

**CITY OF BALTIMORE**  
**(MAYOR AND CITY COUNCIL OF BALTIMORE)**  
**ANNUAL DISCLOSURE**  
**UPDATES TO CERTAIN FINANCIAL AND OPERATING DATA**  
February 28, 2018

**PROJECT AND REFUNDING REVENUE BONDS**  
**(WASTEWATER PROJECTS)**

<b>SERIES 1993-A</b>	<b>\$ 34,450,000</b>
<b>SERIES 1994-A</b>	<b>\$ 18,125,000</b>
<b>SERIES 2005-A</b>	<b>\$ 39,295,000</b>
<b>SERIES 2006-C</b>	<b>\$ 50,355,000</b>
<b>SERIES 2007-C</b>	<b>\$ 60,140,000</b>
<b>SERIES 2007-D</b>	<b>\$ 110,310,000</b>
<b>SERIES 2008-A</b>	<b>\$ 56,615,000</b>
<b>SERIES 2009-C</b>	<b>\$ 29,300,000</b>
<b>SERIES 2011-A</b>	<b>\$ 103,865,000</b>
<b>SERIES 2013-C</b>	<b>\$ 123,750,000</b>
<b>SERIES 2013-D</b>	<b>\$ 100,860,000</b>
<b>SERIES 2013-E</b>	<b>\$ 26,405,000</b>
<b>SERIES 2014-C</b>	<b>\$ 87,815,000</b>
<b>SERIES 2014-D</b>	<b>\$ 115,520,000</b>
<b>SERIES 2014-E</b>	<b>\$ 22,850,000</b>
<b>SERIES 2017-A</b>	<b>\$ 102,630,000</b>
<b>SERIES 2017-B</b>	<b>\$ 91,600,000</b>
<b>SERIES 2017-C</b>	<b>\$ 53,015,000</b>

This annual disclosure document sets forth certain information regarding the above Project and Refunding Revenue Bonds issued by the City of Baltimore ("City"). This annual disclosure document is not intended to contain complete information which is material to the issuance of the revenue bonds of the City. Nor does this annual disclosure document constitute an offer to sell or the solicitation of an offer to buy any revenue bonds of the City. Under no circumstances should it be implied that there has been no change in the affairs of the City or in any official statement of the City since the date of this annual disclosure document or since the date of any such official statement respectively. This information herein is subject to change without notice. The City intends to revise this annual disclosure on an annual basis as required under SEC Rule 15c2-12(b)(5) and does not intend to prepare interim supplements for the purpose of updating the information presented herein. The City, however, may present certain supplemental and additional information in the official statements prepared from time to time in connection with future sales of revenue bonds of the City.

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## **SECTION ONE**

### **The Wastewater System**

# **THE WASTEWATER SYSTEM**

## **Wastewater System Service Area**

The Wastewater Utility, through its system of sanitary sewers, interceptors, pumping stations and wastewater treatment facilities, provides for the treatment and disposal of sanitary sewage flow of approximately two-thirds of the population of the Baltimore metropolitan area. The wastewater system presently receives wastewater directly from portions of Anne Arundel and Baltimore Counties, as well as the City. In addition, portions of Anne Arundel and Howard Counties discharge wastewater into the system through Baltimore County, and Baltimore County recovers the costs attributable to the treatment of such wastewater from those Counties. Total annual flows treated by the City have shown no significant growth over the last ten years. The Back River Treatment Plant influent flow averaged 129.0 million gallons per day (“mgd”) for Fiscal Year 2017. The Patapsco Treatment Plant influent flow averaged 61.9 mgd for Fiscal Year 2017. Therefore, the system total influent flow for Fiscal Year 2017 was 190.9 mgd. Based on overall projected increases in service area population, system-wide demand is expected to modestly increase during the next ten years.

## **Collection System**

The Wastewater Utility’s service area contains two (2) major drainage areas, separately served by the Wastewater Utility’s two (2) treatment plants (see “Treatment Plants” below). The City owns and operates the wastewater collection system within its corporate limits, and the Counties own and operate the collection systems within their respective limits.

The Wastewater Utility’s collection system consists of approximately 1,360 miles of sanitary interceptors and main line sewers, some in operation since 1907. As of 2006, the sewage collection system is separate from the storm water system. Various materials have been used to construct the collection system, including ductile iron, cast iron, vitrified clay, reinforced concrete, and plastic pipes. Most of the collection system was installed prior to the requirement that pipe joints be of the compression type designed to limit groundwater infiltration and wastewater exfiltration. The wastewater collection system is in good condition, but, as with any system with approximately 100 years of service, the level of service provided continues to decline; therefore, an intensive schedule of inspection followed by rehabilitation is in progress to ensure continued operation without disruption of service. In addition, portions of the wastewater collection system must be rehabilitated in light of the Consent Decree described in the “Environmental Compliance” section hereof.

## **Pumping Stations**

The majority of the wastewater in the Baltimore collection system flows to the City’s two (2) wastewater treatment plants by gravity; however, approximately 50 mgd are pumped from the various low points in the system, representing approximately 26% of the combined flow to both plants. The Pumping Stations Section of the Wastewater Facilities Division currently consists of nine (9) major pumping stations and numerous smaller facilities, with a total capacity of approximately 304 mgd. Most of the larger facilities have bar screen units to remove some of

the larger solids such as debris and tree limbs before the water flows to one of the treatment plants. A redundant force main was completed for the Dundalk Pumping Station in 2016. A redundant force main for the Quad Avenue Pumping Station is under construction and scheduled to be completed in 2018. The design of the rehabilitation to the Brooklyn Pumping Station is complete and the construction contract will begin in 2018.

## **Systems Control and Data Acquisition Upgrades**

The pumping stations and sewage metering stations have a Systems Control and Data Acquisition (SCADA) system that provides equipment status, alarms, and for the metering stations, sewage flows, to a central location. The upgrade project consisted of hardware and software upgrades and enhancements to provide improved operations and station status data to the City's central monitoring location and cellular technologies to eliminate land lines. Under SC 890, the metering and pump stations were provided with upgraded communications to provide more accurate and timely information. There were no additions or improvements to existing instrumentation and/or controls. The communications are now provided by Verizon Wireless, with a dialup redundancy. The cabinets were upgraded and allow for any future upgrades. In addition, EAPS was upgraded to receive and process the SCADA information from the metering/PS sites. All systems are currently working and passed functional testing periods. SCADA Master Plan meetings are underway with Department of Public Works personnel and Consultant staff evaluating the Water and Wastewater systems' needs.

## **Treatment Plants**

Treatment of wastewater is provided by the Back River Wastewater Treatment Plant (the "Back River Plant") and the Patapsco Wastewater Treatment Plant (the "Patapsco Plant"). The major treatment processes employed by the plants include primary treatment for the removal of material suspended in the wastewater ("suspended solids"); secondary treatment for biological reduction of pollutants which adversely affect the oxygen content in the receiving waters ("biochemical oxygen demand"); tertiary treatment for nutrient removal; disinfection to kill harmful bacteria; and solids handling for management and recycling of solid material ("biosolids"), a by-product of wastewater treatment.

### **Back River Wastewater Treatment Plant**

**Preliminary Treatment.** Preliminary treatment consists of screening through fine screens and grit removal. A project to improve the headworks through improved pumping, treatment, and storage has been designed and was advertised for construction in early 2016. The Headworks contract is scheduled to begin operation by the end of 2020.

**Primary Treatment.** Primary treatment at Back River Plant consists of clarification in a battery of eleven primary settling tanks. Construction to renovate Primary Clarifiers No. 3 through No. 7 were partially completed in March 2014. Clarifiers 5 and 6 will be completed under another contract due to out of scope repairs to the concrete.

**Secondary Treatment.** Secondary treatment at the Back River Plant consists of two (2) parallel, activated sludge facilities with design flows of 75 and 98 mgd, respectively. Activated II was built in 1988 as a conventional activated sludge facility and was renovated and retrofitted for

biological nutrient removal (BNR) in May 1998. Activated III was designed and constructed as a BNR facility and placed in service in August 1997. Activated II and III are both in service and performing as designed. Activated IV is currently under construction by SC-882; ENR Facilities. It includes 6 reactors and 12 clarifiers.

**Advanced Waste Treatment.** In addition to the BNR upgrades noted above, the National Pollutant Discharge Elimination System (NPDES) permit for the Back River Plant requires the removal of phosphorus. To accomplish this, a chemical containing iron (ferric chloride) is added that reacts with phosphorus forming a precipitate that can be removed in clarifiers or in sand filters. Ferric chloride is stored at the chemical storage and pumping facility, which along with the sand filters were placed in service in 1992. Both of these facilities are in service and performing as designed.

**Disinfection.** The disinfection facilities of the Back River Plant consist of chlorine contact tanks, a re-aeration cascade and the outfall structure. Bacterial kill is accomplished through the use of sodium hypochlorite (bleach); dechlorination is by sodium bisulfate addition, while adequate dissolved oxygen is provided through post aeration. Discharge to Back River is via the outfall structure. These facilities were placed in operation in 1989 and have met effluent limitations. A second outfall delivers treated wastewater to the former steel facility located at Sparrows Point, where historically it had been reused for cooling and other industrial purposes. This water is subsequently discharged to the Patapsco River under the steel facility's permit. The last owner of the facility that was making steel entered into bankruptcy and the steel facility is no longer in operation. In September 2014, the Sparrows Point facility was purchased by a new owner and the City negotiated and secured a new License Agreement with them in December 2014. The term of the License Agreement extends through December 31, 2018. The City is exploring several possible solutions to meet its permitted discharge requirements that do not include use of the former steel facility infrastructure, including construction of additional pipelines, and development of a new discharge location.

**Solids Handling and Treatment.** Solids at the Back River Plant resulting from primary, secondary and tertiary treatment are processed by degritting, thickening, anaerobic digestion and dewatering. As part of preliminary treatment, the wastewater passes through grit tanks; however, some grit remains in the primary sludge and this is removed in cyclone degritters. Primary sludge is thickened in six (6) gravity sludge thickeners. Thickening of secondary sludge is accomplished by two (2) dissolved air flotation thickeners and eight (8) gravity belt thickeners.

Stabilization of sludge is provided by anaerobic digesters in which microorganisms, capable of living in the absence of oxygen, produce a combustible gas (methane) as a by-product. This methane is used to generate heat and electricity in a combined heat and power plant located on-site. In December 1992, the digestion system was expanded with the addition of two egg-shaped digesters with a capacity of three million gallons each. These are in addition to the six (6) conventional digesters with capacity of 1.3 million gallons each for a total capacity of 13.8 million gallons. Digestion facilities improvements will be made under SC-8526 include one (1) new Acid Phase Reactor that is designed to increase volatile solids destruction, subsequently reducing the amount of solids to be processed. This will result in reduced cost of solids disposal. In addition, this project included the renovation and expansion of the Gravity Belt Thickening Facility and the renovation of the existing in-ground anaerobic digesters.

Sludge dewatering is accomplished in a centrifuge dewatering facility placed in service in January 2003. In Fiscal Year 2017, 35.0% of the total solids production at the Back River Plant

was processed through the dewatering system. The remainder of the sludge is pumped directly to the heat drying facility.

**Solids Disposal.** Solids disposal at the Back River Plant is accomplished under private contracts utilizing composting and heat drying. The current composting agreement commenced in March 2008 and allows for a guaranteed monthly tonnage of 2,167 wet tons of sludge (approximately 700 dry tons of sludge per month) to be processed at the composting facility. This privatized contract had a second five-year extension approved June 1, 2013. An additional 55 dry tons of sludge per day is processed at the privatized heat drying facility, located at the Back River Plant. This facility commenced commercial operation in January 1995 under a contract that was extended to March 2015. On March 4, 2015, the contract was amended to include an extension for an additional ten (10) years. The amendment also includes provisions to change from a guaranteed monthly tonnage to a guaranteed quarterly tonnage and a schedule of termination fees should the City choose to terminate before the ten (10) year term is complete. Liquid digested sludge is pumped to the heat drying facility where it is dewatered, dried, converted to pellet form and marketed as a fertilizer amendment.

**Additional Requirements.** The Wastewater Utility has aggressively addressed plant odor problems by installing chemical scrubbers at seven major odor generation sites around the plant and implementing new chemicals to further aid in odor reduction. This effort has successfully reduced the number of odor complaints from 1989's high of 392 complaints per year to two complaints during the period January 1, 2013 through June 30, 2014. There were no odor complaints in calendar year 2017. Additional chemical scrubbers have been installed for the control of odors coming from the primary clarifiers.

## **Patapsco Wastewater Treatment Plant**

**Preliminary/Primary Treatment.** Preliminary and primary treatment at the Patapsco Plant consists of grit removal, screening, and clarification. Under Sanitary Contract SC-855 the new chemical storage and feeding facilities, renovations of the Fine Screen Facility, and renovations of the Primary Settling Tanks were completed in Fiscal Year 2014. A Residuals Transfer Station was completed in December 2017. It will provide means to dump and transfer material during high flow events into a contained area for disposal. Also the installation of scum removal scrapers on Secondary Clarifier 5-A, 5-B, 6-A, and 6-B were completed.

**Secondary Treatment.** The Patapsco Plant currently provides secondary treatment utilizing pure oxygen activated sludge process. A new Reactor Control Building and miscellaneous improvements to the mechanical and electrical systems have been completed and have been performing satisfactorily for several years. The original activated sludge system, placed in service in 1980, has a design capacity of 87.5 mgd and includes special covered reactors, clarifiers, a return sludge pumping station and a pure oxygen generation system. This system was modified in 1987 to provide biological phosphorus removal using a patented Anaerobic/Oxic (A/O) process. The Patapsco Plant also uses ferric chloride to assist in meeting the effluent limits for total phosphorus.

The secondary treatment system was expanded to a hydraulic capacity of 105 mgd with the addition of two (2) reactors, four (4) clarifiers, and a sludge pumping station. These facilities were placed in service in 1993 and are sized to handle the additional capacity necessary for projected Baltimore County population growth.

These facilities also include additional ferric chloride storage for chemical phosphorus reduction. In order to increase operational efficiency, construction to improve Return Sludge Pump Stations and to consolidate the chemical feed system was completed in January 2007. Major upgrades to the Process Control Instrumentation for the Liquid Oxygen Plant were completed in March 2012. Contract SC-868 installed above ground oxygen piping and an atmospheric vaporizer at the Liquid Oxygen Plant was completed August 2015.

**Disinfection.** Disinfection at the Patapsco Plant is accomplished by chlorination prior to discharge to the Patapsco River. These chlorination facilities, last expanded in 1991, allow the plant to meet residual chlorine limits. New disinfection facilities utilizing bleach and sodium bisulfite rather than chlorine and sulfur dioxide gas have been designed. The contract has been awarded and construction is scheduled to be completed in June 2017. In the interim, the Plant is using bleach on a full time basis, using the temporary bleach system provided under construction contract SC-852R. This temporary bleach system was installed so the contractor could relocate the existing chlorine lines and utilities to allow piles to be driven in this area as part of the ENR construction under SC-852R. In August 2015, SC 857 Sodium Hypochlorite (Bleach) and Sodium Bisulfite Conversion contract work began to eliminate hazardous liquid chlorine and liquid sulfur dioxide. This project was completed near the end of 2017.

**Solids Handling and Disposal.** Processes for handling sludge at the Patapsco Plant include degritting and gravity thickening. Because of EPA regulations (40 CFR Part 503), the Wastewater Utility decided to treat and dispose of the sludge from the Patapsco Plant via a privatized heat drying and pelletization process which provides environmentally beneficial reuse of the material. All current sludge production is heat dried, pelletized and marketed as a fertilizer amendment. The Number 2 dryer was rehabilitated due to an April 2010 fire and explosion and placed in service in March 2013. SC 886 Sludge Blending Tanks renovation work replaced the mixing system, piping, pumps and related work and was completed in August 2015. In the fourth quarter of 2017, Synagro Technologies was given an 8-year extension to process Patapsco sludge. In 2018, Synagro Water Technologies will renovate the existing Facility with four new centrifuges and rehabilitation of the Dryer Systems.

**Additional Requirements.** At the Patapsco Plant, there are deposits of chrome-contaminated soil, some of which are being stored in a State-approved containment area on-site. If this area is needed for future development, this soil will have to be moved off-site and decontaminated or moved to an approved facility. The design for the upgrade of the Patapsco Plant with state-of-the-art facilities for the removal of nitrogen indicates that the required new facilities can be constructed on the site without impacting this containment area.

### **Patapsco and Back River Wastewater Treatment Plants ENR Upgrades**

The new NPDES permit for the Patapsco Plant was issued on October 1, 2017 with a permitted capacity of 73.0 mgd. (10-DP-0580). The permit contains effluent criteria limits for biological oxygen demand, suspended solids, phosphorus, nitrogen, enterococcus, residual chlorine, dissolved oxygen and pH. In addition, the City is supporting the implementation strategy of the Chesapeake Bay Agreement updated in 2000 to improve the water quality in the Chesapeake Bay. MDE has adopted effluent criteria for wastewater treatment facilities known as Enhanced Nutrient Reduction (“ENR”) limits to address the Chesapeake Bay Agreement goals. In 2006 the City and MDE signed an agreement instituting ENR at the Patapsco Plant limiting nitrogen discharges to 3 milligrams per liter of effluent (mg/l) and phosphorus discharges to 0.3 mg/l. The 2010 Patapsco NPDES permit contains a provision stating that ENR construction must



be completed by June 20, 2014 and the lowered nutrient limits went into effect January 1, 2015. The City submitted the NPDES renewal application to MDE in September 2014 as required by the current permit. In October 2015, the City was notified that the new Patapsco Permit (15-DP-0580) was out for public review. The City received the draft NPDES permit from MDE in October 2016. Comments were sent to MDE in November 2016 and follow-up comments were sent in December 2016. The design flow for the new Patapsco Permit will be 81 mgd.

To meet the agreed nitrogen and phosphorus limits, the City entered into three (3) ENR contracts (SC-852R, SC-855 and SC-845R). Construction commenced December 2009 for site excavation, driving of 1,652 piles, relocation of plant utilities and the construction of 34 De-Nitrification Filters (SC-852R). The installation of 22 Biological Aerated Flooded Filters (BAFF), pumping station and other related work (SC-845R) is also underway. The construction contract for plant-wide modifications to support the ENR process (SC-855) is close to completion. The completion of the entire ENR project has been delayed due to various construction issues, the causes of which are in dispute. As a result of the construction delays and other issues, the City and the contractor are currently in litigation on SC-845R and SC-852R. Because the entire ENR construction was not completed by the June 20, 2014 deadline, the City has entered into a consent decree with MDE. The consent decree includes milestone dates for construction completion and ENR operability as well as a fine for failure to meet the permit date, stipulated penalties for any failures to meet milestones, and stipulated penalties for exceedances of additional effluent limits set in the consent decree. In October 2016, the City notified MDE that construction would be completed in October 2017, with startup to begin 60 days later. The startup was delayed due to contractual issues. A supplemental contractor was brought in to complete the work. In February 2018, ENR equipment testing started with construction being completed no later than June 30, 2018. The City will pay a \$10,000 civil penalty and daily penalties of \$100, as well as weekly penalties of \$250 and/or monthly penalties of \$500 as determined by MDE, should this schedule not be met.

The City submitted a Permit renewal application to MDE for the Back River Plant NPDES permit to treat 180 mgd on April 30, 2015. The new discharge permit (15-DP-0581) was advertised for Public Comments, but the Plant has not received the new permit. The City began operating a Biological Nutrient Reduction (BNR) facility at Back River over 15 years ago in an effort to improve the water quality in the Bay and reduce nitrogen and other pollutants noted above. In 2006 the City and MDE signed an Agreement instituting ENR at the Back River Plant limiting nitrogen discharges to 3 milligrams per liter of effluent (mg/l) and phosphorus discharges to 0.3 mg/l. The first ENR Project SC-877 is in the testing phase and includes the construction of 52 De-Nitrification Filters, a 300 mgd Pumping Station, and other related work. The De-Nitrification Filters went into operation in September 2017. The second ENR project SC-882 has begun construction of a 40 mgd Activated Plant No. 4 and is projected to be completed in November 2017. The ENR upgrades attained operational levels by September 1, 2017 per the Back River NPDES Permit (10-DP-0581). The City owns and operates the two (2) largest wastewater treatment plants in the State of Maryland.

### **Bay Restoration Fund**

The State of Maryland passed legislation in May 2004 establishing a Bay Restoration Fund (the "BR Fund") to finance the upgrade of wastewater treatment plants in the State of Maryland to achieve state-of-the-art ENR. During the 2012 State of Maryland Legislative Session, HB 0446 was passed which doubled the flat rates applied to residential customers effective July 1, 2012. The revised rates are outlined below.

An environmental surcharge has been set at \$5.00 per month per household; a surcharge on businesses is based on the wastewater they generate. The City began billing the fee to property owners for accounts located within Baltimore City in January of 2005. The City remits the fee to the Comptroller of Maryland based on billings with a reduction for bad debt. In a recent review of the City's historical bad debt calculations through June 30, 2014, it was determined that the amount deducted from the State remittance had been overstated by \$13.6 million. In Fiscal 2016 the City paid to the Comptroller of Maryland \$13.6 million for deposit into the Bay Restoration Fund. This reimbursement is not expected to have a material adverse impact on the financial position of the Wastewater Utility or the ability of the City to meet its obligations under the Wastewater Resolution. In the future, the DPW and the Department of Finance will annually review and, if required, revise the bad debt calculation to prevent the accumulation of such balances.

In April 2005, as allowed by State law, the City implemented, with the consent of MDE, a Bay Restoration Fee Financial Hardship Exemption Program for low- and fixed-income residential customers. Customers who meet the eligibility criteria will be exempt from this fee for one calendar year. Exemptions cannot be made retroactively and must be re-established each year.

The BR Fund is administered by MDE. The BR Fund will reimburse up to 100% of eligible costs for planning, design, and construction of upgrades to achieve ENR. It is expected that MDE will prioritize plants to be upgraded based on their ability to achieve the largest nutrient reduction needed for Maryland to meet its commitments under the 2000 Bay Agreement. Since the Back River and Patapsco Plants are regional facilities that treat large volumes of wastewater, they are among the largest point source contributors of nutrients into the Chesapeake Bay. The City has received approval from the State for up to 71.5% grant funding for the Patapsco ENR project. The City has received approval from the State for up to 93.44% grant funding for Back River ENR project SC877 and up to 40.8% grant funding for Back River project 882 (which the State considers as a BNR project, rather than ENR).

### **System Operation and Maintenance**

The Wastewater Utility's current operation and maintenance procedures and staffing levels are sufficient to ensure continuation of wastewater services. The Department will advertise a Request for Proposal for a new upgraded maintenance management system which will support operations within the agency.

The Wastewater Utility's fleet of vehicles is generally in good repair. A vehicle replacement program is maintained on a continual yearly basis. This replacement and maintenance program requires continued attention as the Wastewater Utility contemplates increased vehicle utilization and a replacement schedule based on the physical condition of the vehicles.

Under the newly formed Office of Asset Management, the City is developing a number of preventative maintenance programs for its linear wastewater infrastructure aimed at shifting the City from a predominately reactive mode to a more proactive mode of asset maintenance. Some of these programs include the Lateral Inspection and Renewal Program, the Small Sewer Main Inspection and Rehabilitation Project in Jones Falls, and the Trunk Sewer Main Inspection Program.

**SECTION TWO**  
**Debt Service Requirements**

## EXISTING DEBT SERVICE REQUIREMENTS OF THE WASTEWATER UTILITY <sup>(1)(2)</sup>

The following table sets forth the Utility's debt service requirements for fiscal years 2018 through 2048 assuming the issuance of no additional Indebtedness as of June 30, 2018.

Fiscal Year Ending	Senior Lien Debt Service			Subordinate Lien Debt Service			Combined Total Debt Service		
	Principal	Interest(1)	Total Debt Service	Principal	Interest(1)	Total Debt Service	Principal	Interest(1)	Total Debt Service
7/1/2018	16,825,000	13,704,313	30,529,313	5,070,000	5,719,938	10,789,938	21,895,000	19,424,250	41,319,250
7/1/2019	24,089,883	27,339,702	51,429,585	17,525,405	12,353,494	29,878,900	41,615,289	39,693,196	81,308,484
7/1/2020	24,848,343	26,380,985	51,229,327	18,166,806	12,036,993	30,203,800	43,015,149	38,417,978	81,433,127
7/1/2021	22,576,890	25,409,323	47,986,213	18,528,706	11,671,843	30,200,550	41,105,596	37,081,166	78,186,762
7/1/2022	23,056,637	24,531,441	47,588,078	18,477,304	11,295,339	29,772,644	41,533,942	35,826,781	77,360,722
7/1/2023	24,502,160	23,609,471	48,111,631	18,314,215	10,904,481	29,218,696	42,816,375	34,513,952	77,330,327
7/1/2024	25,398,801	22,597,858	47,996,659	17,711,590	10,499,466	28,211,055	43,110,390	33,097,324	76,207,714
7/1/2025	26,193,115	21,529,793	47,722,909	16,037,259	10,081,347	26,118,605	42,230,374	31,611,140	73,841,514
7/1/2026	26,745,635	20,423,625	47,169,260	15,569,356	9,654,416	25,223,772	42,314,991	30,078,041	72,393,032
7/1/2027	27,884,231	19,283,307	47,167,538	14,017,700	9,208,557	23,226,257	41,901,931	28,491,864	70,393,795
7/1/2028	29,006,283	18,079,125	47,085,408	14,431,035	8,758,722	23,189,757	43,437,318	26,837,847	70,275,165
7/1/2029	30,284,926	16,812,981	47,097,908	14,864,793	8,290,214	23,155,007	45,149,719	25,103,196	70,252,915
7/1/2030	31,765,730	15,484,479	47,250,210	14,982,810	7,802,030	22,784,840	46,748,540	23,286,509	70,035,050
7/1/2031	32,967,144	14,079,365	47,046,509	15,542,425	7,288,665	22,831,090	48,509,569	21,368,030	69,877,599
7/1/2032	33,871,874	12,615,384	46,487,259	16,022,473	6,749,367	22,771,840	49,894,348	19,364,751	69,259,099
7/1/2033	33,179,132	11,107,785	44,286,916	12,447,960	6,188,130	18,636,090	45,627,092	17,295,915	62,923,007
7/1/2034	30,071,027	9,628,563	39,699,589	12,828,889	5,807,701	18,636,590	42,899,915	15,436,264	58,336,179
7/1/2035	26,910,000	8,291,300	35,201,300	13,230,263	5,410,327	18,640,590	40,140,263	13,701,627	53,841,890
7/1/2036	25,720,000	7,046,750	32,766,750	12,514,651	4,995,004	17,509,655	38,234,651	12,041,754	50,276,405
7/1/2037	24,890,000	5,760,750	30,650,750	12,936,737	4,571,168	17,507,905	37,826,737	10,331,918	48,158,655
7/1/2038	19,375,000	4,516,250	23,891,250	9,423,690	4,127,967	13,551,657	28,798,690	8,644,217	37,442,907
7/1/2039	17,030,000	3,547,500	20,577,500	9,850,911	3,699,997	13,550,907	26,880,911	7,247,497	34,128,407
7/1/2040	16,045,000	2,696,000	18,741,000	10,298,183	3,250,974	13,549,157	26,343,183	5,946,974	32,290,157
7/1/2041	16,850,000	1,893,750	18,743,750	10,770,508	2,779,900	13,550,407	27,620,508	4,673,650	32,294,157
7/1/2042	13,325,000	1,051,250	14,376,250	11,267,885	2,285,523	13,553,407	24,592,885	3,336,773	27,929,657
7/1/2043	7,700,000	385,000	8,085,000	11,785,316	1,766,592	13,551,908	19,485,316	2,151,592	21,636,908
7/1/2044				12,332,799	1,222,109	13,554,907	12,332,799	1,222,109	13,554,907
7/1/2045				7,170,336	650,572	7,820,907	7,170,336	650,572	7,820,907
7/1/2046				7,482,927	337,480	7,820,407	7,482,927	337,480	7,820,407
7/1/2047				1,075,572	9,085	1,084,656	1,075,572	9,085	1,084,656
7/1/2048				173,011	1,384	174,395	173,011	1,384	174,395
<b>TOTAL</b>	<b>631,111,811</b>	<b>357,806,048</b>	<b>988,917,859</b>	<b>390,851,513</b>	<b>189,418,788</b>	<b>580,270,301</b>	<b>1,021,963,324</b>	<b>547,224,836</b>	<b>1,569,188,160</b>

(1) With respect to the Revenue Obligations bearing interest at a variable rate for which the City has entered into interest rate swap agreements, the rate of rates of interest paid under such interest rate swap agreements are reflected in this table.

(2) Totals may not add due to rounding.

**SECTION THREE**

**Financial Operations**

## FINANCIAL OPERATIONS OF THE WASTEWATER UTILITY

### Rates

In November 1978, the voters of the City approved the Charter Amendment establishing the Wastewater Utility as a separate enterprise and requiring that the Wastewater Utility be financially self-sustaining and operated without profit or loss to the other funds or programs of the City. In addition, the Charter Amendment requires the City to approve a separate budget for the Wastewater Utility.

As required by the Charter Amendment, in December 1978, the City Council adopted Ordinance 941 establishing, among other things, a mechanism for the determination of rates and charges. Ordinance 941 requires that the Board of Estimates, upon the recommendation of the Director of Finance and the Director of Public Works, establish rates and charges sufficient to make the Wastewater Utility self-supporting at all times and that it adjust the rates if the projected statement of revenues, expenses and changes in equity for the current fiscal year anticipates a loss and the actual results for the immediate prior year resulted in a loss or deficit. In addition, Ordinance 941 requires that the rates so established shall be at a level sufficient to recover any accumulated deficit from prior years.

On August 31, 2016, the Board of Estimates approved a revised rate structure and three-year schedule of rate increases. The new rate structure was developed in concert with the implementation of the City's new Customer Information System (CIS), and is designed to provide adequate funding of the City's operational, capital, and financial needs. The new rate structure includes an account management fee, infrastructure charge, and uniform volumetric rates for all sewer billable units.

Retail wastewater rate increases since 1998 and the approved for the next two years are as follows:

### Retail Wastewater Rate Increases

<u>Date</u>	<u>% Increase</u>	<u>Date</u>	<u>% Increase</u>
Jun-98	8.0%	Jul-10	9.0%
May-00	15.0%	Jul-11	9.0%
Apr-02	10.0%	Jul-12	9.0%
Apr-03	9.0%	Jul-13	15.0%
Apr-04	9.0%	Jul-14	11.0%
Apr-05	9.0%	Jul-15	11.0%
Apr-06	9.0%	Oct-16	9.0%
Apr-07	9.0%	Jul-17	9.0%
May-08	4.0%	Jul-18	9.0%
Jun-09	9.0%		

## **Current Rate Structure**

The revenues of the Wastewater Utility are primarily derived from wastewater service charges, with a minor amount of revenues generated by charges for other services and interest earnings on investments. With the implementation of AMI technology, the City has also implemented a new Customer Information and Billing System that provides greater visibility to customers and enhances the City's ability to provide best-in-class customer service. The new billing system also allows for monthly billing which results in bills that more easily fit into household budgets.

The rate structure includes two fixed and one volumetric components which have been aligned with the cost of providing service to customers. The new rates were developed to be revenue neutral compared to the previous rate structure. The fixed components are: an account management fee, intended to recover the cost of billing and collections, and to be charged as a flat monthly fee per bill; and the infrastructure charge, intended to recover a portion of capital costs for providing wastewater services. The infrastructure charge is based on an account's meter size. The volumetric component of the proposed rate structure is defined by a uniform wastewater rate multiplied by the amount of billable units each monthly billing cycle. One unit equals one hundred cubic feet (Ccf) and is based on the actual water consumed. The volumetric rate is applied beginning with the first unit of consumption.

The existing schedule of retail wastewater rates for customers in Baltimore City is shown in the table below along with the approved rates for FY 2019 and FY 2020.

## Monthly Charges for Metered Wastewater Service

<b>FIXED CHARGE COMPONENTS</b>			
	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>
<i>Effective:</i>	1-Jul-17	1-Jul-18	1-Jul-19
<b>Account Management Fee (per bill)</b>			
<b>Infrastructure Charge</b>	<i>per month</i>	<i>per month</i>	<i>per month</i>
<u>Meter Size</u>			
5/8"	\$7.71	\$8.40	9.08
3/4"	\$13.87	\$15.12	16.33
1"	\$30.83	\$33.60	36.29
1-1/2"	\$53.94	\$58.80	63.51
2"	\$123.30	\$134.40	145.15
3"	\$215.78	\$235.20	254.02
4"	\$493.20	\$537.59	580.6
6"	\$886.23	\$965.99	1043.27
8"	\$1,387.13	\$1,511.98	1632.94
10"	\$1,965.11	\$2,141.97	2313.33
12"	\$3,506.37	\$3,821.94	4127.7
<b>VOLUMETRIC RATE COMPONENTS</b>			
	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>
<i>Effective:</i>	1-Jul-17	1-Jul-18	1-Jul-19
	<i>per CcF</i>	<i>per CcF</i>	<i>per CcF</i>
<b>Volumetric Rate (all units)</b>	6.71	7.32	7.9

Customers with higher than normal concentrations of pollutants in their wastewater are assessed a surcharge designed to recover the costs of treating such higher-strength wastes.

The City is obligated by statute to provide wastewater treatment and disposal services to Baltimore County at cost. The current method of determining the cost to serve Baltimore County is set out in a City-County Sewerage Agreement dated March 6, 1974 (the "City-County Sewerage Agreement"). In general, Baltimore County is required to pay a share of the Wastewater Utility's operation and maintenance expense related to jointly used facilities in proportion to its wastewater usage. A similar agreement with Anne Arundel County is in effect with respect to a portion of that County's wastewater. See "FINANCIAL OPERATIONS OF THE WASTEWATER UTILITY -- City-County Sewerage Agreement."



Below is a table showing wastewater revenues from the various subdivisions served by the Wastewater Utility as projected for fiscal year 2018 budget:

<b>Subdivision</b>	<b>Revenues (\$000's)</b>	<b>% of Total</b>
<b>Baltimore City</b>	\$167,179	71.0%
<b>Baltimore County</b>	67,953	29.0%
<b>Total</b>	<b>\$235,132</b>	<b>100.0%</b>

### Major Users

The Wastewater Utility's individual accounts, which are located in Baltimore City, are subject to Rates and Charges established by the City. The following list of the Wastewater Utility's ten (10) largest users is drawn from the City's records of its customer accounts with one-inch or larger meters (except that all metered accounts of the City government and the Housing Authority of Baltimore City are included regardless of the size of the account) as of June 30, 2016. The users on this list may be responsible for other smaller accounts that are not reflected below.

<b>Customer Name</b>	<b>Total Billable Units (CCF)</b>	<b>Total Billings</b>
<b>Housing Authority of Baltimore City</b>	639,436	\$ 4,398,863.32
<b>Mayor &amp; City Council</b>	167,650	1,141,750.78
<b>University of Baltimore</b>	162,179	991,689.67
<b>Morgan State University</b>	127,080	781,689.82
<b>VCK Realty LLC</b>	96,875	427,018.57
<b>MD Pre-release Admin. Building</b>	69,618	427,011.08
<b>Armistead Homes Corp</b>	69,468	375,823.33
<b>Johns Hopkins Hospital</b>	68,407	418,328.68
<b>MEDSTARCO/OAMERESCO</b>	67,442	414,352.33
<b>Reisterstown Plaza Assoc. LLC</b>	53,407	327,360.70
<b>TOTAL</b>	<b>1,521,562</b>	<b>\$9,703,888.28</b>

With respect to HABC, the City no longer pays for the Water and Wastewater billings in advance. HABC is now billed monthly which is consistent with the billing of all other Baltimore City Customers including City Agencies. The City and HABC have continued negotiations regarding the aged receivable and it is anticipated that final negotiations will conclude by the close of Fiscal Year 2018 and this settlement will not have a material adverse impact on the financial position of the Water Utility or the Wastewater Utility or the ability of the City to meet its obligations under the Water Resolution or the Wastewater Resolution. The financial models shown in "FINANCIAL OPERATIONS OF THE WATER UTILITY – Summary of Projected Operating Results and Coverage" and "FINANCIAL OPERATIONS OF THE WASTEWATER UTILITY – Summary of Projected Operating Results and Coverage" herein assume that \$903,000 of such \$3.6 million is recaptured equally from the Water Utility and the Wastewater Utility in each of Fiscal Years 2016-2019.

## **City-County Sewerage Agreement**

The City provides wastewater services to parts of Baltimore County at cost. The City's supply of such services to Baltimore County is presently governed by the City-County Sewerage Agreement, which among other things establishes the methods by which Baltimore County's share of the Wastewater Utility's costs is to be determined. Among the costs to be apportioned are the costs of operation, maintenance and administration, major repairs and capital projects during construction.

During the course of each fiscal year, Baltimore County pays quarterly installments to the City based on the costs determined for the last year as to which a settlement was made. Within 60 days of the date settlement is reached for that year, Baltimore County is required to pay, or the City is required to remit, as the case may be, the difference between the amount determined in the settlement and the amount Baltimore County paid during the year. Thus, in a year during which costs attributable to Baltimore County have increased significantly over the previous year, the Wastewater Utility will experience a shortfall in Baltimore County revenues which will be made up sometime after the end of the year. This true-up of cost sharing based on actual year-end financial data is known as the "Settlement Payment."

Baltimore County was scheduled to make quarterly payments of \$15,035,509 on July 1, 2016, October 1, 2016 and January 1, 2017 for its share of wastewater operating costs. Baltimore County Payments were as follows: September 30, 2016 – \$20,722,474; January 3, 2017 – \$15,035,509; August 1, 2017 – 15,035,509; October 3, 2017 – \$12,991,432, this represents the balance of the FY17 quarterly payments. Payments were also received on October 3, 2017 for the FY16 Sewer Settlement totaling \$1,710,563 and for the FY17 additional Sewer deposit totaling \$1,710,563.

The City has a similar agreement with Anne Arundel County under which the Wastewater Utility receives and treats a portion of that Baltimore County's wastewater. Because the revenues received from Anne Arundel County are relatively small, the timing of their receipt has no significant impact on the Wastewater Utility.

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## Summary of Historical Operating Results and Coverage

The Wastewater Utility has operated as a separate enterprise of the City on a self-sustaining basis since July 1, 1979. The following table contains, for the Wastewater Utility's Fiscal Years 2013 to 2017, summary operating results including debt service coverage requirements.

### Summary of Historical Operating Results (1) (\$000's)

	<i>Fiscal Year Ending June 30</i>				
	<u>2017</u>	<u>2016</u>	<u>2015</u>	<u>2014</u>	<u>2013</u>
Total Revenues	\$ 235,338	\$ 229,300	\$ 216,163	\$ 221,840	\$ 184,471
Transfer (to) from Rate Stabilization Fund	-	-	(12,000)	-	-
Total Operating Expenses (2)	<u>(130,532)</u>	<u>(126,379)</u>	<u>(123,799)</u>	<u>(123,993)</u>	<u>(125,214)</u>
<b>Net Revenues</b>	<b>\$ 104,806</b>	<b>\$ 102,921</b>	<b>\$ 80,364</b>	<b>\$ 97,847</b>	<b>\$ 59,257</b>
Debt Service:					
Senior Lien Revenue Obligations	\$ 52,151	\$ 53,295	\$ 48,295	\$ 44,887	\$ 42,283
Subordinate Lien Revenue Obligations	<u>21,563</u>	<u>17,172</u>	<u>11,169</u>	<u>6,406</u>	<u>6,675</u>
<b>Total Debt Service</b>	<b>\$ 73,714</b>	<b>\$ 70,467</b>	<b>\$ 59,464</b>	<b>\$ 51,293</b>	<b>\$ 48,958</b>
Senior Lien Debt Service Coverage (>1.15x)	2.01x	1.93x	1.66x	2.18x	1.40x
Total Debt Service Coverage (>1.0x)	1.42x	1.46x	1.35x	1.91x	1.21x

Notes:

(1) Audited

(2) Excludes depreciation expense

## Summary of Projected Operating Results and Coverage

The following table sets forth the Wastewater Utility's projection of its operating results and coverage requirements for the Fiscal Years 2018 through 2023. These projections are based on the Wastewater Utility's projected rate increases, the Wastewater Utility's forecasted revenues and operating and maintenance expenses, the estimated debt service requirements on revenue obligations and the terms and conditions contained in the Wastewater Resolution. The forecasts in the following table are not guarantees of future performance. Actual results may vary materially from those forecasts as a result of various risks and uncertainties that include, among others, increases in personnel costs and other operating costs, additional regulatory requirements and adverse developments in general economic conditions.

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**Summary of Projected Operating Results  
(\$000's)**

	<i>Fiscal Year Ending June 30</i>					
	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>
<b>Revenues:</b>						
Baltimore City (a)	\$ 181,954	\$ 195,837	\$ 208,845	\$ 223,297	\$ 236,539	\$ 250,565
Revenue from Other Counties (b)	69,391	75,354	86,090	88,037	90,264	92,471
Transfer (to) from Rate Stabilization Fund	-	-	-	-	-	-
Other Revenue (c)	10,157	12,408	14,284	14,284	14,284	14,284
Interest Revenue (d)	-	-	-	-	-	-
Allowance for Bad Debt	-	(2,590)	(2,800)	(3,020)	(3,230)	(3,460)
<b>Total Revenue</b>	<b>\$ 261,501</b>	<b>\$ 281,008</b>	<b>\$ 306,419</b>	<b>\$ 322,598</b>	<b>\$ 337,857</b>	<b>\$ 353,861</b>
<b>Operating Expenses:</b>						
Operating and Maintenance Expenses (e)	\$ (147,109)	\$ (159,397)	\$ (166,750)	\$ (174,368)	\$ (178,465)	\$ (182,667)
Less: Additional Expenses (f)	(1,200)	(1,200)	(1,200)	(1,200)	(1,200)	(1,200)
<b>Net Revenues Available for Debt Service</b>	<b>\$ 113,192</b>	<b>\$ 120,411</b>	<b>\$ 138,469</b>	<b>\$ 147,030</b>	<b>\$ 158,192</b>	<b>\$ 169,993</b>
<b>Debt Service:</b>						
Senior Lien Revenue Obligations (g)	\$ 51,919	\$ 51,466	\$ 51,266	\$ 52,463	\$ 58,101	\$ 64,253
Subordinate Lien Revenue Obligations (g)	32,368	42,769	51,050	53,487	61,234	62,742
<b>Total Debt Service</b>	<b>\$ 84,287</b>	<b>\$ 94,235</b>	<b>\$ 102,316</b>	<b>\$ 105,951</b>	<b>\$ 119,335</b>	<b>\$ 126,996</b>
<b>Revenue Available After Debt Service</b>	<b>\$ 28,905</b>	<b>\$ 26,176</b>	<b>\$ 36,153</b>	<b>\$ 41,079</b>	<b>\$ 38,857</b>	<b>\$ 42,997</b>
<b>Projected Debt Service Coverage:</b>						
Senior Lien Debt Service Coverage (>1.15x)	2.18x	2.34x	2.70x	2.80x	2.72x	2.65x
Total DS Coverage (>1.0x)	1.34x	1.28x	1.35x	1.39x	1.33x	1.34x

\* Totals may not add due to rounding.

(a) Increased charges are assumed to be adopted each year according to the adopted rate schedule prior to the issuance of additional indebtedness.

(b) Projection is based on anticipated cost to provide service under City-County Sewerage Agreement. Assumes Baltimore County cash is received in the fiscal year that the revenue is accrued. However, the County settlement does not occur until the subsequent fiscal year, resulting in some portion of revenues remaining uncollected until the subsequent fiscal year.

(c) Annual penalty revenue will be shared between water and wastewater beginning in FY 2017. Additionally, an equal share of the billing and customer service operating costs (which have historically been funded through water) has been shifted from water to wastewater.

(d) Includes interest on Debt Service Reserve Fund, Operating Reserve Fund and Residual Fund. Assumes interest rate of 0.75%.

(e) Estimated based on line item forecasts, with the exception of an additional \$3.8 million in FY 2018 for increased costs related to ENR implementation at the Back River Treatment Plant and \$4.0 million in FY 2018 related to sanitary sewer cleaning related to the consent decree.

(f) Per Wastewater Resolution, certain additional expenses paid before debt service.

(g) Senior and subordinate lien debt assumed to be issued at end of each fiscal year to fund projects in the following fiscal year. Future senior lien debt (other than MDE loans) and subordinate lien debt issued are assumed to have interest rates ranging from 5.50% to 6.25% and a 40-year term. Future MDE loans are assumed to be issued on a subordinate lien basis with a 3% interest rate and a 20-year term.

## Billings and Collections

The Customer Support and Services Division reads meters monthly from the Advanced Meter Infrastructure (AMI) equipment. Portions of Anne Arundel County, Howard County, and Baltimore County, Maryland continue to have quarterly billing. A bill for both water and wastewater service is rendered within one week of the meter reading. The City collects all bills, including those of customers located in the counties. All customer service inquiries are handled by the Customer Support and Services Division and all costs of billing and collection are borne by the Water Utility.

In order to facilitate the collection of bills rendered, the Customer Support and Services Division implemented (i) a delinquency charge of five percent, compounded each quarter on all bills over 30 days old (which is retained in full by the Water Utility), and (ii) a termination procedure for delinquent balances over \$250. In addition, for utility customers located within the City, every unpaid water and wastewater bill constitutes a lien on the property served. Such properties may be sold by the City at tax sale as a collection method of last resort. As of January 21, 2018, the Utility's delinquent accounts over 260 days old totaled \$30,848,596.73 for water, wastewater, and stormwater services.

The City's billing and collections procedures were the subject of a recent review conducted by the Baltimore City Department of Audits in connection with allegations of inaccurate billing procedures for certain metered water accounts.

**SECTION FOUR**  
**Capital Improvement Program**

## **WASTEWATER UTILITY CAPITAL IMPROVEMENT PROGRAM**

The Wastewater Utility Capital Improvement Program is part of the City's general development plan and consists of a one-year capital budget and a recommended capital program for the succeeding five-year period.

The Wastewater Utility's recommendations as to capital improvements are transmitted through the Director of Public Works to the City's Department of Planning. After holding formal hearings, the City's Planning Commission sends its recommended Capital Improvement Program to the Board of Estimates. Before any action is taken by the Board of Estimates, the plan is reviewed by the Department of Finance. After considering the recommendations of the Planning Commission and the Department of Finance and testimony of the originating agencies, the Board of Estimates approves a Capital Budget for the ensuing Fiscal Year and a recommended Capital Improvement Program for the succeeding five-year period. The Board of Estimates then transmits the Capital Budget and six-year Capital Improvement Program to the City Council; the Capital Budget is subject to final approval by the City Council as part of the annual Ordinance of Estimates. The City Council can approve the Capital Budget as presented or can make reductions in the Board of Estimates' recommendations, but it cannot increase the amounts fixed by the Board or add any amount for any new purpose.

In June 2012, the United States Environmental Protection Agency ("EPA") issued a new framework to help local governments meet their Clean Water Act obligations. The Integrated Municipal Stormwater and Wastewater Planning Approach Framework assists states and local governments in developing voluntary storm and wastewater management plans that will offer the greatest opportunity for cost-effective and protective solutions and implementing the most important projects first. Once adopted, the City's integrated plan will assist the Wastewater Utility in prioritizing the most beneficial projects and in the appropriate sequencing and scheduling of work.

### **Capital Needs**

The Wastewater Utility Capital Improvement Program addresses three major areas of need: the Back River Plant, the Patapsco Plant and the Conveyance System in addition to normal annual improvements. The improvements to the Plants are based on detailed facilities plans which provide for meeting the requirements of future regional growth and maintaining stringent environmental standards. The projects will expand the capacity of the sanitary sewer system and help reduce pollution in the Chesapeake Bay and its tributaries. In addition, improvements to the conveyance system will improve the level of service provided to the customers and minimize the potential of public health concerns associated with direct contact with sewage.

### **Back River Wastewater Treatment Plant**

Improvements to the Back River Plant comprise of approximately \$65 million of the total \$2.0 billion six-year Wastewater Utility Capital Improvement Program. These projects include plant-wide odor control and enhanced nutrient removal. Under contract SC-918 the Back River Headworks Improvements and Wet Weather Flow Equalization project will provide 800 mgd of

influent pumping and storage of wet weather flows intended to eliminate headworks restrictions, which will improve overall sewer collection system performance. Additional capital improvements may be required once the City determines the most appropriate option for the effluent currently discharged through the Sparrows Point facility's pipelines described above under "THE WASTEWATER SYSTEM – Back River Wastewater Treatment Plant – Disinfection".

### **Collection and Conveyance**

The Capital Improvement Program addresses the need to upgrade, renovate and rehabilitate the sewage collection and conveyance system.

### **Normal Annual Improvements**

The Capital Improvement Program includes funds totaling approximately \$184 million for an ongoing program of annual facilities improvements. A summary of projected funding sources for the Capital Improvement Program for Fiscal Years 2018 through 2023 is shown in the following table.

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**WASTEWATER UTILITY CAPITAL IMPROVEMENT PROGRAM 2018-2023**  
*Projected Sources of Funds (000's)*

	Revenue Bonds	County Funds	Utility Funds	State Funds	Total
<b><u>TREATMENT PLANTS</u></b>					
Annual Facilities Improvements	\$74,354	\$95,850	\$14,100	-	\$184,304
Electrical Systems Upgrade	72,289	76,094	-	-	148,383
Patapsco WWTP Secondary Reactor Rehabilitation	16,900	36,500	-	-	53,400
Back River Sparrows Point Outfall	13,980	18,450	-	-	32,430
Back River Egg-Shaped Digester Rehabilitation	16,038	16,038	-	-	32,076
Comprehensive Biosolids Management Plan	11,565	11,564	-	-	23,129
Patapsco WWTP Headworks Upgrade	5,756	12,233	-	-	17,989
SCADA Single Platform	6,852	6,852	-	-	13,704
Patapsco Return Sludge Pump Station No. 2 Rehabilitation	4,044	8,594	-	-	12,638
Primary Tank No. 3 & 4 Renovations	6,150	6,150	-	-	12,300
Patapsco Chlorine Building Concrete	3,116	6,621	-	-	9,737
Patapsco Sludge Blending Tank Rehab	2,148	4,566	-	-	6,714
Wastewater Facilities Security Improvements	2,370	2,370	-	-	4,740
<b>TOTAL TREATMENT PLANTS</b>	<b>\$235,562</b>	<b>\$301,882</b>	<b>\$14,100</b>	<b>\$0</b>	<b>\$551,544</b>
<b><u>COLLECTION &amp; CONVEYANCE</u></b>					
Sanitary Sewer Replacement/Rehabilitation	\$244,928	\$13,000	\$59,000	-	\$316,928
Sewer System Rehabilitation Program - Main Outfall Sewershed	107,583	93,774	25,500	-	226,857
Sewer System Rehabilitation Program - Herring Run Sewershed	119,817	37,951	-	4,550	162,318
Sewer System Rehabilitation Program - High Level Sewershed	117,077	-	8,000	36,960	162,037
Sewer System Rehabilitation Program - Jones Falls Sewershed	94,126	38,309	-	12,600	145,035
Sewer Overflow Elimination	82,590	31,444	9,500	-	123,534
Low Level Sewershed Rehab	67,476	720	20,000	-	88,196
Sewer System Rehabilitation Program - Gwynns Falls Sewershed	23,846	38,661	-	22,085	84,592
High Level Interceptor Rehabilitation	48,600	-	-	-	48,600
Sewer System Rehabilitation Program - Dundalk Sewershed	14,995	11,251	-	-	26,246
Eastern Avenue Pump Station Rehabilitation	6,803	6,803	-	-	13,606
Clinton Street Pump Station Force Main Phase 2	8,039	-	-	-	8,039
Arc Flash Identification at Wastewater Pump Stations	3,348	3,348	-	-	6,696
Department of Public Works Office Building	3,320	3,320	-	-	6,640
Nieman Avenue Office Renovation	3,320	3,320	-	-	6,640
Brooklyn Pumping Station	4,138	122	-	-	4,260
Stoney Run Pump Station Renovations	3,764	204	-	-	3,968
Jones Falls Misc. Electrical	1,235	1,235	-	-	2,470
Caroline Street Pumping Station Renovations	1,507	-	-	-	1,507
<b>TOTAL COLLECTION &amp; CONVEYANCE</b>	<b>\$956,512</b>	<b>\$283,462</b>	<b>\$122,000</b>	<b>\$76,195</b>	<b>\$1,438,169</b>
<b>TOTAL CAPITAL IMPROVEMENT PROGRAM</b>	<b>\$1,192,074</b>	<b>\$585,344</b>	<b>\$136,100</b>	<b>\$76,195</b>	<b>\$1,989,713</b>

The actual amount spent during FY2018-FY2023 may be more than the Total FY2018-2023 Total Capital Improvement Program due to amounts budgeted prior to FY2018 that have not yet been spent.

## **Capital Improvements Benefiting the Counties**

Under the terms of the City's agreements with Baltimore and Anne Arundel Counties, those jurisdictions agree to be responsible for their respective proportionate shares of capital projects that are mutually beneficial. Before the City commences work on such a project, the county involved must approve the project and certify that funds are available to pay its proportionate share of the local costs. The City bills the county for its share monthly based on costs incurred during construction. The six-year current Capital Improvement Program projects contributions totaling \$585 million from Baltimore County.

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**SECTION FIVE**

**Certain Information Regarding City of Baltimore, Maryland**

**Statement of General Obligation Debt and Other Financing Arrangements  
as of June 30**

		2017	2016	2015	2014	2013
<b>General Obligation Bonds:</b>						
	Education	\$186,440,644	\$197,809,693	\$193,487,576	\$176,329,704	\$186,640,763
	Highways	1,310,669	1,657,558	1,090,664	1,283,040	6,012,916
	Parking	5,513,907	5,968,107	6,403,107	6,537,807	7,011,907
	Public Buildings & Facilities	69,919,491	74,435,634	62,483,195	61,026,131	65,237,455
	Public Health	1,896,677	2,170,869	2,373,871	2,579,817	2,800,421
	Public Safety	2,247,638	3,058,949	3,805,882	4,115,202	4,877,871
	Recreation & Parks	31,931,298	34,627,284	28,815,266	24,862,151	26,764,808
	Storm Water	3,290,961	3,602,043	3,800,480	4,061,000	-
	Unallocated	4,561,280	5,204,060	5,923,570	6,576,825	7,327,105
	Urban Renewal & Development	223,227,434	250,860,820	248,512,359	240,626,403	262,423,703
<b>Total General Obligation Bonds</b>		<b>\$530,340,000</b>	<b>\$579,395,016</b>	<b>\$556,695,970</b>	<b>\$527,998,080</b>	<b>\$569,096,949</b>
<b>Revenue Obligations - City Facilities:</b>						
	Convention Center Revenue Bonds	\$281,415,000	\$306,955,000	\$313,770,000	\$320,000,000	\$325,680,000
	County Transportation Bonds	83,270,634	93,288,531	87,860,000	94,930,000	101,685,000
	Parking Facilities Revenue Bonds	123,020,000	133,980,000	144,330,000	154,130,000	163,410,000
	Stormwater Special Revenue Bonds	27,337,885	29,108,505	2,534,105	2,894,732	3,253,922
	Wastewater Utility Revenue Bonds	1,064,546,338	1,004,061,907	919,931,301	859,672,757	717,549,287
	Water Utility Revenue Bonds	912,410,140	697,173,749	713,054,032	627,793,629	509,023,481
<b>Total Revenue Obligations - City Facilities</b>		<b>\$2,491,999,996</b>	<b>\$2,264,567,691</b>	<b>\$2,181,479,438</b>	<b>\$2,059,421,118</b>	<b>\$1,820,601,690</b>
<b>Special Obligation Bonds</b>						
	Tax Increment Financing	\$199,875,908	\$146,010,788	\$149,154,859	\$149,823,973	\$114,434,997
<b>Tax Special Obligation Bonds</b>		<b>\$199,875,908</b>	<b>\$146,010,788</b>	<b>\$149,154,859</b>	<b>\$149,823,973</b>	<b>\$114,434,997</b>
<b>Financings with State of Maryland:*</b>						
	Urban Renewal & Development (a)			\$201,961	\$384,166	\$567,762
<b>Total Financings with State of Maryland</b>		<b>\$0</b>	<b>\$0</b>	<b>\$201,961</b>	<b>\$384,166</b>	<b>\$567,762</b>
<b>Financings with the Federal Government:*</b>						
	Urban Renewal & Development	23,792,000	27,132,000	30,357,000	33,461,000	36,461,000
<b>Total Federal Government Financings:</b>		<b>\$23,792,000</b>	<b>\$27,132,000</b>	<b>\$30,357,000</b>	<b>\$33,461,000</b>	<b>\$36,461,000</b>
<b>Conditional Purchase Agreements:*</b>						
	Certificates of Participation	\$7,275,000	\$12,635,000	\$18,835,000	\$24,745,000	\$34,405,000
	Other	138,780,570	140,737,751	128,210,650	143,249,198	128,608,760
	CPA's Financed by I.D.A.	0	8,421,834	16,270,491	23,845,385	32,981,895
<b>Total Conditional Purchase Agreements</b>		<b>\$146,055,570</b>	<b>\$161,794,585</b>	<b>\$163,316,141</b>	<b>\$191,839,583</b>	<b>\$195,995,655</b>
<b>Total - All Financing Obligations</b>		<b>\$3,392,063,474</b>	<b>\$3,178,900,080</b>	<b>\$3,081,003,409</b>	<b>\$2,962,543,754</b>	<b>\$2,737,158,053</b>

(a). Represents borrowing from the State for (i) Maryland Industrial Land Act (MILA) loans for industrial parks owned by the City or industrial facilities financed for private enterprises; and (ii) Maryland Industrial and Commercial Redevelopment Fund (MICRF) loans for industrial and commercial development.

Source: Bureau of Treasury Management, Department of Finance.

## Taxable Retail Sales

Since the sales tax is not a City revenue source, the City's own sources of revenues are unaffected by cyclical sales tax shifts. Taxable retail sales in the City for Fiscal Years 2013 through 2017 are set forth below:

### Taxable Retail Sales in the City

<u>Fiscal Year</u>	<u>Total</u>	<u>% Change</u>
2017	\$ 6,268,905,063	8.2 %
2016	5,793,919,073	-0.8
2015	5,841,344,541	1.8
2014	5,739,088,058	2.1
2013	5,621,029,135	1.8

Source: Revenue Accounting Division, Comptroller of Maryland

**SECTION SIX**  
**Environmental Compliance**

## ENVIRONMENTAL COMPLIANCE

The objective of the federal Clean Water Act is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. To achieve this objective, wastewater discharges are controlled by the National Pollutant Discharge Elimination System (the "NPDES") administered by the United States Environmental Protection Agency (the "EPA"). The EPA has delegated administration of the program for Maryland to MDE's Water Management Administration. Under this program, the City's larger wastewater plant, the Back River Plant, has two (2) permitted outfalls and the Patapsco Plant has one (1) permitted outfall.

The Patapsco Wastewater Treatment Plant's discharge permit (15-DP-0580) was submitted to MDE for renewal on September 22, 2014. In October 2015, the City was notified by MDE that the Patapsco Permit was out for public review. The new Patapsco discharge permit went in to effect on 10/1/17. The Back River discharge permit (10-DP-0581) was submitted for renewal to MDE on April 30, 2015. The notice of application received was published in the local newspaper on February 10, 2016. The City has commented on the new Back River Permit 15-DP-0581, but hasn't received the final version.

The Patapsco and Back River Plants experienced the following excursions in Fiscal Year 2017:

- The Patapsco Plant experienced enterococcus excursions in August and September 2016.
- In FY 2017, there were annual and seasonal excursions for total nitrogen and total phosphorous at Patapsco due to the delay in construction and completion of the new Enhanced Nutrient Removal Facility.

During Fiscal Year 2016 there were 519 known incidents of sanitary sewer overflows (SSO), including evidence-only events (zero gallons estimated flow) ranging in estimated volume from 3 gallons to 7.7 million gallons from the sewer collection system. The City included these overflows in the Quarterly Reports provided to the EPA, the Department of Justice and MDE pursuant to the Consent Decree.

### **Pending Enforcement Action on Wastewater Laboratories and Treatment Plants**

In November 2014, the City received a letter from the Maryland Department of the Environment (MDE) alleging several excursions of the Back River and Patapsco plants' effluent limitations as well as fats, oils, and grease in the Patapsco effluent, and instances of noncompliance at the laboratories of both plants. Since the receipt of this letter, the City has been in discussions with MDE regarding the alleged violations and next steps. On June 7, 2016, the City and MDE entered into a consent order (the "Consent Order") to resolve the alleged violations. The City paid a \$40,000 civil penalty and all deliverables required by the consent order have been submitted. The City provided the requested information on January 17, 2017.

### **2002 Consent Decree**

In 2002, the City completed negotiations with the U.S. Department of Justice, the EPA, and MDE to address discharges from the City's wastewater collection system. As in many major

cities, the City's sewer infrastructure is aging. There are also designed overflow points that were constructed decades ago to periodically discharge sewage during heavy rainfall events. The agreements were incorporated into a Consent Decree which was subsequently signed by the Mayor, approved by the City's Board of Estimates and executed by the U.S. Department of Justice, the EPA and MDE.

As part of its national efforts to eliminate Combined Sewer Overflows ("CSOs") and Sanitary Sewer Overflows ("SSOs"), the EPA threatened the City with litigation. The federal and state environmental enforcement agencies alleged that the overflows from the City's collection system violated the federal Clean Water Act, the City's treatment plants' NPDES permits, and the Environment Article of the Annotated Code of Maryland. In an effort to avoid litigation and cooperate with federal and state authorities, the City entered into a Consent Decree similar to those entered into by other major cities such as Miami, New Orleans, Atlanta, Birmingham and Cincinnati.

The City commenced the major components of the Consent Decree: Elimination of SSOs and CSOs; Sewershed Planning and Evaluation; Sewershed Rehabilitation; and Upgrades to Operation and Maintenance Program. A capital improvement program estimated to cost approximately \$348,000,000, involving approximately 39 construction projects, has eliminated 60 out of 62 of the City's remaining engineer-designed SSO structures. The City also conducted a comprehensive study, inspection and rehabilitation of the entire collection system, which resulted in comprehensive collection system remedial measures. The projected costs of remedial measures for structural and hydraulic rehabilitation projects range between \$1 billion to \$1.2 billion, depending on negotiations with EPA and MDE to define additional capacity-related improvements for the collection system.

The City estimates that the total cost of all capital improvements, maintenance, repairs and other enhancements necessary to bring the City's collection system into compliance with the federal Clean Water Act will be approximately \$1.5 billion. Consistent with negotiated collection system consent decrees involving other cities, the EPA insisted upon a cash penalty for past overflows and stipulated penalties if the City fails to meet milestone dates for completion of construction, inspection and rehabilitation of its collection system. The City expects to finance these costs through a combination of water and wastewater revenue bonds, user rate increases, state low-interest loans, and any available state or federal grants. The City believes adequate financial resources are or will be available to pay for the capital improvement program.

The City prepares and submits a Quarterly Report to the EPA, the Department of Justice, and MDE detailing the progress and status of the Consent Decree program. The original Consent Decree contained a deadline of January 1, 2016 for the completion of all work mandated by the Consent Decree. Due to several factors, this deadline was not met. On June 1, 2016, a proposed Modified Consent Decree was lodged with the U.S. District Court. After several months of negotiations between the City and regulators, the Modified Consent Decree was entered on October 6, 2017. The Modified Consent Decree is based on an Adaptive Management Approach whereby the City will implement all Consent Decree work in two phases. The first phase will require the completion of projects specified in the Modified Consent Decree. The mandated deadline for the first phase is January 1, 2021, after which an 18-month monitoring and assessment period commences. The second phase will establish a specific performance goal for the City's collections system. The City will submit a Phase II Plan that incorporates input from the phase 1 project results by December 2022, identifying mainly capacity projects that shall be



completed by December 2030. At the conclusion of Phase II projects, another monitoring and assessment period will be initiated to conclude by December 2032 when the Modified Consent Decree will be closed.

### **Emergency Preparedness and Security Measures**

The City has taken aggressive steps to improve its emergency preparedness and security measures at all of its water and wastewater facilities. The use of chlorine gas to disinfect drinking water prior to distribution to the public and to disinfect wastewater prior to discharge into the environment has been discontinued for public safety reasons at the Ashburton Water Treatment Plant, at several of the remote water system chlorination facilities as well as at the Back River Wastewater Treatment Plant. Alternative measures of disinfection will be incorporated into these facilities. A design contract to convert Montebello Water Treatment Plants and all of the remaining remote chlorination facilities to sodium hypochlorite (bleach) began in April 2015. At the Patapsco Plant a construction contract to convert to sodium hypochlorite (Bleach) and sodium bisulfite was completed in the last quarter of 2017. The facilities of the Utilities are being modified to significantly improve security and monitoring capabilities. Improvements include the installation of secure card access facilities at the main gates and building entrances, motion detection equipment, remote digital cameras, and central monitoring stations.

**SECTION SEVEN**

**Litigation**

## **LITIGATION**

There are various lawsuits pending against the City relating to the Utilities. The City believes that, individually and in the aggregate, these actions will have no material adverse effect on the financial position of the City or the future operations of the Utilities.