Reserve Requirement. Any withdrawals from the Operating Reserve Fund made in accordance with the above paragraph (b), shall be made first from any cash or investments on deposit therein and then, to the extent no such cash or investments are available, from a draw on any Operating Reserve Facility.

(d) For so long as the provisions of Section 8.05(a) remain in effect, from the time during any Fiscal Year at which aggregate Current Expenses for such year exceed the amount therefor set forth in the applicable Annual Budget, each requisition from the Operating Reserve Fund must be approved in writing by the Consulting Engineer.

Section 5.11 Capital Improvement Fund.

(a) There shall be credited to the Capital Improvement Fund (i) beginning on the first Business Day of the month, after making the deposits required by Sections 5.02(b)(i) through (viii), an amount of Revenues equal to that which may be necessary to make the balance on deposit therein equal to the Capital Improvement Fund Requirement for the Fiscal Year as set forth in the applicable Annual Budget in equal monthly deposits over such Fiscal Year, (ii) the proceeds of any condemnation awards, (iii) proceeds of insurance (other than use and occupancy insurance), (iv) the proceeds of sales of property constituting a part of the Systems and (v) the proceeds of any termination or similar payment received by the Authority under any interest rate swap or similar hedge agreement. Earnings on moneys held in the Capital Improvement Fund shall be retained therein.

(b) Amounts on deposit in the Capital Improvement Fund shall be available (i) to pay or reimburse the Authority for Costs of Improvements, such Costs of Improvements to

be paid in accordance with the procedures established in Section 4.02(a) and (ii) subject to the provisions of Sections 5.04(f), 5.06(f) and 5.08(f), to the extent that moneys on deposit in the Senior Bond Fund, the Senior Subordinate Bond Fund or the Subordinate Bond Fund are insufficient to make the required interest and principal payments on Bonds prior to any withdrawal from the Senior Debt Service Reserve Fund, the Senior Subordinate Debt Service Reserve Fund or the Subordinate Debt Service Reserve Fund, to satisfy any such deficiencies.

Section 5.12 Commonwealth Payments Fund.

(a) There shall be credited to the Commonwealth Payments Fund (i) any Revenues received by the Authority from the Commonwealth of Puerto Rico on account of Commonwealth Guaranteed Indebtedness and (ii) beginning on the first Business Day of the month, after making the deposits required by Sections 5.02(b)(i) through (ix), an amount of Revenues sufficient to pay:

(i) the Interest Accrual on Commonwealth Guaranteed Indebtedness in respect of the next Interest Payment Date; **provided, however**, that such deposits shall be adjusted to give credit for any other available money then in such account or otherwise available and designated to be used for such purpose; and

(ii) the Principal Accrual on Commonwealth Guaranteed Indebtedness in respect of the next principal payment date; **provided, however**, that such deposits shall be adjusted to give credit for any other available money then in such account or otherwise available and designated to be used for such purpose.

(b) Amounts on deposit in the Commonwealth Payments Fund will be transferred by the Trustee to the respective Fiduciaries therefor not later than one (1) Business Day prior to the applicable interest or principal payment date.

(c) (1) Amounts on deposit in the Commonwealth Payments Fund, excluding amounts received from Commonwealth to pay bonds, shall be available to replenish any deficiencies in the Operating Reserve Fund, including any payments with respect to any Operating Reserve Facility or to pay any amounts due under any other operating line of credit of the Authority.

(2) Subject to the provisions of Sections 5.04(f), 5.06(f) and 5.08(f), to the extent that moneys on deposit in the Senior Bond Fund, the Senior Subordinate Bond Fund or the Subordinate Bond Fund are insufficient to make the required interest and principal payments on Bonds, moneys in the Commonwealth Payments Fund (other than amounts received from the Commonwealth of Puerto Rico to pay principal or interest on Commonwealth Guaranteed Indebtedness) shall be used, in that order of priority, prior to any withdrawal from the Senior Debt Service Reserve Fund, the Senior Subordinate Debt Service Reserve Fund or the Subordinate Debt Service Reserve Fund, to satisfy any such deficiencies.

(d) Amounts received by the Authority from the Commonwealth of Puerto Rico to pay principal or interest when due on Commonwealth Guaranteed Indebtedness shall be used only for such purpose. Any amounts received from the Commonwealth of Puerto Rico by the Authority which represents a reimbursement for principal or interest previously paid by the

Authority on Commonwealth Guaranteed Indebtedness shall be transferred to the Surplus Fund for application in accordance with Section 5.13.

(e) If the amounts so deposited on or before any Deposit Date to the credit of the Commonwealth Payment Fund shall be less than the required amount for such month, the Trustee shall provide notice of such insufficiency to the 1995 Resolution Trustee, the Consulting Engineer, other Consultants, if any, and to the Puerto Rico Fiscal Agency and Financial Advisory Authority.

(f) On each September 15 and February 15 and at any other time requested by the 1995 Resolution Trustee, the Trustee shall provide the 1995 Resolution Trustee with information as to the amount on deposit in the Commonwealth Payments Fund.

Section 5.13 Surplus Fund.

(a) After all the deposits required by Section 5.02(b)(i) through (x) have been made in accordance with the provisions of this Article, any remaining moneys shall be deposited to the credit of the Surplus Fund.

(b) From the amounts deposited in the Surplus Fund, there shall be credited to the Rate Stabilization Account, an amount equal to one twelfth (1/12) of the amount, if any, necessary to fund the Rate Stabilization Account at the amount set forth in the applicable Annual Budget.

(c) At any time the Authority may direct the Trustee to withdraw amounts on deposit in the Rate Stabilization Account and (i) transfer such amounts to any other Fund or Account established under this Agreement, (ii) use such amounts to purchase or redeem Indebtedness, or (iii) use such amounts to otherwise provide for the payment of Indebtedness or interest thereon. Subject to the provisions of Sections 5.04(f), 5.06(f) and 5.08(f), to the extent that moneys on deposit in the Senior Bond Fund, the Senior Subordinate Bond Fund or the Subordinate Bond Fund are insufficient to make the required interest and principal payments on Bonds, moneys in the Rate Stabilization Account shall be used prior to any withdrawal from the Senior Debt Service Reserve Fund, the Senior Subordinate Debt Service Reserve Fund or the Subordinate Debt Service Reserve Fund, to satisfy any such deficiencies. To the extent that any amounts are withdrawn from the Rate Stabilization Account for the purposes of this Section 5.13(c) and deposited in an account outside this Agreement for the purpose of providing for the payment of Indebtedness or interest thereon, the balance of such amounts, if any, that remain after the payment of such Indebtedness or interest shall be redeposited in the Rate Stabilization Account for future application in accordance with this Section 5.13 and for all other purposes of this Agreement.

(d) Subject to the provisions of Sections 5.04(f), 5.06(f) and 5.08(f), to the extent that moneys on deposit in the Senior Bond Fund, the Senior Subordinate Bond Fund or the Subordinate Bond Fund are insufficient to make the required interest and principal payments on Bonds, moneys in the Surplus Fund shall be used prior to any withdrawal from the Senior Debt Service Reserve Fund, the Senior Subordinate Debt Service Reserve Fund or the Subordinate Debt Service Reserve Fund, to satisfy any such deficiencies.

(e) At such time as all purposes described in paragraphs (a) through (d) above of this Section 5.13 are satisfied, amounts remaining to the credit of the Surplus Fund may be applied by the Authority to any lawful purpose of the Authority.

(f) On each September 15 and February 15 and at any other such time requested by the 1995 Resolution Trustee, the Trustee shall provide the 1995 Resolution Trustee with information as to the respective amounts on deposit in each of the accounts within the Surplus Fund.

Section 5.14 Other Funds and Accounts.

In each Supplemental Agreement the Authority may establish such other funds and Accounts within funds as the Authority may determine.

Section 5.15 Disposition of Balances in Funds after Payment of Indebtedness.

After the principal of and premium, if any, and interest on all of the Indebtedness, any amounts required to be paid pursuant to the terms of this Agreement or any Supplemental Agreement and all expenses and charges herein required have been paid or defeased in accordance with Article XI hereof or, if such Indebtedness was not incurred hereunder, in accordance with similar provisions of the controlling document, the Trustee shall pay to the Authority any balance remaining in any fund then held by it.

ARTICLE VI

INVESTMENT OF FUNDS

Section 6.01 Investment of Funds.

(a) Any moneys held to the credit of the Construction Fund shall be invested or reinvested by the Trustee as directed by the Authority in Investment Obligations that shall mature, or that shall be subject to redemption by the holder thereof at the option of such holder, not later than the respective dates when moneys held for the credit of said Account will be required for the purposes intended. The Authority shall give written directions to the Trustee, specifying the maturity date, interest rate, principal amount and the nature of such investments. Prior to the filing of a certificate of completion related to Improvements, all earnings on moneys held in the Construction Fund related to such Improvements shall be retained therein. Subsequent to the filing of such certificate of completion, the Trustee shall (i) deposit any remaining proceeds of Senior Bonds or investment earnings thereon to the related subaccount of the Senior Interest Account of the Senior Bond Fund, (ii) deposit any remaining proceeds of Senior Subordinate Bonds or investment earnings thereon to the related subaccount of the Senior Subordinate Interest Account of the Senior Subordinate Bond Fund, and (iii) deposit any remaining proceeds of Subordinate Bonds or investment earnings thereon to the related subaccount of the Subordinated Interest Account of the Subordinate Bond Fund. The Authority shall direct the investment of amounts held in the Construction Account, and such investments shall have maturities consonant with the need for funds as estimated by the Authority.

(b) Any moneys held to the credit of the Senior Bond Fund, Senior Subordinate Bond Fund, the Subordinate Bond Fund or the Commonwealth Payments Fund, shall be invested or reinvested by the Trustee as directed by the Authority in Investment Obligations that shall mature, or that shall be subject to redemption by the holder thereof at the option of such holder, not later than the respective dates when moneys held for the credit of said Accounts will be required for the purposes intended. The Authority shall give written directions to the Trustee, specifying the maturity date, interest rate, principal amount and nature of such investments. Earnings on moneys held in any Account in such Bond Fund shall be transferred when received to the related subaccount of the Interest Account of the Bond Fund and earnings on moneys held in the Commonwealth Payments Fund shall be retained therein.

(c) Any moneys held as part of the Authority Revenue Fund, the Operating Reserve Fund, the Capital Improvement Fund and the Surplus Fund, shall be invested and reinvested by the Trustee as directed by the Authority in Investment Obligations that shall mature, or that shall be subject to redemption by the holder thereof at the option of such holder, not later than the respective dates when moneys held for the credit of said Accounts will be required for the purposes intended.

(d) Any moneys held as part of the Current Expense Fund shall be invested or reinvested by the Authority in Investment Obligations that shall mature, or that shall be subject to redemption by the holder thereof at the option of such holder, not later than the respective dates when moneys held for the credit of said Fund will be required for the purposes intended. Earnings on moneys held in the Current Expense Fund shall be retained therein.

(e) Any moneys held as part of the Senior Debt Service Reserve Fund, the Senior Subordinate Debt Service Reserve Fund or the Subordinate Debt Service Reserve Fund shall be invested or reinvested by the Trustee as directed by the Authority in Investment Obligations that shall mature, or that shall be subject to redemption by the holder thereof at the option of such holder, not later than the respective dates when moneys held for the credit of said Accounts will be required for the purposes intended. Earnings on moneys held in any Account in a Debt Service Reserve Account shall be retained therein.

(f) In computing the amount in any Fund or Account created by this Agreement, except for the Senior Debt Service Reserve Fund, the Senior Subordinate Debt Service Reserve Fund and the Subordinate Debt Service Reserve Fund, obligations purchased as an investment of moneys therein shall be valued at the lower of market value and the amortized value thereof. Amortized value, when used with respect to an obligation purchased at par, means the par amount thereof, and, when used with respect to an obligation purchased at a premium above or a discount below par, means the value as of any given time obtained by dividing the total premium or discount at which such obligation was purchased by the number of interest payments remaining on such obligation after such purchase and deducting the amount thus calculated for each Interest Payment Date after such purchase from the purchase price in the case of an obligation purchased at a premium and adding the amount thus calculated for each Interest Payment Date after such purchase to the purchase price in the case of an obligation purchased at a discount. Except as set forth in the following sentence, valuations shall be made by the party holding each such Fund or Account at least annually not later than the end of each Fiscal Year and at such other times as the Authority may deem appropriate. Investments in the Senior Debt

Service Reserve Fund, the Senior Subordinate Debt Service Reserve Fund and the Subordinate Debt Service Reserve Fund shall be valued by the Trustee at least semiannually at the fair market value thereof, plus accrued interest. In computing the value of the assets of any Fund or Account established hereunder, investments and accrued interest thereon shall be deemed a part thereof.

(g) For the purposes of this Section, each investment agreement shall be valued at par if amounts thereunder may be withdrawn without penalty in accordance with the terms thereof.

(h) The Trustee may sell or redeem any obligation in which moneys shall have been invested as provided in this Article to the extent necessary to provide cash in the respective funds or accounts, to make any payments required to be made therefrom or to facilitate the transfers of money between various funds and accounts as may be required or permitted from time to time pursuant to the provisions of this Agreement.

(i) Notwithstanding provisions herein for transfer to or holding in particular funds and accounts amounts received or held by the Trustee hereunder, investments in any and all funds and accounts created by this Agreement may be commingled (except amounts held in any arbitrage rebate fund), provided that, notwithstanding any such commingling, the Trustee shall at all times account for such investments in the funds and accounts to which they are credited and otherwise as provided in this Agreement.

(j) The Authority, each Qualified Depository and the Trustee shall not be liable for any depreciation in the value of any investments held in the funds or accounts created by this Agreement, or for any loss arising from any investment permitted hereby. The investments authorized by this Article shall at all times be subject to the provisions of applicable law, as amended from time to time. In the event that the Authority, upon the written opinion of Bond Counsel, addressed to the Trustee and the Authority, is of the opinion that it is necessary to restrict or limit the yield on the investment of any money or securities held in any fund in order to avoid the Bonds being considered “arbitrage bonds” within the meaning of Section 148 of the Code, the Authority may direct the Trustee in writing to take whatever action is necessary to properly restrict or limit the yield on such investment in accordance with such instructions, in which event the Trustee shall follow such directions. If the Trustee has not received directions from the Authority on how to invest any of the Funds and Accounts established hereunder, the Trustee shall invest the moneys in such Funds and Accounts in Government Obligations.

ARTICLE VII

PARTICULAR COVENANTS

Section 7.01 Rate Covenant.

(a) The Authority shall fix, charge and collect such rates, fees, rentals and other charges for the use of and the services furnished by the Systems and shall, from time to time and as often as shall appear necessary, revise such rates, fees and other charges so as to meet the following three independent requirements (which will be calculated annually not later

than nine (9) months after the end of each Fiscal Year based upon the Revenues set forth in the Authority's most recent audited financial statements):

(i) Net Revenues shall be sufficient in each Fiscal Year to be at least equal to 120% of the Annual Debt Service with respect to the Senior Indebtedness for such Fiscal Year;

(ii) Net Revenues shall be sufficient in each Fiscal Year to be at least equal to 110% of the Annual Debt Service with respect to the Senior Indebtedness and the Senior Subordinate Indebtedness for such Fiscal Year; and

(iii) Net Revenues, shall be sufficient in each Fiscal Year to pay (A) Annual Debt Service on Indebtedness, (B) the amounts, if any, necessary to be deposited in any Senior Debt Service Reserve Account, Senior Subordinate Debt Service Reserve Account or Subordinate Debt Service Reserve Account to restore the amount on deposit therein to the amount of the applicable Debt Service Reserve Requirement (provided that such Accounts will be deemed to be funded at the applicable Debt Service Reserve Requirement for so long as the deposits required by Section 5.02(b)(iii), (v) and (vii) are being made), (C) the amount, if any, necessary to be deposited in the Operating Reserve Fund to maintain the balance therein at the Operating Reserve Fund Requirement and, (D) the amount, if any, necessary to be deposited in the Capital Improvement Fund and the Rate Stabilization Account of the Surplus Fund in accordance with the Annual Budget for such Fiscal Year.

(b) The Authority shall immediately retain a Consultant to submit a written report and recommendations with respect to increases in the Authority's rates, fees and other charges and improvements in the operations of and the services rendered by the Systems and the Authority's accounting and billing procedures necessary to bring the Authority into compliance with the Rate Covenant if (i) based on the calculations made in accordance with paragraph (a) above, the Authority is not in compliance with the Rate Covenant; **provided, however**, if the Consultant determines that such noncompliance is attributable to the occurrence of a Force Majeure Event, no such report or recommendations shall be required to be submitted by the Consultant, (ii) the Authority fails for three consecutive months to make the deposits required by Section 5.02 to the Senior Bond Fund, the Senior Subordinate Bond Fund and the Subordinate Bond Fund, (iii) there is a deficiency in a Senior Debt Service Reserve Account, a Senior Subordinate Debt Service Reserve Account or a Subordinate Debt Service Reserve Account for longer than three consecutive months (provided no such deficiency shall be deemed to exist so long as the deposits required by Section 5.02(b)(iii), (v) and (vii) are being made), or (iv) there is a deficiency in the Operating Reserve Fund for longer than six consecutive months. The report and recommendations shall be filed with the Trustee and the Authority within 120 days from the date the Consultant is retained. The Authority shall promptly revise its rates, fees and charges, and alter its operations and services to conform with the report and recommendations of the Consultant to the extent permitted by law.

(c) If the Authority promptly revises its rates, fees, charges, operations, services and procedures in conformity with the report and recommendations of the Consultant and otherwise follows such recommendations to the extent permitted by law so that the Authority

is expected to be, when its actions become fully effective, in compliance with the Rate Covenant, then any failure to meet the Rate Covenant will not constitute an Event of Default under this Agreement. Upon the adoption of any revision of rates, fees and charges, the Authority shall cause a certified copy thereof to be filed with the Trustee.

In the event that the Authority shall fail to diligently pursue an adjustment of the schedule of rates, fees and charges in accordance with the provisions of this Section, the Trustee, without regard to whether an Event of Default shall have occurred, shall, upon the request of the Holders of not less than ten per centum (10%) in principal amount of all Senior Bonds then Outstanding and upon being indemnified to its satisfaction, institute and prosecute in a court of competent jurisdiction an appropriate suit, action or proceeding to compel the Authority to adjust such schedule in accordance with the requirements of this Section, and the Authority covenants that it will adopt and charge rates and charges in compliance with any judgment, order or decree entered in any such suit, action or proceeding.

Section 7.02 Annual Budget and Disbursement Schedule.

(a) Before the beginning of each Fiscal Year, (i) the Authority shall adopt a budget for the operation of the Systems for the ensuing Fiscal Year, which budget shall be called the Annual Budget and (ii) the chief financial officer of the Authority shall prepare a certified Disbursement Schedule for the payment of Current Expenses for the ensuing Fiscal Year.

(b) The Authority covenants that on or before April 15 of each year, it will cause a preliminary Annual Budget and a preliminary Disbursement Schedule to be prepared and delivered to the Consulting Engineer and the Puerto Rico Fiscal Agency and Financial Advisory Authority. Within forty-five (45) days of receipt of the preliminary budget and Disbursement Schedule, the Consulting Engineer shall deliver to the Authority and the Puerto Rico Fiscal Agency and Financial Advisory Authority any comments thereon.

(c) The Authority covenants that on or before June 30th of each year it will cause to be adopted a final Annual Budget and prepared a final Disbursement Schedule for the ensuing Fiscal Year and that it will file such budget and schedule with the Trustee, the Puerto Rico Fiscal Agency and Financial Advisory Authority and the Consulting Engineer.

(d) Each Annual Budget shall be prepared in such manner as to show in reasonable detail (i) Revenues estimated to be received during such Fiscal Year, (ii) the Current Expenses expected to be incurred during such Fiscal Year (calculated on an accrual basis), (iii) the amount of Annual Debt Service that will become due during such Fiscal Year, (iv) the amount, if any, required to be deposited in the Senior Debt Service Reserve Fund, the Senior Subordinate Debt Service Reserve Fund and the Subordinate Debt Service Reserve Fund to make the amount on deposit in each respective Account therein equal to the applicable Debt Service Reserve Requirement (provided that such Accounts will be deemed to be funded at the applicable Debt Service Reserve Requirement so long as the deposits required by Section 5.02(c)(ii), (iv) and (vi) are being made), (v) the amount, if any, required to be deposited in the Operating Reserve Fund to make the amount on deposit therein equal to the amount of the Operating Reserve Requirement, (vi) the amount, if any, required to be deposited in the Capital Improvement Fund, (vii) the amount, if any, required to be deposited in the Rate Stabilization

Account of the Surplus Fund, and (viii) the amount of Net Revenues that will be sufficient to meet the Rate Covenant required pursuant to Section 7.01 for such Fiscal Year. The Annual Budget shall be prepared in sufficient detail to show also the amounts to be deposited in the various funds, accounts and subaccounts created by or under this Agreement or funds and accounts otherwise required to be maintained on behalf of the Systems.

(e) Each annual Disbursement Schedule shall be prepared in such manner as to show in reasonable detail, the Current Expenses expected to be incurred during such Fiscal Year (calculated on a cash basis), including (i) all cash disbursements contained in the Annual Budget for the Fiscal Year, (ii) expenses that may have accrued in prior years and are expected to be paid in the current Fiscal Year, (iii) amounts that are necessary to pay for or result from an emergency condition, (iv) amounts that are necessary to pay judgments or otherwise result from the settlement of litigation, (v) project expenditures that the Authority has determined to capitalize, (vi) amounts that are necessary to be advanced for Costs of Improvements and (vii) other similar disbursements.

(f) On or before each Deposit Date, the chief financial officer shall revise the Disbursement Schedule and deliver a certified copy of such revised Disbursement Schedule to the Trustee and the Puerto Rico Fiscal Agency and Financial Advisory Authority, which schedule shall include the information required by Section 7.11(b).

(g) The Authority may amend the Annual Budget at any time during the Fiscal Year and any amendment which decreases Net Revenues by 10% or more in the aggregate for such Fiscal Year shall be accompanied by a report of the Consulting Engineer. A copy of each amendment to the Annual Budget shall be filed promptly with the Trustee and the Consulting Engineer.

(h) If for any reason an Annual Budget is not adopted by the time required by subsection (c) of this Section, the last previously adopted Annual Budget shall be deemed to provide for and regulate and control expenditures during each subsequent Fiscal Year until an Annual Budget for such Fiscal Year has been adopted.

(i) If for any reason a Disbursement Schedule is not delivered by the time required by subsection (c) or (f) of this Section, the last previously certified Disbursement Schedule shall be deemed to provide for cash expenditures during the current and subsequent months until certified revised Disbursement Schedule has been delivered.

(j) Upon the occurrence and continuance of an Event of Default (other than an Event of Default specified in 8.01(f)) and until delivery of the documents set forth in Section 8.05(b), the Authority shall prepare and deliver to the Trustee a Disbursement Schedule which sets forth on a monthly cash basis the operating and maintenance expenses of the Systems, which Disbursement Schedule must be approved by the Consulting Engineer.

Section 7.03 Payment of Principal, Interest and Premium; Pledge of Revenues.

The Authority covenants that it will promptly pay the principal of and the interest on every Bond issued hereunder and secured hereby 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. Except as in this Agreement otherwise provided, such principal, interest and premium, if any, are payable solely from the Revenues of the Systems, which Revenues are hereby pledged to the payment thereof in the manner and to the extent hereinabove particularly specified; **provided, however**, that any Revenues received from the Commonwealth of Puerto Rico on account of Commonwealth Guaranteed Indebtedness are not subject to the lien hereof and shall only be used for the purposes set forth in Section 5.12 hereof. Nothing in the Bonds or in this Agreement shall be deemed to constitute the Bonds a debt or obligation of the Commonwealth of Puerto Rico or any of its municipalities or other political subdivisions, other than the Authority, and neither the Commonwealth of Puerto Rico nor any such municipality or other political subdivision, other than the Authority, shall be liable for the payment of the principal of any premium, if any, or the interest on the Bonds.

Section 7.04 Construction of Improvements.

The Authority covenants that it will construct or cause the construction of Improvements reasonable and desirable for the operation of the Systems in a safe and efficient manner, and that upon the completion of any Improvements, the Authority will operate and maintain or cause the operation and maintenance of the Improvements as part of the Systems. If deemed advisable by the Authority, the Consulting Engineer shall review any plans and specifications for the Improvements and such construction shall proceed only after the Consulting Engineer approves the plans and specifications.

Section 7.05 Maintenance of the Systems.

The Authority further covenants that it will establish and enforce reasonable rules and regulations governing the use of the Systems and the operation thereof, that all compensation, salaries, fees and wages paid by it in connection with the maintenance, repair and operation of said Systems will be reasonable, that no more persons will be employed by it than are necessary, that it will operate said Systems or cause the Systems to be operated in a reasonable, efficient and economical manner, that it will at all times maintain said Systems or cause said Systems to be maintained in good repair and in sound operating condition and will make or cause to be made all necessary repairs, renewals and replacements, and that it will comply and cause compliance with all valid acts, rules, regulations, orders and directions of any legislative, executive, administrative or judicial body applicable to said Systems, except to the extent that such non-compliance does not result in a material adverse effect or has not otherwise been provided for as an operational contingency and the Authority is exercising commercially reasonable efforts to comply therewith. The Authority may transfer, to the extent permitted by law and Section 7.12, the day-to-day operations of the Systems or any program that would be carried out by the Authority to another entity; as long as the Authority shall cause such other entity to undertake such operations or programs so that the Authority does not violate the terms of this Agreement and so that the Authority is not rendered unable to observe its covenants under this Agreement.

Section 7.06 Payment of Lawful Charges.

The Authority further covenants that, from the Revenues, it will pay all municipal or other governmental charges lawfully levied or assessed upon the Systems or any part thereof or upon any Revenues when the same shall become due, that it will not create or suffer to be created any lien or charge upon the Systems or any part thereof or upon the Revenues ranking equally with or prior to the Indebtedness, except to the extent and in the manner otherwise permitted in this Agreement, and that, from the Revenues, it will pay or cause to be discharged, or will make adequate provision to satisfy and discharge, within sixty (60) days after the same shall accrue, all lawful claims and demands for labor, materials, supplies or other objects which, if unpaid might by law become a lien upon the Systems or any part thereof or the Revenues; **provided, however**, that nothing contained in this Section shall require (i) the Authority to pay or cause to be discharged, or make provision for, any such lien or charge so long as the validity thereof shall be contested in good faith and by appropriate legal proceedings or (ii) Revenues received from the Commonwealth of Puerto Rico on account of Commonwealth Guaranteed Indebtedness to be used for any purpose other than those specified in Section 5.12 hereof.

Section 7.07 Retention of Consulting Engineer and Other Consultants.

Unless the Senior Bonds shall have been rated investment grade by at least two Rating Agencies for twenty-four (24) consecutive months, the Authority covenants and agrees that it will, for the purpose of performing and carrying out the duties imposed on the Consulting Engineer and other Consultants by this Section 7.07, retain the Consulting Engineer and other Consultants. Except for fees and expenses incurred in connection with the issuance of Indebtedness or the construction of Improvements, the cost of retaining the Consulting Engineer and other Consultants shall be treated as a part of Current Expenses.

It shall be the duty of the Consulting Engineer to prepare and file reports with the Authority and the Trustee, no later than thirty (30) days after receipt of the Annual Budget, setting forth the following:

(a) the recommendations of the Consulting Engineer as to the proper maintenance, repair and operation of the Systems during the ensuing Fiscal Year, and an estimate of the amounts of money necessary for such purposes;

(b) the recommendations of the Consulting Engineer as to the amount that should be deposited in each month during the ensuing Fiscal Year to the credit of the Capital Improvement Fund;

(c) the recommendations of the Consulting Engineer as to the Improvements which should be made during the ensuing Fiscal Year, and an estimate of the amounts of money necessary for such purposes, showing separately (i) the amount to be expended during such Fiscal Year from moneys to the credit of the Capital Improvement Fund and the Surplus Fund and (ii) the amount to be expended during such Fiscal Year from the proceeds of Bonds and other Indebtedness;

(d) the recommendations of other Consultants retained by or relied upon by the Consulting Engineer as to the insurance to be carried under the provisions of Section 7.08 of this Article;

(e) a statement by the Consulting Engineer of the cost of all additions made to the Systems and of the cost (if the cost cannot be accurately determined, the estimated cost) of all retirements of property made in such Fiscal Year;

(f) a report of the Consulting Engineer (which may retain other Consultants as necessary) as to the adequacy of existing rates and charges for purposes of the Rate Covenant contained in Section 7.01 hereof for the then current Fiscal Year to date and recommendations as to any necessary or advisable revisions of rates and charges and such other advices and recommendations as they may deem desirable; and

(g) the findings of the Consulting Engineer whether the properties of the Systems have been maintained in good repair and sound operating condition, and their estimate of the amount, if any, required to be expended to place such properties in such condition and the details of such expenditures and the approximate time required therefor.

The Authority further covenants that the Consulting Engineer and other Consultants shall at all times have free access to all properties of the Systems and every part thereof for the purposes of inspection and examination, and that its books, records and accounts may be examined by the Consulting Engineer and other Consultants at all reasonable times.

Section 7.08 Insurance.

The Authority covenants that it will at all times carry or cause to be carried insurance, with a responsible insurance company or companies, approved by an Insurance Consultant, authorized and qualified under the laws of the Commonwealth of Puerto Rico to assume the risk thereof, covering such properties belonging to the Systems as are customarily insured, and against loss or damage from such causes as are customarily insured against, by the Authority in its insurance program. The Authority shall employ an Insurance Consultant to review the insurance program of the Authority from time to time (but not less frequently than biennially). If the Insurance Consultant makes recommendations for the increase of any coverage, the Authority shall increase or cause to be increased such coverage in accordance with such recommendations, subject to a good faith determination of the Authority that such recommendations, in whole or in part, are in the best interests of the Authority. Notwithstanding anything in this Section to the contrary, the Authority shall have the right, without giving rise to an Event of Default, solely on such account, (i) to maintain insurance coverage below that most recently recommended by Insurance Consultant, if the Authority furnishes to the Trustee a report of the Insurance Consultant to the effect that the issuance so provided, affords either the greatest amount of coverage available for the risk being insured against at rates which in the judgment of the Insurance Consultant are reasonable in connection with reasonable and appropriate risk management.

All insurance policies shall be to the extent practicable for the benefit of the Authority, the Trustee and other interested parties, as their interests may appear, shall be made payable to

the Authority or other owners of portions of the Systems, and shall be deposited with the Authority or other officer of the Board designated for said purpose. The proceeds of any and all such insurance shall be deposited by the Authority in the name of the Authority with a Qualified Depositary.

The Authority covenants that, immediately after any loss or damage to any properties of the Systems resulting from any cause, whether or not such loss or damage shall be covered by insurance, it will cause its engineers to prepare plans and specifications for repairing, replacing or reconstructing (either in accordance with the original or a different design) the damaged or destroyed property, and that it will forthwith commence or cause to be commenced and diligently prosecute or cause to be diligently prosecuted the repair, replacement or reconstruction of the damaged or destroyed property unless it shall determine that the repair, replacement or reconstruction of such property is not essential to the efficient operation of the Systems, in which case the proceeds of insurance shall be deposited in the Capital Improvement Fund.

Except as provided in the foregoing paragraph, the proceeds of all insurance referred to in this Section shall be available for, and shall to the extent necessary be applied to, the repair, replacement or reconstruction of the damaged or destroyed property, and shall be paid out in such 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 Capital Improvement Fund. If such proceeds shall be insufficient for such purpose, the deficiency may be supplied out of moneys in the Capital Improvement Fund.

Notwithstanding the foregoing provisions of this Section, the Authority may institute a self-insurance program with regard to such risks as shall be consistent with the practices of utilities operating in a manner similar to the Systems as shall be approved by a Consultant.

Section 7.09 Insurance Policies.

Within the first ninety (90) days of each Fiscal Year the Authority shall mail to the Trustee and the Consulting Engineer a schedule of all insurance policies referred to in Section 7.08 of this Article which are then in effect, stating with respect to each policy the name of the insurer, the amount, number and expiration date, and the hazards and risks covered thereby. All insurance policies shall be open to the inspection of the Holders of Bonds and their representatives at all reasonable times. The Authority is hereby authorized to demand, collect, sue and receipt for any insurance money which may become due and payable under any policies payable to the Authority.

Section 7.10 Protection of Security; No Impairment.

(a) The Revenues and other moneys, securities and funds pledged hereunder are and will be free and clear of any pledge, lien, charge or encumbrance thereon or with respect thereto prior to, or of equal rank with, the pledge created by this Agreement, except as otherwise expressly provided herein, and all action on the part of the Authority to that end has been duly and validly taken. The Bonds are and will be valid and legally enforceable obligations of the Authority in accordance with their terms and the terms of this Agreement. The Authority shall at all times, to the extent permitted by law, defend, preserve and protect the pledge of the Revenues

and other moneys, securities and funds pledged under this Agreement and each Supplemental Agreement and all the rights of the holders of Indebtedness hereto against all claims and demands of all persons whomsoever. In no event shall Revenues received from the Commonwealth of Puerto Rico on account of Commonwealth Guaranteed Indebtedness be subject to the lien hereof or be used for any purpose other than those specified in Section 5.12 hereof.

(b) The Authority further covenants and agrees that, so long as any Indebtedness shall be Outstanding, none of the Revenues will be used for any purpose other than as provided in this Agreement, and that no contract or contracts will be entered into or any action taken by which the rights of the Trustee or of the Holders might be impaired or diminished. Any resolution adopted by the Board authorizing the issuance of a Series of Bonds or any Supplemental Agreement executed by the Authority for such purpose shall, for all purposes, be deemed part of this Agreement and shall constitute a contract for the benefit of the Holders of said Series. This Agreement and any such resolution may be supplemented and amended only in accordance with Article IX hereof, except for supplements and amendments adopted prior to the issuance of the applicable Series of Bonds, which may be adopted without restriction.

Section 7.11 Accounts and Records.

(a) The Authority further covenants that its accounts will be kept according to standard practices for public utility systems similar to the properties and business of the Authority and applicable in such circumstances, and in such manner as appropriate to segregate, insofar as advisable, the accounts in respect of the different classes of its operations, projects, undertakings and activities, that it will keep accurate records and accounts of all items of cost and expenditures relating to the Systems and to each integral unit of said Systems, the Revenues and the application of such Revenues, and the number of consumers, and that it will keep such records and accounts with respect to the physical properties comprising part of the Systems in such manner that it will be possible at all times to identify both the amounts and the items of all additions and retirements.

(b) The Authority further covenants that on or before each Deposit Date, it shall provide to the Trustee, the Consulting Engineer, other Consultants, if any, and the Puerto Rico Fiscal Agency and Financial Advisory Authority as part of the Disbursement Schedule required to be delivered pursuant to Section 7.02(f) (i) for the period commencing on the prior Deposit Date to the Business Day prior to such current Deposit Date a statement of (x) Revenues, (y) cash payments for operating and maintenance expenses, and proceeds from the sale of property or other extraordinary revenue items (to the extent not included in Revenues) and (ii) a reconciliation of Revenues and cash payments for operating and maintenance expenses to Current Expenses and Net Revenues for the monthly period ending on the preceding Deposit Date and Fiscal Year-to-date period through such preceding Deposit Date.

(c) The Authority further covenants that in the first month of each Fiscal Year it will engage an independent firm of certified public accountants of suitable experience and responsibility to be chosen by the Board to perform an audit to be made of the Authority's books and accounts relating to the Systems. Upon receipt of an audit for a Fiscal Year, the Authority shall promptly file a copy thereof with the Trustee, the Consulting Engineer and the other

Consultants. Such audit reports shall set forth in respect of the preceding Fiscal Year the same matters as are hereinabove required for the monthly reports, the findings of such public accountants as to whether the moneys received by the Authority under the provisions of this Agreement during such Fiscal Year or portion of such Fiscal Year for which Bonds have been issued and Outstanding under this Agreement have been applied in accordance with the provisions of this Agreement, whether any obligations for Current Expenses were incurred in the preceding Fiscal Year or portion of such Fiscal Year for which Bonds have been issued and Outstanding under this Agreement, whether the Revenues for the preceding Fiscal Year or portion of such Fiscal Year for which Bonds have been issued and Outstanding under this Agreement have exceeded or were less than the amount for such Fiscal Year or such portion thereof required pursuant to Section 7.01 of this Agreement and whether the Authority is in default in the performance of any of the other covenants contained in this Article VII.

(d) The Authority further covenants that it will cause any additional reports or audits relating to the Systems to be made as required by law and by any applicable rules or regulations of any governmental authority or of any securities exchange on which the Bonds may be listed or traded, and that, as often as may be requested, it will furnish to the Trustee such other information concerning said Systems or the operation thereof as any of them may reasonably request.

(e) The cost of such audits shall be treated as a part of Current Expenses.

Section 7.12 No Sale, Lease, or Encumbrances; Exceptions.

Except as expressly permitted in this Agreement, the Authority irrevocably covenants, binds, and obligates itself not to sell, lease, encumber, or in any manner dispose of the Systems as a whole or in part until all of the Indebtedness and all interest thereon shall have been paid in full or provision for such payment has been duly made in accordance with Article XI. The Authority shall have and hereby reserves the right, however, to sell, lease, or otherwise dispose of any of the property comprising a part of the Systems in the following manner, if any one of the following conditions exists: (i) such property is not necessary for the operation of the Systems; (ii) such property is not useful in the operation of the Systems; (iii) such property is not profitable in the operation of the Systems; or (iv) the disposition of such property will be advantageous to the Systems and will not adversely affect the security for the Bondholders. All proceeds of any such sale shall be deposited in the Capital Improvement Fund.

Prior to the sale or lease of assets constituting in excess of 3% of the net assets on the Authority's most recent audited balance sheet to an entity other than a political subdivision, authority or agency of the Commonwealth of Puerto Rico the Authority shall:

(i) obtain a written report of the Consultant, describing the financial impact of any such sale or lease on the Revenues, Net Revenues, and balance sheet of the Authority;

(ii) obtain a written report of the Consultant, setting forth alternatives to the proposed sale or lease of such assets and comparing such alternatives to the proposal;

(iii) obtain an opinion of the Consultant to the effect that such sale or lease will not, in the current or any future Fiscal Year, result in the Authority not meeting the required Rate Covenant after such sale or lease. In reaching its conclusion, the Consultant shall take into consideration such factors affecting the Net Revenues of the Authority as the Consultant may deem significant, including (A) anticipated diminution of Net Revenues, (B) anticipated increases or decreases in Current Expenses whether or not attributable to such sale or lease, and (C) the reduction in the Annual Debt Service attributable to the application of the sale proceeds to the provision for payment of Indebtedness theretofore Outstanding; and

(iv) make a written determination, approved by the Board that the proposed sale or lease is more beneficial than (a) not entering into such sale or lease and (b) entering into one of the alternatives reviewed and presented by the Consultant.

The Authority reserves the right to sell any portion of the Systems to any political subdivision or authority or agency of one or more political subdivisions of the Commonwealth of Puerto Rico, provided that there shall be first filed with the Authority: (i) an opinion of Bond Counsel to the effect that such sale will not adversely affect the extent to which interest on any tax-exempt bonds is excluded from gross income for federal income tax purposes; and (ii) an opinion of a Consultant to the effect that such sale will not, in the current or any future Fiscal Year, result in Net Revenues not meeting the required Rate Covenant after such sale. In reaching its conclusion, the Consultant shall take into consideration such factors as the Consultant may deem significant, including (i) anticipated diminution of Net Revenues, (ii) anticipated increases or decreases in Current Expenses whether or not attributable to such sale, and (iii) reduction in the Annual Debt Service attributable to the application of the sale proceeds to the provision for payment of Indebtedness theretofore Outstanding. Such sale may include a partial interest in a water or sewer facility owned or to be owned in whole or in part by the Authority. All proceeds of any such sale shall be deposited in the Capital Improvement Fund.

The Authority reserves the right to transfer the Systems as a whole to any political subdivision or authority or agency of one or more political subdivisions of the Commonwealth of Puerto Rico to which may be delegated the legal authority to own and operate the Systems, or any portion thereof, on behalf of the public, and which undertakes in writing, filed with the Authority, the Authority's obligations under this Agreement, provided that there shall be first filed with the Authority: (i) an opinion of Bond Counsel to the effect that such transfer will not adversely affect the extent to which interest on any tax-exempt bonds is excluded from gross income for federal income tax purposes; and (ii) an opinion of a Consultant expressing the view that such transfer will not result in any diminution of Net Revenues to the extent that the Authority could not meet the required Rate Covenant after such transfer, in the then current or any succeeding Fiscal Year. In reaching this conclusion, the Consultant shall take into consideration such factors as the Consultant may deem significant, including any rate schedule to be imposed by the transferee political subdivision, authority, or agency.

Section 7.13 Authority Not to Furnish Free Service; Enforcement of Accounts Due.

So long as any Bonds issued pursuant to this Agreement are Outstanding, the Authority will not furnish or supply water or any other commodity, service or facility furnished by it or in connection with the operation of the Systems, free of charge to any person, firm or corporation, public or private, and the Authority will promptly enforce the payment of any and all accounts owing to the Authority by reason of the ownership and operation of the Systems.

Section 7.14 Reserved.

Section 7.15 Tax Covenants.

The Authority covenants and agrees that so long as any Bonds remain Outstanding hereunder, to the extent permitted by the Constitution and the laws of the Commonwealth of Puerto Rico, it shall comply with the requirements of the Code, including any arbitrage rebate covenants contained on any agreement entered into by and between the Authority and the Trustee in connection with the issuance of any Series of Bonds, except to the extent failure to so comply would not, in the opinion of Bond Counsel, result in the interest payable on such Bonds being included in gross income for federal income tax purposes to the Holders thereof under the Code. Notwithstanding anything to the contrary contained herein or otherwise, the Authority shall not be required to comply with the covenants herein contained in respect of a Series of Bonds to the extent that interest on such Series of Bonds shall be intended by the Authority, on the date of issuance of such Bonds, to be included in gross income for federal income tax purposes to the Holders thereof under the Code.

ARTICLE VIII

DEFAULTS AND REMEDIES

Section 8.01 Events of Default.

Each of the following events shall be an Event of Default:

(a) default in the due and punctual payment of the principal of or premium, if any, on any Bonds or Other System Indebtedness whether at maturity, upon termination or call for redemption or otherwise; or

(b) default in the due and punctual payment of the interest on any Bonds or Other System Indebtedness; or

(c) the Authority shall for any reason be determined to be incapable by a court, governmental entity or agency of competent jurisdiction of fulfilling or shall not have full power and authority to fulfill its obligations hereunder; or

(d) an order or decree shall be entered, with the consent or acquiescence of the Authority, appointing a receiver or receivers of the Systems or any part thereof or of the Revenues, or if such order or decree, having been entered without the consent or acquiescence of

the Authority, shall not have been vacated, discharged or stayed on appeal within ninety (90) days after the entry thereof; or

(e) any proceeding shall be instituted, with the consent or acquiescence of the Authority, for the purpose of effecting a composition between the Authority and its creditors or for the purpose of adjusting the claims of such creditors, pursuant to any Federal or Commonwealth of Puerto Rico statute now or hereafter enacted, if the claims of such creditors are under any circumstances payable out of the Revenues and if said proceeding shall not have been discharged within ninety (90) days after the institution thereof, or if any such proceeding, having been instituted without the consent or acquiescence of the Authority, shall not be contested in good faith; or

(f) the Authority shall default in the due and punctual performance of any other of the covenants, conditions, agreements and provisions contained in the Bonds or in this Agreement on the part of the Authority to be performed, and such default shall continue for thirty (30) days after written notice specifying such default and requiring same to be remedied shall have been given to the Authority by the Trustee, which may give such notice in its discretion and shall give such notice at the written request of the Holders of not less than ten per cent (10%) in principal amount of the Senior Bonds then Outstanding; **provided, however**, if the default specified in this clause (f) shall be of a type that cannot be remedied within thirty (30) days, it shall not constitute an event of default if the Authority shall begin diligently to remedy such default within such thirty-day period.

In no event shall the failure to pay principal of or interest on Commonwealth Guaranteed Indebtedness be an Event of Default hereunder.

Section 8.02 [Reserved]

Section 8.03 Extended Interest Payments.

In case the time for the payment of the interest on any Bond shall be extended, whether or not such extension be by or with the consent of the Authority, such interest so extended shall not be entitled in case of default hereunder to the benefit or security of this Agreement except subject to the prior payment in full of the principal of all Indebtedness then Outstanding and of all interest the time for the payment of which shall not have been extended.

Section 8.04 Acceleration.

Upon the occurrence and continuation of an Event of Default, except for an Event of Default described in clause (f) of Section 8.01, the Trustee may (and if requested by the Holders of not less than a majority in aggregate principal amount of Senior Indebtedness (or if no Senior Indebtedness is then Outstanding, of Senior Subordinate Indebtedness) then Outstanding shall) by written notice to the Authority, declare the entire unpaid principal of the Bonds due and payable and, thereupon, the entire unpaid principal of the Bonds shall forthwith become due and payable. Upon any such declaration, on the first Business Day of each month, the Trustee (i) shall pay to the Authority, an amount of Revenues equal to the amount set forth in the applicable Annual Budget prepared in accordance with Section 7.02(g) to pay Current Expenses of the Systems for such month and (ii) shall pay to the Holders of the Bonds and Other System

Indebtedness, but only from the remaining Revenues and other moneys herein specifically pledged for payments of Bondholders, the entire unpaid principal of and premium, if any, and accrued interest on the Bonds and Other System Indebtedness. If at any time after such a declaration and before the entry of a final judgment or decree in any suit, action or proceeding instituted on account of such default or before the completion of the enforcement of any other remedy under this Agreement, the principal of all Bonds and Other System Indebtedness that have matured or been called for redemption pursuant to any sinking fund provision and all arrears of interest have been paid and any other Events of Default which may have occurred have been remedied, then the Trustee may, by written notice to the Authority, rescind or annul such declaration and its consequences. No such rescission or annulment shall extend to or affect any subsequent default or impair any right consequent thereon. Senior Subordinate Indebtedness may not be accelerated if any Senior Indebtedness is Outstanding. Subordinate Indebtedness may not be accelerated if any Senior Indebtedness or Senior Subordinate Indebtedness is Outstanding.

Section 8.05 Other Remedies; Rights of Bondholders.

(a) Upon the occurrence of an Event of Default (other than an Event of Default specified in Section 8.01(f)) and until delivery of the documents set forth in paragraph (b) below, amounts on deposit in the Authority Revenue Fund shall be applied in accordance with Section 8.06 hereof.

(b) Amounts on deposit in the Authority Revenue Fund shall continue to be applied in accordance with Section 8.06 until there shall have been filed with the Trustee (i) a certificate signed by the Executive President and approved by the Consulting Engineer that (x) the Authority complied with the Rate Covenant set forth in Section 7.01 for the most recent complete Fiscal Year and (y) no Event of Default (other than an Event of Default under Section 8.01(f)) is continuing hereunder and (ii) a report of the Consulting Engineer as to the adequacy of existing rates and charges of the Rate Covenant set forth in Section 7.01 for the then current Fiscal Year and the following Fiscal Year.

(c) Upon the occurrence and continuance of an Event of Default, the Trustee may (and if requested by the holders of not less than a majority in aggregate principal amount of Outstanding Senior Bonds then Outstanding (or if no Senior Bonds are then Outstanding, of Senior Subordinate Bonds) shall proceed to protect and enforce the rights of the Holders by mandamus or other suit, action or proceeding at law or in equity, including an action for specific performance of any covenant or agreement herein contained.

(d) No remedy conferred by this Agreement upon or reserved to the Trustee and Bondholders is intended to be exclusive of any other remedy, but each such remedy shall be cumulative and shall be in addition to any other remedy given to the Trustee and Bondholders hereunder or now or hereafter existing at law, in equity or by statute.

(e) The Holders of a majority in aggregate principal amount of the Senior Bonds then Outstanding hereunder shall have the right, subject to the provisions of Section 10.01(l) hereof, by an instrument or concurrent instruments in writing executed and delivered to the Trustee, to direct the time, method and place of conducting all remedial proceedings to be

taken by the Trustee hereunder or exercising any trust or power conferred upon the Trustee, provided that (i) such direction shall not be otherwise than in accordance with law and the provisions of this Agreement, (ii) subject to the provisions of Section 10.01(I) hereof, that the Trustee may take any other action deemed proper by the Trustee which is not inconsistent with such direction and (iii) the Trustee shall have the right not to follow such direction if the Trustee in good faith shall determine that such direction would be prejudicial to Holders not giving such direction or would involve the Trustee in personal liability.

Notwithstanding any other provision in this Agreement, the owner of any Bond shall have the right which is absolute and unconditional to receive payment of the principal of and premium, if any, and interest on such Bond when due (whether at maturity, upon redemption or otherwise) and to institute suit for the enforcement of any such payment, and such right shall not be impaired without the consent of such owner.

Section 8.06 Application of Moneys.

(a) Unless the principal of all Bonds shall have become due or shall have been declared due and payable, all amounts on deposit in the Authority Revenue Fund, after payment of the cost and expenses of the proceedings resulting in the collection of such moneys, the expenses, liabilities and advances incurred or made by the Trustee and its fees and the expenses in carrying out this Agreement, shall be transferred beginning on the first Business Day of each month in the following order of priority:

First - To the Authority, in each month, an amount equal to the amount set forth in the Annual Budget prepared in accordance with Section 7.02(a) or (b) to pay Current Expenses of the Systems for such month;

Second - To the subaccounts established for each issue of Senior Indebtedness in the Senior Interest Account, (i) an amount equal to the Interest Accrual on all the Outstanding Senior Indebtedness to and including the first day of the next calendar month; (ii) the amount of any payments or reimbursements due in the next ensuing month to each Enhancement Facility Provider to the extent such payment or reimbursement obligation constitutes Senior Indebtedness hereunder; and (iii) the amount of any payments due in the next ensuing month under any Hedge Agreement or Qualified Swap secured on a parity with Senior Indebtedness, and all such deposits shall be adjusted to give credit for any other available money then in such interest account or subaccount or otherwise available and designated to be used for such purpose;

Third - To the subaccounts established for each issue of Senior Indebtedness in the Senior Principal Account and Senior Sinking Fund Account, an amount equal to the Principal Accrual on the Outstanding Senior Indebtedness to and including the first day of the next calendar month, and all such deposits shall be adjusted to give credit for any other available money then in the principal or sinking fund account or subaccount or otherwise available and designated to be used for such purpose;

Fourth - To each Account in the Senior Debt Service Reserve Fund, (i) an amount equal to (x) 1/60 of the amount (or such greater amount specified in the Supplemental

Agreement authorizing any Senior Bonds), if any, necessary to restore the amount on deposit therein to the related Debt Service Reserve Requirement in the event of an increase in the applicable Debt Service Reserve Requirement upon the issuance of additional Senior Bonds, and (y) except as provided in Section 5.05(c), 1/12 of the amount, if any, necessary to restore the amount on deposit therein to the related Debt Service Reserve Requirement in the event of any other deficiency and (ii) the amount of proceeds of any Senior Bonds as required by the applicable Supplemental Agreement;

Fifth - To the subaccounts established for each issue of Senior Subordinate Indebtedness in the Senior Subordinate Interest Account, (i) an amount equal to the Interest Accrual on all the Outstanding Senior Subordinate Indebtedness to and including the first day of the next calendar month; (ii) the amount of any payments or reimbursements due in the next ensuing month to each Enhancement Facility Provider to the extent such payment or reimbursement obligation constitutes Senior Subordinate Indebtedness hereunder; (iii) the amount of any payments due in the next ensuing month under any Hedge Agreement or Qualified Swap secured on a parity with Senior Subordinate Indebtedness, and all such deposits shall be adjusted to give credit for any other available money then in such interest account or subaccount or otherwise available and designated to be used for such purpose;

Sixth - To the subaccounts established for each issue of Senior Subordinate Indebtedness in the Senior Subordinate Principal Account and Senior Subordinate Sinking Fund Account, an amount equal to the Principal Accrual on the outstanding Senior Subordinate Indebtedness to and including the first day of the next calendar month, and all such deposits shall be adjusted to give credit for any other available money then in the principal or sinking fund account or subaccount or otherwise available and designated to be used for such purpose;

Seventh - To each Account in the Senior Subordinate Debt Service Reserve Fund (i) an amount equal to (x) 1/60 of the amount (or such greater amount specified in the Supplemental Agreement authorizing any Senior Subordinate Bonds), if any, necessary to restore the amount on deposit therein to the related Debt Service Reserve Requirement in the event of an increase in the applicable Debt Service Reserve Requirement upon the issuance of additional Senior Subordinate Bonds, and (y) except as provided in Section 5.07(c), 1/12 of the amount, if any, necessary to restore the amount on deposit therein to the related Debt Service Reserve Requirement in the event of any other deficiency and (ii) the amount of proceeds of any Senior Subordinate Bonds as required by the applicable Supplemental Agreement;

Eighth - To the subaccounts established for each issue of Subordinate Indebtedness in the Subordinate Interest Account, (i) an amount equal to the Interest Accrual on all the Outstanding Subordinate Indebtedness to and including the first day of the next calendar month; (ii) the amount of any payments or reimbursements due in the next ensuing month to each Enhancement Facility Provider to the extent such payment or reimbursement obligation constitutes Subordinate Indebtedness hereunder; and (iii) the amount of any payments due in the next ensuing month under any Hedge Agreement or Qualified Swap secured on a parity with Subordinate Indebtedness, and all such deposits shall be

adjusted to give credit for any other available money then in such interest account or subaccount or otherwise available and designated to be used for such purpose;

Ninth - To the subaccounts established for each issue of Subordinate Indebtedness in the Subordinate Principal Account and Subordinate Sinking Fund Account, an amount equal to the Principal Accrual on the Outstanding Subordinate Indebtedness to and including the first day of the next calendar month, and all such deposits shall be adjusted to give credit for any other available money then in the principal or sinking fund account or subaccount or otherwise available and designated to be used for such purpose;

Tenth – To each Account in the Subordinate Debt Service Reserve Fund (i) on each Deposit Date an amount equal to (x) 1/60 of the amount (or such greater amount specified in the Supplemental Agreement authorizing such additional Subordinate Bonds), if any, necessary to restore the amount on deposit therein to the related Debt Service Reserve Requirement in the event of an increase in the applicable Debt Service Reserve Requirement upon the issuance of additional Subordinate Bonds, and (y) except as provided in Section 5.09(c), 1/12 of the amount, if any, necessary to restore the amount on deposit therein to the related Debt Service Reserve Requirement in the event of any other deficiency and (ii) the amount of proceeds of any Subordinate Bonds as required by the applicable Supplemental Agreement;

Eleventh – To the credit of the Operating Reserve Fund, an amount equal to that which is necessary to make the balance on deposit therein equal to the Operating Reserve Requirement;

Twelfth - To the Capital Improvement Fund (i) an amount equal to that which is necessary to make the balance on deposit therein equal to the Capital Improvement Fund Requirement for the Fiscal Year as set forth in the applicable Annual Budget in equal monthly deposits over such Fiscal Year;

Thirteenth - To the Commonwealth Payments Fund (i) any amounts received by the Authority from the Commonwealth of Puerto Rico on account of Outstanding Commonwealth Guaranteed Indebtedness and (ii) an amount sufficient to pay (A) the Interest Accrual on Commonwealth Guaranteed Indebtedness in respect of the next Interest Payment Date and (B) the Principal Accrual on Commonwealth Guaranteed Indebtedness in respect of the next principal payment date, and all such deposits in this paragraph shall be adjusted to give credit for any other available money then in such account or otherwise available and designated to be used for such purpose; and

Fourteenth - To the Surplus Fund, any remaining balance.

(b) If the principal of all the Bonds shall have become due or shall have been declared due and payable, all such moneys shall be applied by the Trustee as follows: first, it shall transfer to the Authority the amount set forth in the Annual Budget prepared in accordance with Section 7.02 to pay Current Expenses of the Systems on a monthly basis and thereafter, such moneys shall be applied by the Trustee to the payment of the principal and interest then due and unpaid on the Senior Indebtedness, including, to the extent permitted by law, interest on

overdue installments of interest, without preference or priority of principal over interest or of interest over principal, or of any installment of interest over any other installment of interest, or of any Senior Indebtedness over any other Senior Indebtedness, ratably, according to the amounts due respectively for principal and interest, to the persons entitled thereto, without any discrimination or preference except as to any difference in the respective rates of interest specified in the Senior Indebtedness.

(c) If the principal of all the Bonds shall have become due or shall have been declared due and payable and there is no Senior Indebtedness Outstanding hereunder, all such moneys shall be applied first, to pay the amount set forth in the Annual Budget prepared in accordance with Section 7.02 to pay Current Expenses of the Systems on a monthly basis and thereafter, to the payment of the principal and interest then due and unpaid on the Senior Subordinate Indebtedness, including, to the extent permitted by law, interest on overdue installments of interest, without preference or priority of principal over interest or of interest over principal, or of any installment of interest over any other installment of interest, or of any Senior Subordinate Indebtedness over any other Senior Subordinate Indebtedness, ratably, according to the amounts due respectively for principal and interest, to the persons entitled thereto, without any discrimination or preference except as to any difference in the respective rates of interest specified in the Senior Subordinate Indebtedness.

(d) If the principal of all the Bonds shall have become due or shall have been declared due and payable and there is no Senior Indebtedness or Senior Subordinate Indebtedness Outstanding hereunder, all such moneys shall be applied first, to pay the amount set forth in the Annual Budget prepared in accordance with Section 7.02 to pay Current Expenses of the Systems on a monthly basis and thereafter, to the payment of the principal and interest then due and unpaid on the Subordinate Indebtedness, including, to the extent permitted by law, interest on overdue installments of interest, without preference or priority of principal over interest or of interest over principal, or of any installment of interest over any other installment of interest, or of any Subordinate Indebtedness over any other Subordinate Indebtedness, ratably, according to the amounts due respectively for principal and interest, to the persons entitled thereto, without any discrimination or preference except as to any difference in the respective rates of interest specified in the Subordinate Indebtedness.

(e) If the principal of all the Bonds shall have become due or shall have been declared due and payable and there is no Senior Indebtedness, Senior Subordinate Indebtedness or Subordinate Indebtedness Outstanding hereunder, all such moneys shall be applied first, to pay the amount set forth in the Annual Budget prepared in accordance with Section 7.02 to pay Current Expenses of the Systems on a monthly basis and thereafter, to the payment of the principal and interest then due and unpaid on the Commonwealth Guaranteed Indebtedness, including, to the extent permitted by law, interest on overdue installments of interest, without preference or priority of principal over interest or of interest over principal, or of any installment of interest over any other installment of interest, or of any Commonwealth Guaranteed Indebtedness over any other Commonwealth Guaranteed Indebtedness, ratably, according to the amounts due respectively for principal and interest, to the persons entitled thereto, without any discrimination or preference except as to any difference in the respective rates of interest specified in the Commonwealth Guaranteed Indebtedness.

(f) Whenever moneys are to be applied pursuant to the provisions of this Section, such moneys shall be applied at such times and from time to time as the Trustee 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. Whenever the Trustee shall apply such moneys, it shall fix the date (which shall be an Interest Payment Date unless it shall deem another date more suitable) on which such application is to be made and on such date interest on the amounts of principal to be paid and shall cease to accrue. The Trustee shall give such notice as it may deem appropriate of the deposit with it of any such moneys and of the fixing of any such date.

Whenever the principal of and premium, if any, and interest on all Indebtedness have been paid under the provisions of this Section, all payments required by the terms of any Supplemental Agreement have been paid and all expenses and charges of the Trustee have been paid, any balance remaining in the several funds created by this Agreement shall be paid to the Authority as provided in Section 5.15.

Section 8.07 Remedies Vested in Trustee.

All rights of action (including the right to file proof of claims) under this Agreement or under any of the Bonds may be enforced by the Trustee without the possession of any of the Bonds or the production thereof in any trial or other proceeding relating thereto and any such suit or proceeding instituted by the Trustee may be brought in its name as Trustee without the necessity of joining as plaintiffs or defendants any Bondholders, and, subject to the provisions of Section 8.06 hereof, any recovery of judgment shall be for the equal benefit of the Bondholders.

Section 8.08 Limitation on Suits.

Except to enforce the rights given under Sections 8.04 and 8.05, no Bondholder shall have the right to institute any action, suit or proceeding at law or in equity for the enforcement of this Agreement or for the execution of any trust thereof or any other remedy hereunder, unless (a) a default has occurred that has become an Event of Default and the holders of a majority in aggregate principal amount of Senior Bonds (or if no Senior Bonds are then Outstanding, of Senior Subordinate Bonds) then Outstanding have made written request to the Trustee and offered it reasonable opportunity either to proceed to exercise the powers hereinbefore granted or to institute such action, suit or proceeding in its own name, (b) such requesting Bondholders have offered to the Trustee indemnity as provided in Section 10.05, (c) the Trustee has thereafter failed or refused to exercise the powers hereinbefore granted, or to institute such action, suit or proceeding in its, own name, (d) no direction inconsistent with such written request has been given to the Trustee by the holders of a majority in aggregate principal amount of Senior Bonds (or if no Senior Bonds is then Outstanding, of Senior Subordinate Bonds) then Outstanding, and (e) notice of such action, suit or proceeding is given to the Trustee; it being understood and intended that no one or more holders of the Bonds shall have any right in any manner whatsoever to affect, disturb or prejudice this Agreement by its or their action or to enforce any rights hereunder except in the manner herein provided, and that all proceedings at law or in equity shall be instituted and maintained in the manner herein provided and for the equal benefit of the holders of all Bonds then Outstanding. The notification, request and offer of indemnity set forth above, at the option of the Trustee, shall be conditions precedent to the execution of the powers

and trusts of this Agreement and to any action or cause of action for the enforcement of this Agreement or for any other remedy hereunder.

Section 8.09 Termination of Proceedings.

In case the Trustee shall have proceeded to enforce any right under this Agreement and such proceedings shall have been discontinued or abandoned for any reason or shall have been determined adversely to the Trustee, then and in every such case the Authority and the Trustee shall be restored to their former positions and rights hereunder, and all rights, remedies and powers of the Trustee shall continue as if no such proceedings had been taken.

Section 8.10 Waivers of Events of Default.

The Trustee may in its discretion waive any Event of Default hereunder or any action taken pursuant to any Event of Default and rescind any acceleration of maturity of principal of and interest on the Bonds, and shall do so at the request of the Holders of (a) a majority in aggregate principal amount of Senior Bonds then Outstanding in respect of which default in the payment of principal and/or premium, if any, and/or interest exists, or (b) a majority in aggregate principal amount of Senior Bonds then Outstanding in the case of any other default; **provided, however,** that there shall not be waived without the consent of the Holders of all Senior Bonds then Outstanding (i) any Event of Default in the payment of the principal of any Outstanding Bonds (whether at maturity or by sinking fund redemption), or (ii) any default in the payment when due of the interest on any such Bonds unless, prior to such waiver or rescission, (x) there shall have been paid or provided for all arrears of interest with interest, to the extent permitted by law, at the rate borne by the Bonds on overdue installments of interest, all arrears of principal and premium, if any, and all expenses of the Trustee in connection with such default, and (y) in case of any such waiver or rescission or in the case of any discontinuance, abandonment or adverse determination of any proceeding taken by the Trustee on account of any such default, the Authority, the Trustee, and the Holders of Bonds shall be restored to their former positions and rights hereunder respectively.

No such waiver or rescission relating to the Bonds shall extend to any subsequent or other default or impair any right consequent thereon.

Section 8.11 No Delay or Omission Construed to be a Waiver.

No delay or omission of the Trustee or of any Holder of the Bonds to exercise any right or power accruing upon any default shall impair any such right or power or shall be construed to be a waiver of any such default or any acquiescence therein; and every power and remedy given by this Agreement to the Trustee and to the Bondholders, respectively, may be exercised from time to time and as often as may be deemed expedient.

Before the entry of final judgment or decree in any suit, action or proceeding instituted by it under the provisions of this Agreement or before the completion of the enforcement of any other remedy under this Agreement, the Trustee shall be permitted to discontinue such suit, action, proceeding or enforcement of any remedy if in its opinion any default forming the basis of such suit, action, proceeding or enforcement of any remedy shall have been remedied;

provided, however, that no such discontinuance shall extend to or affect any subsequent or other default, or impair any right or remedy consequent thereon.

The Trustee may also, and upon written request of the Holders of not less than a majority in aggregate principal amount of the Senior Bonds then Outstanding shall, waive any default which shall have been remedied before the entry of final judgment or decree in any suit, action or proceeding instituted by it or the Holders under the provisions of this Agreement or before the completion of the enforcement of any other remedy under this Agreement in respect of such default, but no such waiver shall extend to or affect any other existing or any subsequent default or defaults or impair any rights or remedies consequent thereon.

Section 8.12 Notice of Default.

The Trustee shall mail to all owners of Bonds and the Fiduciaries for any Other System Indebtedness at their addresses as they appear on the registration books written notice of the occurrence of any Event of Default set forth in Section 8.01 within thirty (30) days after the Trustee shall have notice, pursuant to the provisions of Section 10.01 of this Agreement, that any such Event of Default shall have occurred. The Trustee shall not, however, be subject to any liability to any Bondholder by reason of its failure to mail any such notice.

Section 8.13 Unconditional Right to Receive Principal, Premium and Interest.

Nothing in this Agreement shall, however, affect or impair the right of the Trustee or any Bondholder to enforce, by action at law, payment of the principal of and premium, if any, or interest on any Bond at and after the maturity thereof, or on the date fixed for redemption or upon the same being declared due prior to maturity as herein provided, or the obligation of the Authority to pay the principal of and premium, if any, and interest on each of the Bonds issued hereunder to the respective holders thereof at the time and place, from the source and in the manner herein and in the Bonds expressed.

ARTICLE IX

SUPPLEMENTAL AGREEMENTS

Section 9.01 Supplemental Agreements Not Requiring Consent of Holders of Bonds.

The Authority and the Trustee may, without the consent of, or notice to, any of the Bondholders, enter into such Supplemental Agreements as shall not be inconsistent with the intent of the terms and provisions hereof for any one or more of the following purposes:

- (a) To cure any ambiguity, formal defect or omission in this Agreement;
- (b) To grant to or confer upon the Bondholders any additional rights, remedies, powers or authority that may lawfully be granted to or conferred on the Bondholders;
- (c) To add to the covenants and agreements of the Authority in this Agreement other covenants and agreements to be observed by the Authority;

(d) To modify, amend or supplement this Agreement in such manner as required to permit the Authority to comply with the provisions of the Code relating to the rebate to the United States of America of earnings derived from the investment of the proceeds of any Bonds, provided that such modification, amendment or supplement does not materially adversely affect the holders of all Outstanding Bonds;

(e) To modify, amend or supplement this Agreement in such manner as may be required by a Rating Agency to maintain or enhance its rating on the Senior Bonds, provided that such modification, amendment or supplement does not materially adversely affect the Holders of all Outstanding Bonds;

(f) To modify, amend or supplement this Agreement to make any change to the role of the Consulting Engineer as set forth in Section 7.07;

(g) To authorize the issuance of and to secure one or more issues of Bonds pursuant to Article II;

(h) To notify, amend or supplement this Agreement in such manner as required to implement any agreement with a securities depository relating to a book-entry system to be maintained with respect to any Bonds; and

(i) To modify, amend or supplement this Agreement in any manner that the Trustee concludes is not materially adverse to the Holders of all Outstanding Bonds.

For purposes of this Section, any modification, amendment or supplement to this Agreement shall not be deemed to be materially adverse to the Holders of all Outstanding Bonds unless such modification, amendment or supplement results in a downgrade or withdrawal of any then existing rating on Outstanding Bonds.

Section 9.02 Supplemental Agreements Requiring Consent of Bondholders.

(a) Exclusive of Supplemental Agreements authorized by Section 9.01 and subject to the terms and provisions contained in this Section, the Authority and the Trustee may execute such other Agreements supplemental hereto as shall be deemed necessary or desirable by the Authority for the purpose of modifying, altering, amending, adding to or rescinding, any of the terms or provisions contained in this Agreement and any Supplemental Agreement with the written consent given as provided in Section 9.02(b) below of (i) the Holders of not less than a majority in aggregate principal amount of Outstanding Bonds at the time such consent is given, or (ii) in case less than all of the several Series of Bonds then Outstanding are affected by the modification or amendment, of the Holders of not less than a majority in aggregate principal amount of Outstanding Bonds so affected and Outstanding at the time such consent is given; **provided, however,** that if such modification or amendment will, by its terms, not take effect so long as any Bonds of any specified like Series, maturity and tenor remain Outstanding, the consent of the Holders of such Bonds shall not be required and such Bonds shall not be deemed Outstanding for the purpose of any calculation of Outstanding Bonds under this Section. No such modification or amendment shall permit, or be construed as permitting, (i) an extension of the time for payment of the principal of or the interest on any Bonds, (ii) a preference or priority of any Senior Bonds over any other Senior Bonds, (iii) a preference or priority of any Senior

Subordinate Bonds over any other Senior Subordinate Bonds, (iv) a preference or priority of any Subordinate Bonds over any other Subordinate Bonds, (v) a reduction in the aggregate principal amount of Bonds required for consent to such Supplemental Agreement, (vi) a reduction in the principal amount of or premium, if any, on any Bonds or the rate of interest thereon, (vii) the creation of any lien or pledge upon the Revenues and the moneys and securities in the funds and accounts hereunder other than the lien and pledge permitted by this Agreement or (viii) an extension of time or a reduction in amount of any payment required by any sinking fund that may be applicable to any Bonds, without the consent of one hundred percent (100%) of the Holders so affected.

(b) If at any time the Authority shall request the Trustee to enter into any such Supplemental Agreement, the Trustee shall cause notice of the proposed execution of such Supplemental Agreement to be sent by registered or certified mail to the registered owner of each Bond at his address as it appears on the registration books. Such notice shall briefly set forth the nature of the proposed Supplemental Agreement and shall state that a copy thereof is on file at the corporate trust office of the Trustee for inspection by all Bondholders. If, within ninety (90) days or such longer period as shall be prescribed by the Authority following the giving of such notice, the Holders of not less than a majority in aggregate principal amount of Outstanding Bonds, or in the case of (i) through (viii) above, the holders of all affected Bonds, shall have consented to and approved the execution thereof as herein provided, no Holder of any Bond shall have any right to object to any of the terms and provisions contained therein, or the operation hereof, or in any manner to question the propriety thereof, or to enjoin or restrain the Trustee or the Authority from executing such Supplemental Agreement or from taking any action pursuant to the provisions thereof. Upon the execution of any such Supplemental Agreement as in this Section permitted and provided, this Agreement shall be and be deemed to be modified and amended in accordance therewith.

(c) Bonds owned or held by or for the account of the Authority shall not be deemed Outstanding for the purpose of consent or any calculation of Outstanding Bonds provided for in this Agreement. At the time of any such calculation, the Authority shall furnish the Trustee a certificate of an Authorized Representative of the Authority upon which the Trustee may rely, describing all Bonds so to be excluded.

(d) It shall not be necessary for the consent of the Holders of Bonds under this Section 9.02 to approve the particular form of any proposed supplement or amendment, but it shall be sufficient if such consent shall approve the substance thereof.

(e) For the purposes of this Article IX, the purchasers of the Bonds of a Series, whether purchasing as underwriters, for resale or otherwise, upon such purchase, may consent to a modification or amendment permitted by this Section 9.02 in the manner provided herein, except that no proof of ownership shall be required, and with the same effect as a consent given by the Holder of such Bonds; **provided, however**, that, if such consent is given by a purchaser who is purchasing as an underwriter or for resale, the nature of the modification or amendment and the provisions for the purchaser consenting thereto shall be described in the official statement, prospectus, offering memorandum or other offering document prepared in connection with the primary offering or remarketing of the Bonds of such Series by the Authority.

(f) A Supplemental Agreement may provide that an Enhancement Facility Provider shall have the right to vote in lieu of the holders of the Bonds authorized thereunder.

Section 9.03 Discretion of Trustee in Entering into Supplements and Amendments.

In each and every case provided for in this Article, the Trustee shall not be obligated to execute any proposed supplement or amendment if the rights, obligations and interests of the Trustee would be thereby affected, and the Trustee shall not be under any responsibility or liability to the Authority, or to any Bondholder or to anyone whomsoever, for its refusal in good faith to enter into any such supplement or amendment if such supplement or amendment is deemed by it to be contrary to the provisions of this Article.

The Trustee shall be entitled to receive, and shall be fully protected in relying upon, an opinion of any counsel approved by it, who may be counsel for the Authority, as conclusive evidence that any such proposed supplement or amendment does or does not comply with the provisions of this Agreement, and that it is or is not proper for it, under the provisions of this Article, to join in the execution of such supplement or amendment.

ARTICLE X

TRUSTEE

Section 10.01 Acceptance of Trusts and Obligations.

The Trustee hereby accepts the trusts and obligations imposed upon it by this Agreement and agrees to perform such trusts and obligations, but only upon and subject to the following express terms and conditions and no implied covenants or obligations shall be read into this Agreement against the Trustee:

(a) The Trustee, prior to the occurrence of an Event of Default and after the curing of all Events of Default which may have occurred, undertakes to perform such duties and only such duties as are specifically set forth in this Agreement and no implied covenants or obligations shall be read into this agreement against the Trustee. Upon the occurrence and continuation of an Event of Default (which has not been cured or waived), the Trustee shall exercise such of the rights and powers vested in it by this Agreement and use the same degree of care and skill in its exercise as a prudent man ordinarily would exercise and use under the circumstances in the conduct of his own affairs.

(b) The Trustee may execute any of the trusts or powers hereof and perform any of its duties by or through attorneys or agents and shall not be liable for the misconduct of any attorney or agent selected by it with due care, and shall be entitled to consult with counsel and to act upon the opinion or advice of its counsel concerning all matters of trust hereof and the duties hereunder, and may in all cases pay reasonable compensation to all such attorneys, agents, receivers and employees as may reasonably be employed in connection with the trust hereof. The Trustee may act in reliance on an Opinion of Counsel and shall not be responsible for any loss or damage resulting from any action or nonaction by it taken or omitted to be taken in good faith and in reliance on such Opinion of Counsel.

(c) The Trustee shall not be responsible for any recital herein or in the Bonds (except in respect to the certificate of the Trustee endorsed on the Bonds) or for the recording, re-recording, filing or re-filing of any financing or continuation statement or any other document or instrument, or for insuring the Systems, collecting any insurance moneys, or for the validity of the execution by the Authority of this Agreement or for any supplements thereto or instruments of further assurance, or for the sufficiency of the security for the Bonds issued hereunder or intended to be secured hereby, and the Trustee shall not be bound to ascertain or inquire as to the observance or performance of any covenants, conditions or agreements on the part of the Authority except as hereinafter set forth. The Trustee shall not be responsible or liable for any loss suffered in connection with any investment of moneys made by it in accordance with Section 6.02.

(d) The Trustee shall not be accountable for the use of any Bonds authenticated or delivered hereunder. The bank or trust company acting as Trustee and its directors, officers, employees or agents may in good faith buy, sell, own, hold and deal in the Bonds and may join in any action which any holder of Bonds may be entitled to take with like effect as if such bank or trust company were not the Trustee. To the extent permitted by law, such bank or trust company may also receive tenders and purchase in good faith Bonds for itself, including any department, affiliate or subsidiary, with like effect as if it were not the Trustee.

(e) The Trustee shall be protected in acting on any notice, request, consent, certificate, order, affidavit, letter, telegram or other paper or document reasonably believed by it to be genuine and correct and to have been signed or sent by the proper person or persons. Any action taken by the Trustee pursuant to this Agreement on the request or authority or consent of any person who at the time of making such request or giving such authority or consent is the owner of any Bonds shall be conclusive and binding upon all future owners of the same Bonds and upon Bonds issued in exchange therefor or in place thereof.

(f) As to the existence or non-existence of any fact or as to the sufficiency or validity of any instrument, paper or proceeding, the Trustee shall be entitled to rely on a certificate signed on behalf of the Authority by its Chairman, its Executive President or any Executive or Senior Vice President and attested by the Secretary of the Authority under its seal, or such other person or persons as may be designated for such purposes by resolution of the Authority, as sufficient evidence of the facts therein contained, and prior to the occurrence of a default of which the Trustee has been notified as provided in subsection (h) of this Section, or of which by said subsection it is deemed to have notice, may also accept a similar certificate to the effect that any particular dealing, transaction or action is necessary or expedient, but may at its discretion secure such further evidence deemed necessary or advisable, but shall in no case be bound to secure the same. The Trustee may accept a certificate of the Secretary of the Authority under its seal to the effect that a resolution in the form therein set forth has been adopted by the Authority as conclusive evidence that such resolution has been duly adopted and is in full force and effect.

(g) The permissive right of the Trustee to do things enumerated in this Agreement shall not be construed as a duty, and the Trustee shall not be answerable for other than its negligence or willful default.

(h) The Trustee shall not be required to take notice or be deemed to have notice of any default hereunder, except failure by the Authority to cause to be made any of the payments to the Trustee required to be made by Article VI or failure by the Authority to file with the Trustee any document required by this Agreement to be so filed, unless the Trustee shall be notified of such default by the Authority or by the Holders of 25% in aggregate principal amount of Senior Bonds (or if no Senior Bonds are then Outstanding, Senior Subordinate Bonds) then Outstanding.

(i) At any and all reasonable times the Trustee and its duly authorized agents, attorneys, experts, engineers, accountants and representatives shall have the right, but shall not be required, to inspect the Systems and all books, papers and records of the Authority pertaining to the Systems and the Bonds, and to make such memoranda from and in regard thereto as may be desired.

(j) The Trustee shall not be required to give any bond or surety with respect to the exercise of its rights and obligations hereunder.

(k) Notwithstanding any other provision of this Agreement, the Trustee shall have the right, but shall not be required, to demand, as a condition of any action by the Trustee in respect of the authentication of any Bonds, the withdrawal of any cash, the release of any property, or any action whatsoever within the purview of this Agreement, any showings, certificates, opinions, appraisals or other information, or corporate action or evidence thereof, in addition to that required by the terms hereof.

(l) Before taking any action under this Agreement the Trustee may require that satisfactory indemnity be furnished to it for the reimbursement of all expenses to which it may be put and to protect it against all liability by reason of any action so taken, except liability which is adjudicated to have resulted from its negligence or willful default.

(m) All moneys received by the Trustee shall, until used or applied or invested as herein provided, be held in trust in the manner and for the purposes for which they were received but need not be segregated from other moneys except to the extent required by this Agreement or law. The Trustee shall not be under any liability for interest on any moneys received hereunder except such as may be agreed upon.

(n) In the absence of gross negligence or bad faith on its part, the Trustee may conclusively rely, as to the truth of the statements and the correctness of the opinions expressed therein, upon certificates or opinions furnished to the Trustee and conforming to the requirements of this Agreement, if any; but in the case of any such certificates or opinions which by any provision hereof are specifically required to be furnished to the Trustee, the Trustee shall be under a duty to examine the same to determine whether or not they conform to the requirements of this Agreement.

(o) The Trustee shall not be liable with respect to any action taken or omitted to be taken by it in good faith in accordance with the direction of the holders of a majority in principal amount of the Senior Bonds (or, if there are no Senior Bonds outstanding, Senior Subordinate Bonds, or if there are no Senior Subordinate Bonds Outstanding, Subordinated

Bonds) relating to the time, method and place of conducting any proceeding for any remedy available to the Trustee, or exercising any trust or power conferred upon the Trustee, under the provisions of this Agreement.

(p) No provision of this Agreement shall require the Trustee to expend or risk its own funds or otherwise incur any financial liability in the performance of any of its duties hereunder, or in the exercise of any of its rights or powers, if it shall have reasonable grounds for believing that repayment of such funds or adequate indemnity against such risk or liability is not reasonably assured to it.

(q) Whenever in the administration of this Agreement, prior to the occurrence of an Event of Default, the Trustee shall deem it desirable that a matter be proved or established prior to taking or suffering any action hereunder, such matters (unless other evidence in respect thereof be herein specifically prescribed) may be deemed to be conclusively proved and established by a certificate of the Authority and such certificate, in the absence of bad faith on the part of the Trustee, shall be full warrant to the Trustee for any action taken or suffered by it under the provisions of this Agreement upon the faith thereof.

(r) The Trustee shall not be bound to make any investigation into the facts or matters stated in any resolution, certificate, statement, instrument, opinion, report, notice, request, direction, consent, order, note, or other paper or document but the Trustee, in its discretion, may make such further inquiry or investigation into such facts or matters as it may see fit.

Section 10.02 Monthly Statements of Funds on Deposit.

(a) If such statements are not already filed on a monthly basis, it shall be the duty of the Trustee, to file with the Authority, the Consulting Engineer and any other Consultants identified by the Authority, a statement setting forth in respect of the preceding calendar month:

(i) the amount withdrawn or transferred by it and the amount deposited with it on account of each fund and account held by it under the provisions of this Agreement; and

(ii) the Authority's Outstanding Indebtedness by category.

(b) If on or before any Deposit Date, the amount transferred from the Authority Revenue Fund is insufficient to make the total required deposit to the Commonwealth Payments Fund for such month, the Trustee will notify the Authority, the Consulting Engineer, any other Consultants identified by the Authority, and the Puerto Rico Fiscal Agency and Financial Advisory Authority of such insufficiency.

(c) The Trustee shall notify the Authority, the Consulting Engineer, and any other Consultants identified by the Authority, and the Puerto Rico Fiscal Agency and Financial Advisory Authority of the amount transferred from the Operating Reserve Fund to the Senior Bond Fund, the Senior Subordinate Bond Fund and the Subordinate Bond Fund to fund deficiencies therein.

(d) If any amount is required to be transferred from the Senior Debt Service Reserve Fund, Senior Subordinate Debt Service Reserve Fund or Subordinate Reserve Fund, pursuant to Article V herein, the Trustee shall notify the Authority, the Consulting Engineer, any other Consultants identified by the Authority of such transfers.

(e) All records and files pertaining to the trusts hereunder in the custody of the Trustee shall be open at all reasonable times to the inspection of the Authority and its agents and representatives.

Section 10.03 Trustee May be Bondholder.

The bank, national banking association or trust company acting as Trustee under this Agreement, and its directors, officers, employees or agents, may in good faith buy, sell, own, hold and deal in any of the Bonds, and may join in the capacity of a Bondholder in any action which any Bondholder may be entitled to take with like effect as if such bank, national banking association or trust company were not the Trustee under this Agreement, may engage, as principal or agent, or be interested in any financial or other transaction with the Authority and may maintain any and all other general banking and business relations with the Authority, all with like effect and in the same manner as if the Trustee were not a party to this Agreement, and may act as depository, trustee or agent for any committee or body of Holders of the Bonds issued under and secured by this Agreement or other obligations of the Authority with like effect and in the same manner as if the Trustee were not a party to this Agreement; and no implied covenant shall be read into this Agreement against the Trustee in respect of such matters.

Section 10.04 Trustee not Responsible for Recitals.

The recitals, statements and representations contained herein and in the Bonds (excluding the Trustee's certificate of authentication on the Bonds) shall be taken and construed as made by and on the part of the Authority and not by the Trustee, and the Trustee shall not be under any responsibility for the correctness of the same. The Trustee makes no representations as to the validity or sufficiency of this Agreement or of the Bonds. The Trustee shall not be accountable for the use or application, other than those required to be made by the Trustee as herein provided, of any of the proceeds of the Bonds.

Section 10.05 Trustee not Responsible for Recording.

The Trustee shall not be under any obligation to see to the recording or filing of this Agreement or any other agreement or instrument or otherwise to the giving to any person of notice of the provisions hereof or thereof.

Section 10.06 Appointment of Co-Trustee.

(a) Notwithstanding any other provisions of this Agreement, at any time, for the purpose of meeting any legal requirement of any jurisdiction with respect to this Agreement, including any jurisdiction in which any part of the assets pledged hereunder may at the time be located, the Trustee shall have the power and may execute and deliver all instruments necessary to appoint one or more persons or entities to act as a co-trustee or co-trustees, or separate trustee or separate trustees with respect to this Agreement, including with respect to all or any part of

such assets, and to vest in such person or entity, in such capacity and for the benefit of the Bondholders, such title to the collateral, or any part hereof, and subject to the other provisions of this Section, such powers, duties, obligations, rights and trusts as the Trustee may consider necessary or desirable. No co-trustee or separate trustee hereunder shall be required to meet the terms of eligibility as a successor trustee under Section 10.14 and no notice to Bondholders of the appointment of any co-trustee or separate trustee shall be required.

(b) Every separate trustee and co-trustee shall, to the extent permitted by law, be appointed and act subject to the following provisions and conditions:

(i) all rights, powers, duties and obligations conferred or imposed upon the Trustee shall be conferred or imposed upon and exercised or performed by the Trustee and such separate trustee or co-trustee jointly (it being understood that such separate trustee or co-trustee is not authorized to act separately without the Trustee joining in such act), except to the extent that under any law of any jurisdiction in which any particular act or acts are to be performed the Trustee shall be incompetent or unqualified to perform such act or acts, in which event such rights, powers, duties and obligations (including the holding of title to the assets pledged hereunder or any portion thereof in any such jurisdiction) shall be exercised and performed singly by such separate trustee or co-trustee, but solely at the direction of the Trustee;

(ii) no trustee hereunder shall be personally liable by reason of any act or omission of any other trustee hereunder; and

(iii) the Trustee may at any time accept the resignation of or remove any separate trustee or co-trustee.

(c) Any notice, request or other writing given to the Trustee shall be deemed to have been given to each of the then separate trustees and co-trustees, as effectively as if given to each of them. Every instrument appointing any separate trustee or co-trustee shall refer to this Agreement and the conditions of this Article X. Each separate trustee and co-trustee, upon its acceptance of the trusts conferred, shall be vested with the estates or property specified in its instrument of appointment, either jointly with the Trustee or separately, as may be provided therein, subject to all the provisions of this Agreement, specifically including every provision of this Agreement relating to the conduct of, affecting the liability of, or affording protection or rights (including the rights to compensation, reimbursement and indemnification hereunder) to, the Trustee. Every such instrument shall be filed with the Trustee.

(d) Any separate trustee or co-trustee may at any time constitute the Trustee its agent or attorney-in-fact with full power and authority, to the extent not prohibited by law, to do any lawful act under or in respect of this Agreement on its behalf and in its name.

Section 10.07 Fees, Charges and Expenses of Trustee.

The Trustee shall be entitled to payment of and reimbursement for reasonable fees for its services and all expenses reasonably incurred by it hereunder, including the reasonable fees and disbursements of its counsel.

Section 10.08 Notice Required of Trustee.

If the Authority shall fail to transfer amounts to the Authority Revenue Fund as provided in Article V, the Trustee shall give notice thereof by telephone or telegram to the Authority on the next succeeding Business Day and shall confirm such notice in writing by first class registered or certified mail. In the event of (a) the continuance for thirty (30) days of any such failure to make payment, or (b) notification to the Trustee by the holders of 25% in aggregate principal amount of the Senior Bonds (or if no Senior Bonds are then Outstanding, Senior Subordinate Bonds) then Outstanding of any default hereunder, then the Trustee shall give notice thereof to the Bondholders.

Section 10.09 Intervention by Trustee.

In any judicial proceeding to which the Authority is a party and which in the opinion of the Trustee has a substantial bearing on the interests of the Bondholders, the Trustee may intervene on behalf of the Bondholders and, subject to Section 10.01(l), shall do so if requested by the holders of 25% in aggregate principal amount of Senior Bonds (or if no Senior Bonds are then Outstanding, Senior Subordinate Bonds) then Outstanding.

Section 10.10 Merger or Consolidation of Trustee.

Any corporation or association into which the Trustee may be converted or merged, or with which it may be consolidated, or to which it may sell or transfer its corporate trust business and assets as a whole or substantially as a whole, or any corporation or association resulting from any such conversion, sale, merger, consolidation or transfer to which it is a party shall be and become successor Trustee hereunder and vested with all the trusts, powers, discretion, immunities, privileges and all other matters as was its predecessor, without the execution or filing of any instrument or any further act, deed or conveyance on the part of any of the parties hereto, **provided, however**, that so long as no Event of Default has occurred and is continuing, the Authority shall have the right to appoint a successor Trustee other than corporation or association that results from such conversion, safe, merger,-consolidation or transfer.

Section 10.11 Resignation by Trustee.

The Trustee may at any time resign from the trusts hereby created by giving thirty (30) days' notice to the Authority, provided that such resignation shall not take effect until the appointment of a successor or temporary Trustee by the Bondholders, the Authority or a court of competent jurisdiction.

Section 10.12 Removal of Trustee.

The Trustee may be removed at any time (a) by an instrument or concurrent instruments in writing delivered to the Trustee and the Authority, and signed by the owners of a majority in aggregate principal amount of Senior Bonds (or if no Senior Bonds are then Outstanding, Senior Subordinate Bonds) then Outstanding, or (b) by the Authority by notice in writing given by an Authorized Representative of the Authority to the Trustee thirty (30) days before the removal date; **provided, however**, that the Authority shall have no right to remove the Trustee during any time when an Event of Default has occurred or is continuing or when an event has occurred and

is continuing or condition exists that with the giving of notice or the passage of time, or both, would be an Event of Default. The removed Trustee shall return to the Authority the amount of the Trustee's annual fee allocable to the portion of the current year remaining after the removal date. Notwithstanding the foregoing, nothing contained in this Agreement shall relieve the Authority of its obligation to pay the Trustee's fees and expenses incurred to the date of such removal. Such removal shall take effect upon the appointment of a successor Trustee or the earlier appointment of a temporary Trustee by the Bondholders, the Authority or a court of competent jurisdiction.

Section 10.13 Appointment of Successor Trustee by Bondholders; Temporary Trustee.

In case the Trustee hereunder shall resign, be removed, be dissolved, be in course of dissolution or liquidation or otherwise become incapable of acting hereunder, or in case it shall be taken under the control of any public officer or officers or of a receiver appointed by a court, a successor may be appointed by the owners of a majority in aggregate principal amount of Senior Bonds (or if no Senior Bonds are then Outstanding, Senior Subordinate) then Outstanding, by an instrument or concurrent instruments in writing signed by such owners; **provided, however**, that in case of such vacancy the Authority, by an instrument signed by its Executive President and attested by the Secretary of the Authority under its seal, may appoint a temporary Trustee to fill such vacancy until a successor Trustee shall be appointed by the bondholders in the manner provided above; and any such temporary Trustee so appointed by the Authority shall immediately and without further act be superseded by the Trustee so appointed by such bondholders. Every such Trustee appointed pursuant to this Section shall be, if there be such an institution willing, qualified and able to accept the trust upon reasonable or customary terms, a bank or trust company having a combined capital, surplus and undivided profits of not less than \$50,000,000 (or whose obligations hereunder are guaranteed by a bank or trust company duly authorized to exercise corporate trust powers and subject to examination by federal or state authority, of good standing, and having at the time of the appointment of such Trustee, a combined capital and surplus of at least such amount).

Section 10.14 Concerning any Successor Trustee.

Every successor Trustee appointed hereunder shall execute, acknowledge and deliver to its predecessor and also to the Authority an instrument in writing accepting such appointment hereunder, and thereupon such successor, without any further act or deed of conveyance, shall become fully vested with all the properties, rights, powers, trusts, duties and obligations of its predecessor; but such predecessor shall, nevertheless, on the request of the Authority, execute and deliver an instrument transferring to such successor Trustee all the properties, rights, powers and trusts of such predecessor hereunder; and every predecessor Trustee shall deliver all securities and moneys held by it as Trustee hereunder to its successor. Should any instrument in writing from the Authority be required by any successor Trustee for more fully and certainly vesting in such successor the properties, rights, powers and duties hereby vested or intended to be vested in the predecessor, any and all such instruments in writing shall, on request, be executed, acknowledged and delivered by the Authority.

Section 10.15 Trustee Protected in Relying on Agreements, Etc.

The resolutions, opinions, certificates and other instruments provided for in this Agreement may be accepted by the Trustee as conclusive evidence of the facts and conclusions stated therein and shall be full warrant, protection and authority to the Trustee for the release of property and the withdrawal of cash hereunder or the taking of any other action by the Trustee as provided hereunder.

Section 10.16 Successor Trustee as Paying Agent, Registrar and Custodian of Funds.

In the event of a change in the office of Trustee, the predecessor Trustee which has resigned or been removed shall cease to be paying agent and registrar for the Bonds and custodian of the funds created hereunder, and the successor Trustee shall become such paying agent, registrar and custodian.

Section 10.17 Limitation of Liability.

The Trustee is entering into this Agreement solely in its capacity as trustee and not in its individual capacity (except as expressly stated herein), and in no case shall the Trustee (or any person acting as successor trustee under this Agreement) be personally liable for or on account of any of the statements, representations, warranties, covenants or obligations stated to be those of any other person or entity hereunder, all such liability, if any, being expressly waived by the parties hereto and any person claiming by, through or under such party; **provided, however**, that the Trustee (or any such successor trustee) shall be personally liable hereunder for its own gross negligence or willful misconduct. The provisions of this Section shall survive the termination of this Agreement.

ARTICLE XI

DISCHARGE OF AGREEMENT

Section 11.01 Discharge of Agreement.

If (a) (1) all Bonds issued hereunder shall have become due and payable in accordance with their terms or otherwise as provided in this Agreement or have been duly called for redemption or irrevocable instructions to call the Bonds issued hereunder for redemption have been given by the Authority to the Trustee, and (2) the Trustee holds for such purpose cash or Defeasance Obligations, the principal of and the interest on which, as verified by a licensed independent certified public accountant or other independent consulting firm (that carries errors and omissions insurance) reasonably acceptable to the Trustee and the Authority, at maturity will be sufficient (without reinvestment) (A) to redeem all Bonds issued hereunder that have been called for redemption, or for which such irrevocable instructions have been given, on the date set for such redemption, (B) to pay at maturity all Bonds issued hereunder not irrevocably called for redemption, (C) to pay interest accruing on all Bonds issued hereunder prior to their redemption or payment at maturity, (D) to make all payments required by the terms of any Supplemental Agreement, and (E) to pay the Trustee's fees and expenses and any other fees and expenses for which the Authority is responsible under this Agreement, including the costs and expenses of

canceling and discharging this Agreement, and (b) the Trustee shall have received notification from the Holders of all other Indebtedness that such Indebtedness has been paid, or payment has been provided for such Indebtedness, in accordance with the documents related thereto, then the Trustee shall, at the expense of the Authority, cancel and discharge this Agreement and execute and deliver to the Authority such instruments in writing as shall be necessary to cancel the lien hereof, and assign and deliver to the Authority any property at the time subject to this Agreement that may then be in its possession, except moneys or securities in which such moneys are invested which are held by the Trustee for the payment of principal, or premium, if any, or interest on the Bonds issued hereunder;

Any Outstanding Bond, or portion thereof in any denomination authorized by this Agreement, shall be deemed to have been paid within the meaning and with the effect expressed in this Section 11.01 when the whole amount of the principal of and interest on such Bond or such portion shall have been paid or duly provided for and the conditions set forth in clause (c) below have been satisfied or when (a) in the event such Bond or such portion shall have been duly called for redemption or irrevocable instructions to call such Bond or such portion for redemption shall have been given to the Trustee by the Authority, (b) whether or not such Bond or portion thereof has been so called for redemption, there shall have been deposited with the Trustee either moneys in an amount which shall be sufficient, or Defeasance Obligations, which shall not contain provisions permitting the redemption thereof at the option of the issuer, the principal of and the interest on which when due, and without any reinvestment thereof, will provide moneys which, together with the moneys, if any, deposited with or held by the Trustee available therefor, shall be sufficient, to pay when due the principal of and premium, if any, and interest due and to become due on such Bond or such portion on or prior to the maturity or redemption date thereof, and (c) in the event such Bond or such portion does not mature and is not to be redeemed within the next succeeding 60 days, the Authority shall have given the Trustee irrevocable instructions to give, as soon as practicable, a notice to the Holder of such Bond or such portion by first-class mail, postage prepaid, stating that the deposit of moneys or Defeasance Obligations required by clause (b) of this paragraph has been made with the Trustee and that such Bond or such portion is deemed to have been paid in accordance with this Section and stating the maturity or redemption date upon which moneys are to be available for the payment of the principal of and premium, if any, and interest on such Bond or such portion.

The moneys and Defeasance Obligations deposited with the Trustee pursuant to this Section and all payments of principal of or interest on any such Obligations shall not be withdrawn or used for any purpose other than, and shall be held in trust for, the payment of the principal of and premium, if any, and interest on said Bonds, or portions thereof, deemed to have been paid in accordance with this Section. If Bonds, or portions thereof, are deemed to have been paid in accordance with the provisions of this Article by reason of the deposit with the Trustee of moneys or Defeasance Obligations and the Trustee has received an opinion of counsel satisfactory to it as to such deemed payment, no amendment to the provisions of this Section which would adversely affect the Holders of such Bonds, or portions thereof, shall be made without the consent of each Holder affected thereby.

For purposes of determining whether any Outstanding Variable Rate Indebtedness is deemed paid and discharged pursuant to this Article XI, such Variable Rate Indebtedness shall

be deemed to bear interest at the maximum rate of interest such Variable Rate Indebtedness may bear pursuant to the applicable Supplemental Agreement.

ARTICLE XII

SUBORDINATION

Section 12.01 Subordination

(a) Senior Subordinate Indebtedness, Subordinate Indebtedness and Commonwealth Guaranteed Indebtedness (collectively, the “Subordinated Obligations”) shall to the extent provided in this Article be subordinate and subject in right of payment to the prior payment in full of the Senior Indebtedness, and the Holder of any Subordinated Obligation, whether upon original issue or upon transfer or assignment thereof, accepts and agrees to be bound by such provision. The Indebtedness evidenced by Subordinate Indebtedness shall to the extent provided in this Article be subordinate and subject in right of payment to the prior payment in full first of Senior Indebtedness and then of the Senior Subordinate Indebtedness, and the Holder of any Subordinate Indebtedness, whether upon original issue or upon transfer or assignment thereof, accepts and agrees to be bound by such provision.

(b) Upon any payment or distribution of assets of the Authority upon any dissolution or winding up or total or partial liquidation of the Authority whether in bankruptcy, insolvency or receivership proceedings, or otherwise,

(1) all Senior Indebtedness shall first be paid or duly provided for to the extent of such payment or distribution before any payment is made upon the indebtedness evidenced by the Subordinated Obligations;

(2) any payment or distribution of assets of the Authority of any kind or character, whether in cash, property or securities, to which the Holders of the Subordinated Obligations or the Trustee would be entitled except for the provisions of this Article XII, including any such payment or distribution which may be payable or deliverable by reason of the payment of any other indebtedness of the Authority being subordinated to the payment of the Subordinated Obligations, shall be paid by the liquidating trustee or agent or other person making such payment or distribution, whether a trustee in bankruptcy, a receiver or liquidating trustee or otherwise, directly to the Holders of Senior Indebtedness, to the extent necessary to pay or provide for the payment of all Senior Indebtedness in full before any payment is made upon the indebtedness evidenced by the Subordinated Obligations; and

(3) in the event that, notwithstanding the foregoing, upon any such dissolution or winding up or liquidation any payment or distribution of assets of the Authority of any kind or character, whether in cash, property or securities, including any such payment or distribution which may be payable or deliverable by reason of the payment of any other indebtedness of the Authority being subordinated to the payment of the Subordinated Obligations, shall be received by the Trustee or by the Holders of the Subordinated Obligations before all Senior Indebtedness are paid or duly provided for in full, such payment or distribution shall be paid over to the Holders of such Senior Indebtedness for application to the payment

thereof until such Senior Indebtedness shall have been paid or provision for such payment shall have been made in full.

Upon any payment or distribution of assets of the Authority referred to in this Section 12.01, the Trustee and the Holders of the Subordinated Obligations shall be entitled to rely upon a certificate of the liquidating trustee or agent or other person making any payment or distribution to the Trustee or the Holders of the Subordinated Obligations for the purpose of ascertaining the persons entitled to participate in such payment or distribution, the Holders of Senior Indebtedness and other indebtedness of the Authority, the amount thereof or payable thereon, the amount or amounts paid or distributed thereon and all other facts pertinent thereto, or to this Article.

(c) (1) In the event that any Subordinated Obligation is declared due and payable before its expressed maturity because of the occurrence of an event of default (under circumstances when the provisions of subsection (b) above shall not be applicable), the owners of all Senior Indebtedness outstanding at the time such Subordinated Obligation becomes due and payable because of the occurrence of such an Event of Default shall be entitled to receive payment in full of all principal of and interest on all such Indebtedness then due and payable before the Holder of such Subordinated Obligation is entitled to receive any accelerated payment from the Revenues and other moneys pledged to Senior Indebtedness under this Agreement of principal (and premium, if any) or interest upon such Subordinated Obligation; **provided, however,** that any Revenues received from the Commonwealth of Puerto Rico on account of Commonwealth Guaranteed Indebtedness are not subject to the lien hereof and shall only be used for the purposes set forth in Section 5.12 hereof.

(2) If any Event of Default specified in Section 8.01 hereof with respect to the Senior Indebtedness shall have occurred and be continuing (under circumstances when the provisions of subsection (b) above shall not be applicable), the owners of all Senior Indebtedness then Outstanding shall be entitled to receive payment in full of all principal of and interest on all such Indebtedness as the same become due and payable before the Holders of the Subordinated Obligations are entitled to receive, subject to the provisions of (3) below, any payment from the Revenues or other moneys pledged to Senior Indebtedness under this Agreement of principal (and premium, if any) or interest upon the Subordinated Obligations; **provided, however,** that any Revenues received from the Commonwealth of Puerto Rico on account of Commonwealth Guaranteed Indebtedness are not subject to the lien hereof and shall only be used for the purposes set forth in Section 5.12 hereof.

(3) The Subordinated Obligations may provide that the provisions of subsection (b) and (c) are solely for the purpose of defining the relative rights of the owners of Senior Indebtedness on the one hand, and the Holders of Subordinated Obligations on the other hand, and that nothing therein shall impair, as between the Authority and the Holders of the Subordinated Obligations, the obligation of the Authority, which is unconditional and absolute, to pay to the Holders thereof the principal thereof and premium, if any, and interest thereon in accordance with their terms, nor shall anything therein prevent the Holders of the Subordinated Obligations from exercising all remedies otherwise permitted by applicable law or thereunder upon default thereunder, subject to the rights under subsections (b) and (c) of the owners of Senior Indebtedness to receive cash, property or securities from the funds pledged to Senior

Indebtedness under this Agreement otherwise payable or deliverable to the Holders of the Subordinated Obligations; and the Subordinated Obligations may provide that, insofar as a trustee or paying agent for such Subordinated Obligations is concerned, the foregoing provisions shall not prevent the application by such trustee or paying agent of any moneys deposited with such trustee or paying agent for the purpose of the payment of or on account of the principal (and premium, if any) and interest on such Subordinated Obligations if such trustee or paying agent did not have knowledge at the time of such application that such payment was prohibited by the foregoing provisions.

(d) No owner of Senior Indebtedness shall be prejudiced in this right to enforce subordination of the Subordinated Obligations by any act or failure to act on the part of the Authority.

(e) Any issue of Subordinated Obligations may have such rank or priority with respect to any other issue of Subordinated Obligations as may be provided herein, in the applicable Supplemental Agreement or in the resolution, trust Agreement or other instrument securing such issue of Subordinated Obligations and may contain such other provisions as are not in conflict with the provisions of this Agreement.

Section 12.02 Liability of Trustee and Qualified Depository in respect of Subordination.

Neither the Trustee nor any Qualified Depository shall be deemed to owe any fiduciary duty to the Holders of Subordinated Obligations and shall not be liable to such Holders if it shall mistakenly pay over or transfer to owners of Senior Indebtedness, the Authority or any other person, moneys to which any Holders of Subordinated Obligations shall be entitled by virtue of this Section 12.02 or otherwise; **provided, however**, that neither the Trustee nor any Qualified Depository shall be relieved from liability for its own negligent action, its own negligent failure to act, or its own willful misconduct. Notwithstanding any of the provisions of this Section 12.02 or any other provision of this Agreement, neither the Trustee nor any such Qualified Depository shall at any time be charged with knowledge of the existence of any facts that would prohibit the making of any payment of moneys to or by the Trustee or any such Qualified Depository in respect of Subordinated Obligations or of any default in the payment of the principal of or premium, if any, or interest on any Subordinated Obligations, unless and until the Trustee or such Qualified Depository shall have received written notice thereof from the Authority or the Holders of a majority in principal amount of any class or category of any Subordinated Obligations or from any trustee or other fiduciary therefor and any financial institution that provides credit or security for any Subordinated Obligations.

Section 12.03 When Payment of Subordinated Obligations Allowed.

Nothing contained in this Agreement or in any Senior Indebtedness or Subordinated Obligations shall (a) affect the obligation of the Authority to make, or prevent the Authority from making, at any time, except as provided in Section 12.01, payments of principal of or premium, if any, or interest on Senior Indebtedness or the Subordinated Obligations, or (b) prevent the application by the Trustee of any moneys deposited with it hereunder for such purpose to the payment of or on account of the principal of or premium, if any, or interest on Senior

Indebtedness or the Subordinated Obligations, if, at the time of such payment or deposit, the Trustee did not have written notice or actual knowledge of any event prohibiting the making of such deposit by the Authority.

Section 12.04 Subrogation of Holders of Subordinated Obligations.

Subject to the payment in full of all Senior Indebtedness as provided in Section 12.01, the Holders of the Subordinated Obligations shall be subrogated to the rights of the Holders of Senior Indebtedness to receive payments or distributions of assets of the Authority made on Senior Indebtedness until the Subordinated Obligations shall be paid in full, and no payments or distributions to the Holders of Senior Indebtedness by the Authority or by the Holders of the Subordinated Obligations shall, as between the Authority and the Holders of the Subordinated Obligations, be deemed to be a payment by the Authority to or on account of the Subordinated Obligations, it being understood that the provisions of this Article are and are intended solely for the purpose of defining the relative rights of the Holders of the Subordinated Obligations and of Senior Indebtedness and nothing in this Article shall or is intended to, as between the Authority and the Holders of the Subordinated Obligations, impair the obligation of the Authority, which is unconditional and absolute, to pay from the sources herein provided to the Holders of the Subordinated Obligations the principal of and premium, if any, and interest on the Subordinated Obligations in accordance with their terms, nor shall anything in this Article XII prevent the Trustee or the Holder of any Subordinated Obligation from exercising all remedies otherwise permitted by applicable law upon default hereunder, subject to the rights, if any, under this Article XII of the Holders of Senior Indebtedness in respect of cash, property or securities of the Authority received upon the exercise of any such remedy.

Section 12.05 Treatment of Enhancement Facilities.

Any payment made under an Enhancement Facility, to the Holders of the Subordinated Obligations having the benefit of such Enhancement Facility, by the appropriate obligor thereof shall be retained by such Holders for their own account, and no Holder of Senior Indebtedness is to have any right with respect to any such payment so made.

As between the obligor whose Enhancement Facility secures any Subordinated Obligation and the Holder of such Subordinated Obligations, any payment made on such Subordinated Obligation by the Authority which, under the subordination provisions of this Article, is required to be paid over to the Holders of the Senior Indebtedness, shall not constitute a payment on such Subordinated Obligation but, instead, shall be treated for all purposes of such Enhancement Facility, as though such payment had not been made by the Authority. Until the Holder of the Subordinated Obligation so guaranteed has received from the Authority, or from such obligor, moneys which such Holder is entitled to retain for its own account, equal in the aggregate to the principal amount of his Subordinated Obligation and any accrued and unpaid interest thereon, such obligor shall remain liable on its Enhancement Facility, and, unless otherwise provided in such Enhancement Facility, shall not be subrogated to any of the rights of the Holder of such Subordinated Obligation.

Section 12.06 Amendments to Senior Indebtedness not Requiring Consent of Holders of Subordinated Obligations.

Unless otherwise provided therefor in the Senior Indebtedness, the Holders of the Senior Indebtedness may extend, renew, modify or amend the terms of Senior Indebtedness or any security therefor and release, sell or exchange such security and otherwise deal freely with the Authority, all without notice to or consent of the Holders of the Subordinated Obligations and without affecting the liabilities and obligations of the Authority or the Holders of the Subordinated Obligations.

ARTICLE XIII

MISCELLANEOUS

Section 13.01 Consents, Etc., of Bondholders.

(a) Any consent, request, direction, approval, objection or other instrument (collectively, a "Consent") required by this Agreement to be executed by the Bondholders may be in any number of concurrent writings of similar tenor and may be executed by such Bondholders in person or by agent appointed in writing. Proof of the execution of a Consent or of the writing appointing any such agent shall be sufficient for any of the purposes of this Agreement and shall be conclusive in favor of the Authority with regard to any action taken under the Consent if the fact and date of the execution by any person of any such writing is proved by a certificate of any officer in any jurisdiction who by law has power to take acknowledgments within such jurisdiction that the person signing such writing acknowledged before him the execution thereof, or by affidavit of any witness to such execution.

(b) Nothing contained in this Section shall be construed as limiting the Trustee to such proof, it being intended that the Trustee may accept any other evidence of the matters herein stated which may be sufficient.

(c) If the Authority shall solicit from the Holders any request, direction, consent or other instrument in writing required or permitted by this Agreement to be signed or executed by Bondholders, the Authority may, at its option, fix in advance a record date for the determination of Holders entitled to give such request, direction, consent or other instrument, but the Authority shall have no obligation to do so. If such a record date is fixed, such request, direction, consent or other instrument may be given before or after such record date, but only the Holders of record at the close of business on such record date shall be deemed to be Holders for the purposes of determining whether Holders of the requisite proportion of Bonds have authorized or agreed or consented to such request, direction, consent or other instrument, and for that purpose the Bonds shall be computed as of such record date; provided that no such consent by the Holders on such record date shall be deemed effective unless it shall become effective pursuant to the provisions of this Agreement no later than twelve (12) months after the record date.

(d) Any request or consent of the Holder of any Bond shall bind every future Holder of the same Bond or any Bond issued in place thereof in respect of anything done by the Trustee in pursuance of such request or consent.

Section 13.02 Limitation of Rights.

With the exception of rights herein expressly conferred, nothing expressed or mentioned in or to be implied from this Agreement or the Bonds is intended or shall be construed to give to any person other than the parties hereto and the holders of the Bonds any legal or equitable right, remedy or claim under or in respect to this Agreement or any covenants, conditions and agreements herein contained since this Agreement and all of the covenants, conditions and agreements hereof are intended to be and is for the sole and exclusive benefit of the parties hereto and the Holders of the Bonds as herein provided.

Section 13.03 Limitation of Liability of Board of Directors of the Authority, Etc.

No covenant, agreement or obligation contained herein shall be deemed to be a covenant, agreement or obligation of any present or future member of the Board of Directors of the Authority or officer, employee or agent of the Authority in his or her individual capacity, and neither the members of the Board of Directors of the Authority nor any officer of the Authority executing the Bonds shall be liable personally on the Bonds or be subject to any personal liability or accountability by reason of the issuance thereof. No member of the Board of Directors of the Authority or officer, employee, agent or advisor of the Authority shall incur any personal liability with respect to any other action taken by him pursuant to this Agreement, provided such member, officer, employee, agent or advisor acts in good faith. All covenants, stipulations, obligations and agreements of the Authority contained in this Agreement shall be deemed to be covenants, stipulations, obligations and agreements of the Authority to the full extent permitted by the Constitution and laws of the Commonwealth of Puerto Rico.

Section 13.04 Severability.

If any provision of this Agreement shall be held invalid by any court of competent jurisdiction, such holding shall not invalidate any other provision hereof, and this Agreement shall be construed and enforced as if such illegal provision had not been contained herein. In case any covenant, stipulation, obligation, stipulation, obligation or agreement contained in the Bonds or in this Agreement shall for any reason be held to be in violation of law, then such covenant, stipulation, obligation or agreement of the Authority to the full extent permitted by law.

Section 13.05 Notices.

Unless otherwise provided herein, all demands, notices, approvals, consents, requests, opinions and other communications hereunder shall be in writing and shall be deemed to have been given when delivered in person or mailed by first class registered or certified mail, postage prepaid, addressed (a) if to the Authority, at 604 Barbosa Avenue, Barrio Obrero, San Juan, Puerto Rico 00916 (Attention: Executive President) or (b) if to the Trustee, at 153 Ponce de Leon Avenue, Suite 800, San Juan, Puerto Rico 00918 (Attention: Corporate Trust Department). The Authority and the Trustee may, by notice given hereunder, designate any further or different

addresses to which subsequent demands, notices, approvals, consents, requests, opinions or other communications shall be sent or persons to whose attention the same shall be directed.

Section 13.06 Substitute Mailing.

In case, by reason of the suspension of regular mail service as a result of a strike, work stoppage or similar activity, it shall be impractical to mail notice of any event to Bondholders when such notice is required to be given pursuant to any provision of this Agreement, any manner of giving notice as shall be satisfactory to the Trustee and the Authority shall be deemed to be a sufficient giving of such notice.

Section 13.07 Successors and Assigns.

This Agreement shall be binding upon, inure to the benefit of and be enforceable by the parties and their respective successors and assigns.

Section 13.08 Payments Due on Saturdays, Sundays and Holidays.

In any case where the maturity or redemption date or date on which the payment of interest on or principal of the Bonds is due shall be a Saturday, Sunday or other day on which banking institutions in the Commonwealth of Puerto Rico are authorized or required by law to close, then payment of such interest, principal or premium, if any, need not be made on such date but may be made on the next succeeding Business Day with the same force and effect as if made on the date of maturity or the date fixed for redemption, and no interest on such payment shall accrue for the period after such date.

Section 13.09 Headings not Part of Agreement.

Any headings preceding the text of the several articles hereof, and any table of contents appended to copies hereof, shall be solely for convenience of reference and shall not constitute a part of this Agreement, and they shall not affect its meaning, construction or effect.

Section 13.10 Applicable Law.

This Agreement shall be governed by the applicable laws of the Commonwealth of Puerto Rico.

Section 13.11 Counterparts.

This Agreement may be executed in several counterparts, each of which shall be an original and all of which together shall constitute but one and the same instrument.

IN WITNESS WHEREOF, the Authority and the Trustee have caused this Agreement to be executed in their respective corporate names as of the date first above written.

**PUERTO RICO AQUEDUCT AND SEWER
AUTHORITY**

By: _____
Executive President

**BANCO POPULAR DE PUERTO RICO,
as Trustee**

By: _____
Vice President

[Signature Page to the Master Agreement of Trust]

REVENUE REFUNDING BONDS, SERIES 2020A (SENIOR LIEN) AND FEDERALLY TAXABLE REVENUE REFUNDING BONDS, SERIES 2020B (SENIOR LIEN)
PUERTO RICO AQUEDUCT AND SEWER AUTHORITY



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