OFFERING MEMORANDUM DATED JUNE 12, 2023

BOOK-ENTRY ONLY | **RATINGS: See "RATINGS" herein**

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
SEWER AND DRAINAGE SYSTEM
SUBORDINATED PROGRAM NOTES, SERIES 2023

$250,000,000 COMMERCIAL PAPER, SUB-SERIES 2023A-1
$250,000,000 COMMERCIAL PAPER, SUB-SERIES 2023A-2

The Louisville and Jefferson County Metropolitan Sewer District (the "District") has authorized the issuance of its Sewer and Drainage System Subordinated Program Notes, Series 2023 (collectively, the "Program Notes"), consisting of Commercial Paper Notes (as defined herein) and Direct Purchase Notes (as defined herein), pursuant to a resolution (the "Note Resolution") adopted by the Board of the District on March 27, 2023.

The Dealers identified below are offering (i) the District's $250,000,000 Sewer and Drainage System Subordinated Program Notes, Commercial Paper Sub-Series 2023A-1 (the "Commercial Paper Notes, Sub-Series 2023A-1"), for which liquidity support is provided by Bank of America, N.A. ("BANA"), pursuant to a Revolving Credit Agreement dated as of June 1, 2023, by and between the District and BANA (as amended, restated, supplemented or otherwise modified from time to time in accordance with the terms thereof, the "BANA Revolving Credit Agreement"), and (ii) the District's $250,000,000 Sewer and Drainage System Subordinated Program Notes, Commercial Paper Sub-Series 2023A-2 (the "Commercial Paper Notes, Sub-Series 2023A-2" and, together with the Commercial Paper Notes, Series 2023A-1, the "Commercial Paper Notes"), for which liquidity support is provided by JPMorgan Chase Bank, National Association ("JPMCB"), pursuant to a Revolving Credit Agreement dated as of June 1, 2023, by and between the District and JPMCB (as amended, restated, supplemented or otherwise modified from time to time in accordance with the terms thereof, the "JPMCB Revolving Credit Agreement" and, together with the BANA Revolving Credit Agreement, the "Revolving Credit Agreements"). The Revolving Credit Agreements shall expire on June 18, 2026, unless extended or terminated on an earlier date in accordance with the respective terms thereof. See "BANK LIQUIDITY ARRANGEMENTS" herein.

The Commercial Paper Notes are issued as fully registered notes in denominations of $100,000 and integral multiples of $1,000 in excess of $100,000, without coupons. The Commercial Paper Notes have terms not to exceed 270 days, with a maximum maturity date of June 18, 2026, and are not subject to redemption prior to maturity. The Dealers began offering the District's commercial paper notes in July 2018. Subsequent offerings and delivery of the District's commercial paper notes have occurred since then. It is expected that the delivery of the Commercial Paper Notes will occur on or about June 21, 2023 (the "Delivery Date"). See "THE COMMERCIAL PAPER NOTES" herein.

The Commercial Paper Notes are issuable under a book-entry system, registered in the name of The Depository Trust Company ("DTC") or its nominee. Principal of and interest on the Commercial Paper Notes will be paid directly to DTC, so long as the Commercial Paper Notes are held in book-entry only form. See "THE COMMERCIAL PAPER NOTES –Book-Entry Only Commercial Paper Notes" herein and "APPENDIX E – Book-Entry Only System" hereto. The Commercial Paper Notes have been and will continue to be issued on a tax-exempt or a taxable basis, as determined by the District, in its discretion. See "TAX MATTERS" herein.

The holders of the Commercial Paper Notes have a lien on and security interest in the revenues of the District derived from the operation of the District's sewer and drainage system, subject and subordinate, however, to the lien thereon granted to the holders of certain bonds and other indebtedness issued, or to be issued, under the provisions of the General Bond Resolution (as defined herein). The Commercial Paper Notes are special and limited revenue obligations of the District and do not constitute a debt, liability, or general obligation of the Commonwealth of Kentucky or any political subdivision or taxing authority thereof, including the Louisville/Jefferson County Metro Government or the County of Jefferson, Kentucky, within the meaning of the Constitution and laws of the

Commonwealth of Kentucky. See “SOURCES OF PAYMENT AND SECURITY FOR THE COMMERCIAL PAPER NOTES” herein.

BofA Securities, Inc. is acting as dealer for the Commercial Paper Notes, Sub-Series 2023A-1, and J.P. Morgan Securities LLC is acting as dealer for the Commercial Paper Notes, Sub-Series 2023A-2 (each a “Dealer” and collectively, the “Dealers”). The Commercial Paper Notes are offered when, as, and if issued, subject to the approving legal opinion of Dinsmore & Shohl LLP, Louisville, Kentucky, Note Counsel. Certain legal matters have been passed upon for the District by its General Counsel, Kellie S. Watson, Esq.

BofA Securities, Dealer
Commercial Paper Notes, Sub-Series 2023A-1

J.P. Morgan Securities LLC, Dealer
Commercial Paper Notes, Sub-Series 2023A-2

Date: June 12, 2023

THE COMMERCIAL PAPER NOTES HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED, IN RELIANCE UPON EXEMPTIONS CONTAINED THEREIN. THE REGISTRATION OR QUALIFICATION OF THE COMMERCIAL PAPER NOTES IN ACCORDANCE WITH APPLICABLE PROVISIONS OF SECURITIES LAW OF THE STATES IN WHICH THE COMMERCIAL PAPER NOTES HAVE BEEN REGISTERED OR QUALIFIED, AND THE EXEMPTION FROM REGISTRATION OR QUALIFICATION IN OTHER STATES CANNOT BE REGARDED AS A RECOMMENDATION THEREOF. THE COMMERCIAL PAPER NOTES HAVE NOT BEEN RECOMMENDED BY ANY FEDERAL OR STATE SECURITIES COMMISSION OR OTHER REGULATORY AUTHORITY. FURTHER, THE FOREGOING AUTHORITIES HAVE NOT CONFIRMED THE ACCURACY OR DETERMINED THE ADEQUACY OF THIS OFFERING MEMORANDUM. ANY REPRESENTATION TO THE CONTRARY MAY BE A CRIMINAL OFFENSE.

This Offering Memorandum includes descriptions and summaries of certain events, matters and documents. Such descriptions and summaries do not purport to be complete, and all such descriptions, summaries and references thereto are qualified in their entirety by reference to this Offering Memorandum in its entirety and to each such document, copies of which may be obtained from the District. Any statements made in this Offering Memorandum or the appendices hereto involving matters of opinion or estimates, whether or not so expressly stated, are set forth as such and not as representations of fact, and no representation is made that any of such opinions or estimates will be realized.

This Offering Memorandum is delivered in connection with the sale of securities referred to herein, and this Offering Memorandum may not be reproduced or used, in whole or in part, for any other purposes. This 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 Commercial Paper Notes in any jurisdiction in which it is unlawful to make such offer, solicitation, or sale. No dealer, salesperson, or other person has been authorized by the District to give any information or to make any representation other than those contained herein, and, if given or made, such other information or representation must not be relied upon as having been authorized by the District, the Dealers, or any other person.

The Dealers have provided the following sentence for inclusion in this Offering Memorandum: The Dealers have reviewed the information herein in accordance with, and as part of, their responsibilities to investors under the federal securities laws as applied to the facts and circumstances of the transaction, but the Dealers do not guarantee the accuracy or completeness of such information.

BANA has provided only the information set forth in "APPENDIX F – Bank of America, N.A." hereto for inclusion in this Offering Memorandum and has not provided any other information for this Offering Memorandum. JPMCB has provided only the information set forth in "APPENDIX G – JPMorgan Chase Bank, National Association" hereto for inclusion in this Offering Memorandum and has not provided any other information for this Offering Memorandum. The Banks (as defined herein) have not independently verified or reviewed, make no representation regarding, and do not accept any responsibility for the accuracy or completeness of this Offering Memorandum or any information or disclosure contained herein, and do not guarantee the accuracy of any information set forth herein other than solely with respect to the information provided by the Banks and set forth in "APPENDIX F – Bank of America, N.A." and "APPENDIX G – JPMorgan Chase Bank, National Association" hereto, respectively.

The information and expressions of opinion in this Offering Memorandum are subject to change without notice, and neither the delivery of this Offering Memorandum nor any sale of Commercial Paper Notes pursuant to this Offering Memorandum shall under any circumstances create the implication that there has been no change in the matters referred to in this Offering Memorandum since the date hereof. Prospective purchasers of the Commercial Paper Notes are expected to conduct their own review and analysis before making an investment decision.

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT

Board Members
Marita Willis, Chair
Keith Jackson, Vice Chair
Rebecca Cox
Gerald Joiner
Ricky Mason
Carmen Moreno-Rivera
John Selent

Executive Director and Secretary Treasurer
James A. "Tony" Parrott

Chief Financial Officer
Brad Good

Chief of Operations
Brian Bingham

Chief Engineer
David Johnson

General Counsel
Kellie S. Watson, Esq.

CERTIFIED PUBLIC ACCOUNTANTS
Crowe LLP
Louisville, Kentucky

NOTE COUNSEL
Dinsmore & Shohl LLP
Louisville, Kentucky

FINANCIAL ADVISOR
Robert W. Baird & Co. Incorporated
Louisville, Kentucky

ISSUING AND PAYING AGENT
U.S. Bank Trust Company, National Association

PROVIDERS OF REVOLVING CREDIT FACILITIES
Bank of America, N.A. (Commercial Paper Notes, Sub-Series 2023A-1)
JPMorgan Chase Bank, National Association (Commercial Paper Notes, Sub-Series 2023A-2)

COMMERCIAL PAPER DEALERS
BofA Securities, Inc. (Commercial Paper Notes, Sub-Series 2023A-1)
J.P. Morgan Securities LLC (Commercial Paper Notes, Sub-Series 2023A-2)

TABLE OF CONTENTS

Page

THE COMMERCIAL PAPER NOTES ... **1**
General ... 1
No Redemption of Commercial Paper Notes ... 2
Commercial Paper Notes May be Issued as Tax-Exempt Notes or Taxable Notes ... 2
Commercial Paper Notes, Sub-Series 2023A-1 ... 2
Commercial Paper Notes, Sub-Series 2023A-2 ... 3
Book-Entry Only Commercial Paper Notes ... 3
Direct Purchase Notes ... 4

BANK LIQUIDITY ARRANGEMENTS ... **5**
The Commitments ... 5
Events of Default and Remedies Under the Revolving Credit Agreements ... 6

PLAN OF FINANCE ... **12**

ESTIMATED DEBT SERVICE REQUIREMENTS OF THE DISTRICT ... **13**

SOURCES OF PAYMENT AND SECURITY FOR THE COMMERCIAL PAPER NOTES ... **13**
Sources of Payment; Pledged Security ... 13
Rate Covenant ... 13
Outstanding Bonds of the District Issued under the General Bond Resolution ... 15
Commercial Paper Notes and Direct Purchase Notes are Subordinate to Bonds of the District ... 18
Additional Bonds ... 18
Senior Subordinated Debt; Subordinated Revenue Bond Anticipation Notes ... 19
Commercial Paper Notes and Direct Purchase Notes Not Indebtedness of Louisville/Jefferson County Metro Government or the County of Jefferson, Kentucky ... 19

SWAPS AND OTHER FINANCIAL INSTRUMENTS ... **19**
Floating-to-Fixed Swap ... 20

THE DISTRICT ... **21**
General ... 21
Administration and Management of the District ... 21
The Sewer System ... 24
The Drainage System ... 24
One Water Initiative ... 25

THE SERVICE AREA ... **25**

RATES AND CHARGES ... **27**
Wastewater Service and Drainage Service Charges ... 27
Rate Making Process ... 28
Rate History ... 28
Customer Growth ... 29

Top 10 Customers 29

FINANCIAL OPERATIONS **31**

Historical Financial Operations 31

Projected Financial Operations 34

CAPITAL IMPROVEMENT PROGRAM **36**

Consulting Engineer’s Report 36

Consent Decree 36

Critical Repair and Reinvestment Plan 37

Climate Change Storm Risk 39

RECENT AND PENDING TRANSACTIONS OF THE DISTRICT **39**

PENDING LITIGATION **40**

APPROVAL OF LEGAL PROCEEDINGS **41**

TAX MATTERS **42**

General 42

Corporate Alternative Minimum Tax 43

FINANCIAL STATEMENTS **43**

RATINGS **43**

THE DEALERS AND CERTAIN RELATIONSHIPS AND POTENTIAL CONFLICTS OF INTEREST **44**

FINANCIAL ADVISOR **45**

CONTINUING DISCLOSURE **45**

CONCLUDING STATEMENT **47**

APPENDIX A	Definitions of Certain Terms and Summary of Provisions of the Note Resolution
APPENDIX B	Annual Comprehensive Financial Report of the District, Fiscal Years Ended June 30, 2022 and 2021
APPENDIX C	Preliminary and Unaudited Interim Financial Statements for Period Ending March 31, 2023
APPENDIX D-1	Note Counsel Opinion for Tax-Exempt Notes
APPENDIX D-2	Form of Note Counsel Opinion for Taxable Notes
APPENDIX E	Book-Entry Only System
APPENDIX F	Bank of America, N.A.
APPENDIX G	JPMorgan Chase Bank, National Association
APPENDIX H	Estimated Debt Service Requirements of the District
APPENDIX I	Consulting Engineer’s Report
APPENDIX J	Consulting Engineer’s FY 2023 Supplement

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT SEWER AND DRAINAGE SYSTEM SUBORDINATED PROGRAM NOTES, SERIES 2023

THE COMMERCIAL PAPER NOTES

This Offering Memorandum provides information regarding the Louisville and Jefferson County Metropolitan Sewer District (the "District") and its Sewer and Drainage System Subordinated Program Notes, Series 2023 (collectively, the "Program Notes"), consisting of Commercial Paper Notes (as defined herein) and Direct Purchase Notes (as defined herein).

The Board of the District adopted a resolution (the "Note Resolution") on March 27, 2023, authorizing the issuance of the Program Notes, including the Commercial Paper Subseries, consisting of $250,000,000 Commercial Paper Sub-Series 2023A-1 (the "Commercial Paper Notes, Sub-Series 2023A-1") and $250,000,000 Commercial Paper Sub-Series 2023A-2 (the "Commercial Paper Notes, Sub-Series Series 2023A-2" and, together with the Commercial Paper Notes, Sub-Series 2023A-1, the "Commercial Paper Notes").

The District has engaged BofA Securities, Inc. ("BofA Securities") and J.P. Morgan Securities LLC ("J.P. Morgan") to act as dealers (BofA Securities and J.P. Morgan each a "Dealer" and collectively, the "Dealers") for the Commercial Paper Notes. The issuance and delivery of the Commercial Paper Notes is expected to occur on or about June 21, 2023 (the "Delivery Date").

Liquidity support for the Commercial Paper Notes is being provided by Bank of America, N.A. ("BANA") and JPMorgan Chase Bank, National Association ("JPMCB") (BANA and JPMCB each a "Bank" and collectively, the "Banks"), under revolving credit agreements (collectively, the "Revolving Credit Agreements"), as described herein.

General

The Commercial Paper Notes have been and will continue to be issued and sold, at public or private sale, as taxable or tax-exempt notes, maturing in 270 days or less (but in any event not later than June 18, 2026) as determined by the District, and bearing interest at a rate or rates determined by the District (not in excess of 12% per annum for Taxable Notes (as defined herein) or 10% per annum for Tax-Exempt Notes (as defined herein)). The Commercial Paper Notes are payable only from (i) proceeds of the sale of other Commercial Paper Notes issued under the Note Resolution and used to refund outstanding Commercial Paper Notes, (ii) the proceeds of Direct Purchase Notes or other loans from the Banks used to refund outstanding Commercial Paper Notes, and (iii) the proceeds of Bonds (as defined in "APPENDIX A – Definitions of Certain Terms and Summary of Provisions of the Note Resolution" hereto) issued to pay outstanding Commercial Paper Notes.

The Commercial Paper Notes will be issued in principal amounts of $100,000 and integral multiples of $1,000 in excess of $100,000. The Commercial Paper Notes will be completed and delivered by U.S. Bank Trust Company, National Association as Issuing and Paying Agent (the "Issuing and Paying Agent"), from time to time in accordance with telephonic, electronic, or written instructions of an Authorized Representative (as defined herein) of the District, pursuant to the Issuing and Paying Agent Agreement dated June 21, 2023, by and between the District and the Issuing and Paying Agent (the "Issuing and Paying Agent Agreement"). Under the Issuing and Paying Agent Agreement, an Authorized Representative of the District is to provide instructions to the Issuing and Paying Agent as to the principal amount, interest rate, and maturity of the Commercial Paper Notes not later than 12:00 p.m. New York City time on any Business Day (as defined herein) on which a Master Note (as defined herein) with respect to the Commercial Paper Notes is to be delivered to DTC (as defined herein).

The Commercial Paper Notes will mature as determined by an Authorized Representative of the District, such maturity to be designated upon the issuance of the Commercial Paper Notes and to be identified therein; provided, however, that no Commercial Paper Notes shall (i) have a term in excess of 270 days or (ii) mature after June 18, 2026.

The Commercial Paper Notes will bear interest at a fixed rate or rates per annum as may be determined by an Authorized Representative of the District or the applicable Dealer acting at the request of an Authorized Representative of the District, computed on the basis of actual days elapsed and a 365-day year. In no event shall such interest rate exceed 10% per annum for Tax-Exempt Notes and 12% per annum for Taxable Notes (collectively, the "Maximum Interest Rate").

The District expects to issue Bonds from time to time under the General Bond Resolution (as defined in "APPENDIX A – Definitions of Certain Terms and Summary of Provisions of the Note Resolution" hereto) to retire any Program Notes (either Commercial Paper Notes or Direct Purchase Notes) outstanding at maturity and not to be refunded with other Program Notes.

No Redemption of Commercial Paper Notes

The Commercial Paper Notes are not subject to redemption prior to their maturity.

Commercial Paper Notes May be Issued as Tax-Exempt Notes or Taxable Notes

The District may issue the Commercial Paper Notes either (i) as obligations described in Section 103 of the Internal Revenue Code of 1986, as amended (the "Code"), the interest on which is not includable in the gross income of the holders thereof for federal income tax purposes (as designated, the "Tax-Exempt Notes"), or (ii) as obligations the interest on which is includable in the gross income of the holders thereof for federal income tax purposes (as designated, the "Taxable Notes"). The District has designated the Commercial Paper Notes to be delivered on the Delivery Date as Tax-Exempt Notes. The District will designate subsequent issuances of Commercial Paper Notes as either Tax-Exempt Notes or Taxable Notes. See "TAX MATTERS" herein, and see "APPENDIX D-1 – Note Counsel Opinion for Tax-Exempt Notes" hereto for the form of the opinion Note Counsel will deliver in connection with the District's issuance of Tax-Exempt Notes and "APPENDIX D-2 – Note Counsel Opinion for Taxable Notes" hereto for the form of the opinion Note Counsel will deliver in connection with the District's issuance of Taxable Notes. To the extent that the District elects to issue Commercial Paper Notes as Taxable Notes, the Tax-Exempt Notes and the Taxable Notes will be further designated in sub-series to differentiate between the Tax-Exempt Notes and the Taxable Notes.

Commercial Paper Notes, Sub-Series 2023A-1

The Commercial Paper Notes, Sub-Series 2023A-1 are obligations of the District which have terms not to exceed 270 days, with a maximum maturity date of June 18, 2026, and are not subject to redemption prior to maturity.

Liquidity support for the Commercial Paper Notes, Sub-Series 2023A-1 is provided by BANA, pursuant to a Revolving Credit Agreement dated as of June 1, 2023, by and between the District and BANA (as amended, restated, supplemented or otherwise modified from time to time in accordance with the terms thereof, the "BANA Revolving Credit Agreement"). The BANA Revolving Credit Agreement expires on June 18, 2026, unless extended or terminated on an earlier date in accordance with the terms thereof. Under the BANA Revolving Credit Agreement, BANA has provided a commitment of $250,000,000 (the "BANA Commitment"), which is the maximum amount available to be drawn for the payment of the principal of and interest on the Commercial Paper Notes, Sub-Series 2023A-1, as this aggregate amount may be reduced and reinstated from time to time, as provided in the BANA Revolving Credit Agreement, including, without limitation, in connection with the purchase of BANA Direct Purchase Notes (as defined herein) by BANA under the BANA Note Purchase Agreement (as defined herein). The aggregate principal amount of Commercial Paper Notes, Sub-Series 2023A-1 outstanding at any one time shall not exceed $250,000,000; provided, however, that the maximum principal amount of Program Notes at any one time outstanding under the BANA Commitment shall not exceed the amount available under the BANA Commitment, after taking into account amounts under the BANA Commitment required to provide for the payment of interest on such Program Notes. See "BANK LIQUIDITY ARRANGEMENTS" herein.

BofA Securities is the Dealer for the Commercial Paper Notes, Sub-Series 2023A-1, pursuant to a Commercial Paper Dealer Agreement dated as of June 21, 2023, by and between the District and BofA Securities (the "Sub-Series 2023A-1 Commercial Paper Dealer Agreement").

Commercial Paper Notes, Sub-Series 2023A-2

The Commercial Paper Notes, Sub-Series 2023A-2 are obligations of the District which have terms not to exceed 270 days, with a maximum maturity date of June 18, 2026, and are not subject to redemption prior to maturity.

Liquidity support for the Commercial Paper Notes, Sub-Series 2023A-2 is provided by JPMCB, pursuant to a Revolving Credit Agreement dated as of June 1, 2023, by and between the District and JPMCB (as amended, restated, supplemented or otherwise modified from time to time in accordance with the terms thereof, the "JPMCB Revolving Credit Agreement" and, together with the BANA Revolving Credit Agreement, the "Revolving Credit Agreements"). The JPMCB Revolving Credit Agreement expires on June 18, 2026, unless extended or terminated on an earlier date in accordance with the terms thereof. Under the JPMCB Revolving Credit Agreement, JPMCB has provided a commitment of $250,000,000 (the "JPMCB Commitment" and, together with the BANA Commitment, the "Commitments"), which is the maximum amount available to be drawn under the JPMCB Revolving Credit Agreement for the payment of the principal of and interest on the Commercial Paper Notes, Sub-Series 2023A-2, as this aggregate amount may be reduced and reinstated from time to time, as provided in the JPMCB Revolving Credit Agreement, including, without limitation, in connection with the purchase of JPMCB Direct Purchase Notes (as defined herein) by JPMCB under the JPMCB Note Purchase Agreement (as defined herein). The aggregate principal amount of Commercial Paper Notes, Sub-Series 2023A-2 outstanding at any one time shall not exceed $250,000,000; provided, however, that the maximum principal amount of Program Notes at any one time outstanding under the JPMCB Commitment shall not exceed the amount available under the JPMCB Commitment, after taking into account amounts under the JPMCB Commitment required to provide for the payment of interest on such Program Notes. See "BANK LIQUIDITY ARRANGEMENTS" herein.

J.P. Morgan is the Dealer for the Commercial Paper Notes, Sub-Series 2023A-2, pursuant to a Commercial Paper Dealer Agreement dated as of June 21, 2023, by and between the District and J.P. Morgan (the "Sub-Series 2023A-2 Commercial Paper Dealer Agreement" and, together with the Sub-Series 2023A-1 Commercial Paper Dealer Agreement, the "Dealer Agreements").

Book-Entry Only Commercial Paper Notes

The Commercial Paper Notes are issuable only as fully registered Commercial Paper Notes, without coupons. The Commercial Paper Notes, when issued, will be registered in the name of Cede & Co., as nominee of The Depository Trust Company, New York, New York ("DTC"), which will act as securities depository for the Commercial Paper Notes. Purchasers of the Commercial Paper Notes will not receive certificates representing their ownership interest in the Commercial Paper Notes. So long as DTC or its nominee is the registered owner of the Commercial Paper Notes, payments of the principal of and interest due on the Commercial Paper Notes will be made directly to DTC. Principal of and redemption premium, if any, and interest on the Commercial Paper Notes will be paid directly to DTC by the Issuing and Paying Agent.

Under the initial book-entry only system with DTC, no physical Commercial Paper Note certificates will be delivered to DTC. The Note Resolution approved the execution and delivery to the Issuing and Paying Agent, as the custodian for DTC, of a master note ("Master Note") with respect to the Commercial Paper Notes. Ownership of beneficial interests in the Commercial Paper Notes shall be shown by book-entry on the system maintained and operated by DTC and the DTC Participants (as defined herein), and any transfers of ownership of beneficial interests shall only be made by book-entry by DTC and the DTC Participants. The District and the Issuing and Paying Agent have no responsibility for DTC's book-entry system. DTC will be required to maintain records of the positions of the DTC Participants in the Commercial Paper Notes, and the DTC Participants and persons acting through the DTC Participants will be required to maintain records of the purchasers of beneficial interests in the Commercial Paper Notes. During any period when a book-entry only system is in effect, except as provided above, the Commercial Paper Notes shall not be transferable or exchangeable, except for transfer to another securities depository or to another nominee of a securities depository.

With respect to Commercial Paper Notes registered in the name of DTC or its nominee, neither the District nor the Issuing and Paying Agent shall have any responsibility or obligation to any DTC Participant or to any person on whose behalf a DTC Participant holds an interest in the Commercial Paper Notes. Without limiting the immediately preceding sentence, neither the District nor the Issuing and Paying Agent shall have any responsibility or obligation with respect to (i) the accuracy of the records of DTC or any DTC Participant with respect to any ownership interest in the Commercial Paper Notes, (ii) the delivery to any DTC Participant or any other person, other than a registered owner of the Commercial Paper Notes, as shown on the Commercial Paper Note Registration Books (as defined herein), of any notice with respect to the Commercial Paper Notes, and (iii) the payment to any DTC Participant or any other person, other than a registered owner of the Commercial Paper Notes, as shown in the Commercial Paper Note Registration Books, of any amount with respect to principal of or interest on the Commercial Paper Notes.

The District or DTC each may determine to discontinue the book-entry only system, and following any such discontinuation, unless a new book-entry only system is put in place, physical certificates shall be provided to the beneficial owners of the Commercial Paper Notes. See "APPENDIX E – Book-Entry Only System" hereto.

THE INFORMATION CONTAINED IN THIS SECTION AND "APPENDIX E – BOOK-ENTRY ONLY SYSTEM" CONCERNING DTC AND DTC'S BOOK-ENTRY SYSTEM HAS BEEN OBTAINED FROM SOURCES THAT THE DISTRICT BELIEVES TO BE RELIABLE, BUT THE DISTRICT TAKES NO RESPONSIBILITY FOR THE ACCURACY THEREOF.

Direct Purchase Notes

As an alternative to the issuance of Commercial Paper Notes to investors, the District, in its discretion, may issue Program Notes, Direct Purchase Subseries (the "Direct Purchase Notes"), to BANA and JPMCB, evidencing loans from such financial institutions.

The District and BANA have entered into a Note Purchase Agreement dated as of June 1, 2023 (as amended, restated, supplemented, or otherwise modified from time to time in accordance with the terms thereof, the "BANA Note Purchase Agreement"), providing for the purchase of Direct Purchase Notes by BANA from time to time, up to an aggregate principal amount of $250,000,000 (the "BANA Direct

Purchase Notes"), in accordance with the terms thereof. The BANA Revolving Credit Agreement and the BANA Note Purchase Agreement provide that the aggregate principal amount of the Commercial Paper Notes, Sub-Series 2023A-1 (exclusive of interest thereon, in the case of the BANA Revolving Credit Agreement) and the BANA Direct Purchase Notes shall not exceed $250,000,000. The BANA Direct Purchase Notes will not be offered to investors.

The District and JPMCB have entered into a Note Purchase Agreement dated as June 1, 2023 (as amended, restated, supplemented, or otherwise modified from time to time in accordance with the terms thereof, the "JPMCB Note Purchase Agreement" and, together with the BANA Note Purchase Agreement, the "Note Purchase Agreements"), providing for the purchase of Direct Purchase Notes by JPMCB from time to time, up to an aggregate principal amount of $250,000,000 (the "JPMCB Direct Purchase Notes"), in accordance with the terms thereof. The JPMCB Revolving Credit Agreement and the JPMCB Note Purchase Agreement provide that the aggregate principal amount of the Commercial Paper Notes, Sub-Series 2023A-2 (exclusive of interest thereon, in the case of the JPMCB Revolving Credit Agreement) and the JPMCB Direct Purchase Notes shall not exceed $250,000,000. The JPMCB Direct Purchase Notes will not be offered to investors.

The District may elect, in its discretion, to issue Commercial Paper Notes or Direct Purchase Notes, or a combination of Commercial Paper Notes and Direct Purchase Notes; provided, however, that the aggregate principal amount of Commercial Paper Notes and Direct Purchase Notes outstanding at any time shall not exceed $500,000,000.

BANK LIQUIDITY ARRANGEMENTS

The Commercial Paper Notes are payable solely from (a) the proceeds from the sale of other Commercial Paper Notes issued under the Note Resolution to refund any outstanding Commercial Paper Notes, (b) Advances to the District by the Banks under the respective Revolving Credit Agreements to refund any outstanding Commercial Paper Notes, (c) obligations of the District to the Banks under the respective Revolving Credit Agreements or the respective Fee Letters (as defined herein), as applicable, to refund any outstanding Commercial Paper Notes, and (d) the proceeds from the sale of any Bonds issued to pay any outstanding Commercial Paper Notes.

The following is a summary of certain provisions of the respective Revolving Credit Agreements and does not purport to be complete or definitive and reference to such documents is made for the complete provisions thereof. The Revolving Credit Agreements should be reviewed in order to fully understand the provisions relating to Events of Default and remedies in connection therewith. Capitalized terms used and not defined in this section of the Offering Memorandum or in "APPENDIX A – Definitions of Certain Terms and Summary of Provisions of the Note Resolution" have the respective meanings assigned to such terms in the Revolving Credit Agreements.

The Commitments

Pursuant to the provisions of the BANA Revolving Credit Agreement, BANA is providing the BANA Commitment in the amount of not to exceed $250,000,000. See "THE COMMERCIAL PAPER NOTES – Commercial Paper Notes, Sub-Series 2023A-1" herein. Until the expiration of the BANA Commitment on June 18, 2026, and in the absence of an Event of Default under the BANA Revolving Credit Agreement, the District may request Advances from BANA for the purpose of paying principal of and interest on the Commercial Paper Notes, Sub-Series 2023A-1 which have matured and for which new Commercial Paper Notes have not been sold. The BANA Commitment is subject to automatic reduction and reinstatement of the amounts and upon the terms and conditions set forth in the BANA Revolving Credit Agreement. Pursuant to the BANA Revolving Credit Agreement, the District has executed and delivered a Bank Note in the principal amount of $250,000,000, evidencing the District's obligation to pay the amounts advanced to the District under the BANA Revolving Credit Agreement and interest thereon (the "BANA Bank Note").

Pursuant to the provisions of the JPMCB Revolving Credit Agreement, JPMCB is providing the JPMCB Commitment in the amount of $250,000,000. See "THE COMMERCIAL PAPER NOTES – Commercial Paper Notes, Sub-Series 2023A-2" herein. Until the expiration of the JPMCB Commitment on June 18, 2026, and in the absence of an Event of Default under the JPMCB Revolving Credit Agreement, the District may request Advances from JPMCB for the purpose of paying principal of and interest on the Commercial Paper Notes, Sub-Series 2023A-2 which have matured and for which new Commercial Paper Notes have not been sold. The JPMCB Commitment is subject to automatic reduction and reinstatement of the amounts and upon the terms and conditions set forth in the JPMCB Revolving Credit Agreement. Pursuant to the JPMCB Revolving Credit Agreement, the District has executed and delivered a Bank Note in the principal amount of $250,000,000, evidencing the District's obligation to pay the amounts advanced to the District under the JPMCB Revolving Credit Agreement and interest thereon (the "JPMCB Bank Note" and, together with the BANA Bank Note, the "Bank Notes").

Prospective purchasers of the Commercial Paper Notes are advised that upon the occurrence of a Special Event of Default under the Revolving Credit Agreements, (i) the obligations of the Banks to make Advances under the respective Revolving Credit Agreements shall automatically and immediately terminate without tender, notice, or payment, and (ii) the obligations of the District to the Banks shall immediately become due and payable. The District cannot provide assurance that it will have sufficient funds on hand and available to make payment of the principal of and interest on the Commercial Paper Notes in a timely manner in such circumstance.

Events of Default and Remedies Under the Revolving Credit Agreements

Notice of Events of Default

Pursuant to the Revolving Credit Agreements with each of the Banks, the District is required to promptly, and in any event within five Business Days, notify the applicable Bank of the occurrence of any Event of Default under the Note Resolution or of a default under the Revolving Credit Agreements, any Related Document or any ordinance, resolution, indenture, agreement or other instrument pursuant to which any Bonds or Parity Lien Obligations are issued, specifying the details thereof and the action that the District proposes to take with respect thereto.

Events of Default

The following events are "Events of Default" under the Revolving Credit Agreements:

(a) the District shall fail to pay (i) any principal of or interest on any Loan or Bank Note when due (whether by scheduled maturity, required prepayment, acceleration, demand or otherwise) (other than payments on Loans or the Bank Note due solely as a result of acceleration caused by the Bank, pursuant to the Revolving Credit Agreements), or (ii) any Facility Fee or any other amount payable under the Revolving Credit Agreements or under the Fee Letters and, in the case of such Facility Fee or other amount, such failure shall continue for a period of three Business Days from the date such obligation was due;

(b) any representation, warranty, certification, or statement made by the District (or incorporated by reference) in the Revolving Credit Agreements, any other Related Document or in any certificate, financial statement, or other document delivered pursuant to the Revolving Credit

Agreements or any Related Documents shall have been incorrect, untrue or misleading in any material respect when made or deemed to have been made;

(c) the District shall fail to perform or observe any covenant, agreement, or condition contained in Article VI of the Revolving Credit Agreements;

(d) the District shall fail to perform or observe any other covenant, agreement, or condition (other than those referred to or contained in clause (a), (b), or (c) above) contained in the Revolving Credit Agreements, the Bank Notes, or any other Related Document and such failure, if capable of being remedied, shall remain unremedied for 30 days after the earlier to occur of (i) written notice of such failure shall have been given to the District by the Bank or (ii) the date on which such failure shall first become known to the District;

(e) (i) one or more final unappealable judgments or orders, issued or rendered by a Governmental Authority of competent jurisdiction, for the payment of money in excess of $15,000,000, individually or in the aggregate, shall be issued or rendered against the District, and such judgment or order shall continue unsatisfied, unbonded, undismissed and unstayed for a period of 60 days; or (ii) one or more final unappealable judgments or orders or writ or writs, or warrant or warrants of attachment, or any similar process or processes issued or rendered by a Governmental Authority of competent jurisdiction, for the payment of money in excess of $15,000,000, individually or in the aggregate, shall be issued or rendered against the District (but only with respect to writ or writs or warrant or warrants of attachment, or any similar process or processes) or any of the District's Property and remain unpaid, unvacated, unbonded or unstayed for a period of 30 days;

(f) (i)(A) the District shall fail to pay, when due and payable, any principal of or interest on any Specified Debt (including, in each case, without limitation, any principal or sinking fund installments, but excluding, in each case, (i) payments due on Specified Debt owing to a liquidity provider under a liquidity facility solely as a result of acceleration caused by such liquidity provider with respect to such Specified Debt, and (ii) any Specified Debt which is in the form of commercial paper notes which are supported as to the payment of principal and/or interest thereof by a credit enhancement or liquidity facility if such failure to make such payment is due solely to the failure of the related credit enhancement or liquidity facility provider to make such payment), and such failure shall continue beyond any applicable period of grace specified in any underlying indenture, contract, or instrument providing for the creation of or concerning such Specified Debt; or (B) any other default under any indenture, contract, or instrument providing for the creation of or concerning such Specified Debt, or any other event, shall occur and shall continue after the applicable grace period, if any, specified in such agreement or instrument, if the effect of such default or event is to cause such Debt to become due, or permit the holder of such Debt to cause such Debt to become due, prior to its stated maturity; (ii)(A) the District shall fail to pay, when due and payable, any principal of or interest on any of the Bonds or Parity Lien Obligations, other than as described in the foregoing clause (i) (including, in each case, without limitation, any principal or sinking fund installments), and such failure shall continue beyond any applicable period of grace specified in any underlying indenture, contract, or instrument providing for the creation of or concerning such Bonds or Parity Lien Obligations; or (B) any other default under any indenture, contract, or instrument providing for the creation of or concerning such Bonds or Parity Lien Obligations, or any other event, shall occur and shall continue after the applicable grace period, if any, specified in such agreement or instrument, if the effect of such default or event is to cause such Bonds or Parity Lien Obligations to become due, or permit the holder of such Bonds or Parity Lien Obligations to cause such Bonds or Parity Lien Obligations to become due, prior to its stated maturity; or (iii)(A) the District shall fail to pay, when due and payable, any principal of or interest on any Debt of the District, other than as described in clause (i) and (ii) above having a principal amount in excess of $15,000,000, and such failure shall continue beyond any applicable period of grace specified in any underlying indenture, contract, or instrument providing for the creation thereof, or (B) any other default under any indenture, contract, or instrument providing for the creation of or concerning such other Debt, or any other event, shall occur and shall continue after the applicable grace period, if any, specified in such agreement or instrument, if the effect of such default or event is to cause such Debt to become due, or permit the holder of such Debt to cause such Debt to become due, prior to its stated maturity;

(g) (i) the District shall commence any case, proceeding, or other action (A) under any existing or future law of any jurisdiction, domestic or foreign, relating to bankruptcy, insolvency, reorganization or relief of debtors, seeking to have an order for relief entered with respect to it, or seeking to adjudicate it as bankrupt or insolvent, or seeking reorganization, arrangement, marshaling of assets, adjustment, winding-up, liquidation, dissolution, composition, or other relief with respect to it or its debts, or (B) seeking appointment of a receiver, trustee, examiner, liquidator, custodian, or other similar official for it or for all or any substantial part of its assets, or the District shall make a general assignment for the benefit of its creditors; or (ii) there shall be commenced against the District any case, proceeding, or other action of a nature referred to in clause (i) above, which (x) results in an order for such relief or in the appointment of a receiver, trustee, examiner, liquidator, custodian, or similar official, or (y) remains undismissed, undischarged or unbonded for a period of 60 days; or (iii) there shall be commenced against the District any case, proceeding, or other action seeking issuance of a warrant of attachment, execution, distraint or similar process against all or any substantial part of its assets, which results in the entry of an order for any such relief which shall not have been vacated, discharged or stayed or bonded pending appeal within 60 days from the entry thereof; (iv) the District shall take any action in furtherance of, or indicating its consent to, approval of, or acquiescence in, any of the actions set forth in clause (i), (ii) or (iii) above, or fail to contest in good faith any such appointment or proceeding; or (v) the District shall admit in writing its inability to pay its debts generally as they become due, or shall become insolvent within the meaning of Section 101(32) of the United Stated Bankruptcy Code;

(h) (i) any provision of applicable law or the Revolving Credit Agreements, the Commercial Paper Notes, the Bank Notes, the Issuing and Paying Agent Agreement, the Note Resolution or any other Related Document related to the payment of principal or interest on the Commercial Paper Notes, the Bank Notes, or the Loans or the pledge of and Lien on the Revenues or the Security shall at any time for any reason cease to be valid and binding or enforceable on the District or shall be declared to be null and void, invalid or unenforceable as determined by any Governmental Authority of competent jurisdiction in a final, nonappealable judgment or as a result of any legislative or administrative action by any Governmental Authority having jurisdiction over the District, or (ii)(a) the validity or enforceability of any provision of applicable law or the Revolving Credit Agreements, the Commercial Paper Notes, the Bank Notes, the Issuing and Paying Agent Agreement, the Note Resolution or any other Related Document related to the payment of principal or interest on the Commercial Paper Notes, the Bank Notes or the Loans or the pledge of and Lien on the Revenues or the Security shall be publicly repudiated or repudiated in writing or publicly contested, or contested in writing by the District, (b) any Governmental Authority having appropriate jurisdiction over the District shall make a finding or ruling, or shall enact or adopt legislation or issue an executive order or enter a judgment or decree, which contests the validity or enforceability of any material provision of the Revolving Credit Agreements, the Commercial Paper Notes, the Bank Notes, the Issuing and Paying Agent Agreement, the Note Resolution or any other Related Document related to the payment of principal or interest on the Commercial Paper Notes, the Bank Notes or the Loans or the pledge of and Lien on the Revenues or the Security, or (c) the District shall publicly deny or deny in writing that it has any or further liability or obligation under the Revolving Credit Agreements, the Commercial Paper Notes, the Bank Notes, the Issuing and Paying Agent Agreement, the Note Resolution or any other Related Document (other than the Fee Letters, the Offering Memorandum, the Dealer Agreements, or any exhibit or schedule to any of the Related Documents); or (iii) any material provision of the Revolving Credit Agreements, the Commercial Paper Notes, the Bank Notes, the Issuing and Paying Agent Agreement, the Note Resolution, or any other Related Document, other than a provision described in clause (i) and (ii) of this paragraph (h) shall at any time for any reason, cease to be valid and binding on the District, or shall be declared in a final, nonappealable judgment by any court having jurisdiction over the District to be null and void, invalid, or unenforceable, or the validity or enforceability thereof shall be denied or contested by the District;

(i) (i) the District shall impose, declare or announce (whether or not in writing) a debt moratorium, debt restructuring, debt adjustment or comparable extraordinary restriction on the repayment when due and payable of the principal of or interest on any Specified Debt (including, without limitation, the Commercial Paper Notes, the Bank Notes or the Loans) or (ii) any Governmental Authority having appropriate jurisdiction over the District shall impose, declare or announce (whether or not in writing), as a result of a finding, ruling or other determination or shall enact or adopt legislation or issue an executive order or enter a judgment or decree which results in a debt moratorium, debt restructuring, debt adjustment, or comparable extraordinary restriction on the repayment when due and payable of the principal of or interest on (A) the Commercial Paper Notes, the Loans or the Bank Notes, (B) all of the District's Parity Lien Obligations, or (C) all of the District's Debt;

(j) (i) the long-term unenhanced rating by any of Moody's, S&P or Fitch (in each case, to the extent such Rating Agency is then providing a rating) on any Bonds or any Parity Lien Obligations shall be withdrawn or suspended (for credit related reasons) or reduced below "A3" (or its equivalent), "A-" (or its equivalent) or "A-" (or its equivalent), respectively, or (ii) the long-term, unenhanced ratings by Moody's, S&P and Fitch (in each case, to the extent such Rating Agency is then providing a rating) on the Bonds shall be withdrawn or suspended (for credit related reasons) or reduced below "Baa3" (or its equivalent), "BBB-" (or its equivalent) and "BBB-" (or its equivalent);

(k) an *"Event of Default,"* as defined in the Note Resolution, either Revolving Credit Agreement, the Note Purchase Agreements or the Issuing and Paying Agent Agreement shall occur and be continuing, or the District shall default in the due performance or observance of any material term, covenant, or agreement contained in any other Related Document and the same shall not have been cured within any applicable cure period;

(l) (A)(i) the District or any Governmental Authority shall impose, declare or announce (whether or not in writing) a debt moratorium, debt restructuring, debt adjustment, or comparable extraordinary restriction on the repayment when due and payable of the principal of or interest on any indebtedness of the District, other than as set forth in paragraph (i) above, or (ii) there shall be appointed or designated with respect to the District an entity, such as an organization, board, commission, authority, agency or body to monitor or declare a financial emergency or similar state of financial distress with respect to the District, or there shall be declared by the District or by any legislative or regulatory body with competent jurisdiction over the District, the existence of a state of financial emergency or similar state of financial distress in respect of the District; or (B) the District shall not pay, or be unable to pay, its debts generally as they become due;

(m) dissolution or termination of the existence of the District;

(n) a court of competent jurisdiction has found any of the Bonds or Parity Lien Obligations to have been issued illegally or in violation of the additional debt test in the related ordinance or resolution; or

(o) any "default" or "event of default" under the WIFIA Loan Agreement (as defined herein under the heading "RECENT AND PENDING TRANSACTIONS OF THE DISTRICT") shall occur and be continuing.

Remedies Available to the Banks under the Revolving Credit Agreements

In the event of any Event of Default under the Revolving Credit Agreements, other than an Event of Default specified in paragraph (g) under the subheading *"Events of Default"* above, the Banks may declare the Bank Notes and the Loans, all accrued interest thereon, and all other amounts payable under the Revolving Credit Agreements to be forthwith due and payable, whereupon the Bank Notes and the Loans and such interest, and all such amounts shall become and be forthwith due and payable without presentment, demand, protest or further notice of any kind, all of which are waived by the District. If any Event of Default specified in paragraph (g) under the subheading *"Events of Default"* above shall occur, then, without any notice to the District or any other act by the Banks, the Bank Notes and the Loans, together with accrued interest thereon, and all other amounts payable under the Revolving Credit Agreements, shall become forthwith due and payable, without presentment, demand, protest, or other notice of any kind, all of which are waived by the District.

The Events of Default described in paragraphs (a)(i), (e)(i), (f)(i)(A), (g), (h)(i), (i), (j)(ii), and (m) under the subheading *"Events of Default"* above constitute "Special Events of Default." Upon the occurrence of any Special Event of Default, (i) the Commitments shall automatically and immediately terminate with respect to all Commercial Paper Notes, and the Banks shall have no obligation to make any Loan or to fund any outstanding Commercial Paper Note, and (ii) the Banks shall use commercially reasonable efforts to deliver a Notice of Termination to the Issuing and Paying Agent and the Dealer; provided, however, that the failure to do so shall in no way affect the automatic and immediate termination of the Commitments under the Revolving Credit Agreements.

Upon the occurrence of an Event of Default that is not a Special Event of Default, the Banks may, by notice to the District, terminate their Commitments, if any (except as provided below), and/or deliver a Notice of No-Issuance to the District and to the Issuing and Paying Agent directing the Issuing and Paying Agent to cease issuing all Commercial Paper Notes, whereupon no additional Commercial Paper Notes shall be issued, the Available Commitment shall immediately be reduced to the then outstanding principal amount of Commercial Paper Notes plus the amount of interest to accrue on such outstanding Commercial Paper Notes, and the Available Commitment shall be further reduced in a similar manner as and when such Commercial Paper Notes mature; *provided* that the Commitments shall not terminate, and the right of the Banks to accelerate the maturity of the Bank Notes and the Loans shall not affect the obligation of the Banks to make Loans in an aggregate principal amount equal to the respective Commitments, to the extent necessary for the District to make required payments of principal on the Commercial Paper Notes issued and sold prior to the date upon which the Notice of No-Issuance is received by the Issuing and Paying Agent; *provided further* that if any Loans are made that would not have been made but for the application of the immediately preceding provision, such Loans shall be immediately due and payable on the date such Loans are made.

Upon the occurrence of an Event of Default under paragraph (h)(ii) under the subheading *"Events of Default"* above, the obligation of the Banks to make Loans under the Revolving Credit Agreements shall be suspended from the time of the occurrence of such Event of Default until a final, non-appealable judgment of a court having jurisdiction in the premises shall be entered declaring that all contested provisions of the Revolving Credit Agreements, the Commercial Paper Notes, the Bank Notes, the Issuing and Paying Agent Agreement, the Note Resolution or any other Related Document relating to the payment of principal or interest on the Commercial Paper Notes, the Bank Notes or any Loans or the validity or enforceability of the pledge of and lien on the Security are upheld in their entirety. In the event a judgment is entered declaring that all material contested provisions of the Revolving Credit Agreements, the Commercial Paper Notes, the Bank Notes, the Issuing and Paying Agent Agreement, the Note Resolution and any other Related Document relating to the payment of principal or interest on the Commercial Paper Notes, the Bank Notes or any Loans or the validity or enforceability of the pledge of and lien on the Security are upheld in their entirety, the obligation of the Banks to make Loans under the Revolving Credit Agreements shall be automatically reinstated and the terms of the Revolving Credit Agreements will continue in full force and effect (unless the Revolving Credit Agreements shall have otherwise expired or terminated in accordance with their terms or there has occurred a Special Event of Default) as if there had been no suspension. In the event any provision of the Revolving Credit Agreements, the Commercial Paper Notes, the Bank Notes, the Issuing and Paying Agent Agreement, the Note Resolution or any other Related Document relating to the payment of principal or interest on the Commercial Paper Notes, the Bank Notes or any Loans or the validity or enforceability of the pledge of and lien on the Security is declared to be null and void or unenforceable, or it is determined that the District has no liability or obligation under the Revolving Credit Agreements, the Commercial Paper Notes, the Bank Note, the Issuing and Paying Agent Agreement, the Note Resolution or any other Related Document, then the obligations of the Banks under the Revolving Credit Agreements will terminate as set forth above. Notwithstanding the foregoing, if, upon the date which is the earlier of the Commitment Termination Date or one (1) year after the effective date of such suspension of the obligation of the Banks as set forth in this paragraph, litigation is still pending and a judgment regarding the validity and enforceability of the Revolving Credit Agreements, the Commercial Paper Notes, the Bank Notes, the Issuing and Paying Agent Agreement, the Note Resolution or any other Related Document relating to the payment of principal or interest on the Commercial Paper Notes, the Bank Notes or any Loans or the validity or enforceability of the pledge of and lien on the Security as is the subject of such Event of Default has not been obtained, then the Commitment and the obligation of the Bank to make Loans under the Revolving Credit Agreements shall at such time terminate without notice or demand.

Upon the occurrence of a Default under paragraph (g)(ii) or (g)(iii) under the subheading *"Events of Default"* above, the obligation of the Banks to make Loans under the Revolving Credit Agreements shall be suspended until the proceeding referred to therein is terminated prior to the court entering an order granting the relief sought in such proceeding. In the event such proceeding is terminated, the obligation of the Banks to make Loans under the Revolving Credit Agreements shall be reinstated and the terms of the Revolving Credit Agreements will continue in full force and effect (unless the obligation of the Banks to make Loans shall have otherwise expired or terminated in accordance with their terms or there has occurred a Special Event of Default) as if there had been no such suspension.

Failure to take action in regard to one or more Events of Default shall not constitute a waiver of, or the right to take action in the future in regard to, such or subsequent Events of Default.

Other Remedies under the Revolving Credit Agreements

If an Event of Default specified above under the subheading *"Events of Default"* shall occur and be continuing, the Banks may take, in addition to the remedies specified above under the subheading *"Remedies Available to the Banks under the Revolving Credit Agreements"*, one or more of the following actions at any time and from time to time (regardless of whether the actions are taken at the same or different times):

(i) either personally or by attorney or agent without bringing any action or proceeding, or by a receiver to be appointed by a court in any appropriate action or proceeding, take whatever action at law or in equity may appear necessary or desirable to collect the amounts due and payable under the Related Documents or to enforce performance or observance of any obligation, agreement or covenant of the District under the Related Documents, whether for specific performance of any agreement or covenant of the District or in aid of the execution of any power granted to the Banks in the Related Documents;

(ii) cure any Default, Event of Default or event of nonperformance under the Revolving Credit Agreements or under any Related Document; *provided, however,* that the Banks shall have no obligation to effect such a cure; and

(iii) exercise, or cause to be exercised, any and all remedies as it may have under the Related Documents (other than as provided for in clause (i) of this subsection) and as otherwise available at law and at equity.

Suits at Law or in Equity and Mandamus

If any Event of Default shall occur, then and in every such case the Banks shall be entitled to proceed to protect and enforce its rights by such appropriate judicial proceeding as they may deem most effectual to protect and enforce any such right, either by suit, in equity, or by action at law, whether for the specific performance of any covenant or agreement contained in the Revolving Credit Agreements, in aid of the exercise of any power granted in the Revolving Credit Agreements, or to enforce any other legal or equitable right vested in the Banks on behalf of the Banks by the Revolving Credit Agreements, the Bank Notes or by law. The provisions of the Revolving Credit Agreements shall be a contract with each and every Holder and the duties of the District shall be enforceable by any Holder by mandamus, specific performance or injunctive relief or other appropriate suit, action, or proceeding in any court of competent jurisdiction.

Remedies Not Exclusive

No remedy conferred in the Revolving Credit Agreements upon or reserved to the Holder (as defined in the Revolving Credit Agreements) is intended to be exclusive of any other remedy, and every such remedy shall be cumulative and shall be in addition to every other remedy given in the Revolving Credit Agreements or now or hereafter existing, at law or in equity or by statute or otherwise, and may be exercised at any time or from time to time, and as often as may be necessary, by any Holder.

Default Rate and Expenses of the Banks

From and after the occurrence of an Event of Default and during the continuance of any such Event of Default, all Obligations (including, without limitation, Loans) under the Revolving Credit Agreements and under the Fee Letters shall thereafter bear interest at the Default Rate. In addition, the District agrees in the Revolving Credit Agreements to pay, after the occurrence of an Event of Default, all costs and expenses (including attorneys' fees and costs of settlement) incurred by the Banks in enforcing any obligations or in collecting any payments due from the District by reason of such Event of Default or in connection with any refinancing or restructuring of the credit arrangements provided under the Revolving Credit Agreements in the nature of a "workout" or of any insolvency or bankruptcy proceedings.

PLAN OF FINANCE

The proceeds of the Commercial Paper Notes will be used to (i) finance Project Costs of Eligible Projects for the District's sewer and drainage system (the "System"); (ii) refinance, renew, or refund any

Bonds, any Program Notes issued under the Note Resolution, or any Prior Program Notes issued under the Prior Program Resolution; and (iii) pay the costs of issuing the Commercial Paper Notes.

ESTIMATED DEBT SERVICE REQUIREMENTS OF THE DISTRICT

For the aggregate debt service requirements of the District (including senior lien Bond debt service and Subordinated Debt service), see "APPENDIX H – Estimated Debt Service Requirements of the District" hereto.

SOURCES OF PAYMENT AND SECURITY FOR THE COMMERCIAL PAPER NOTES

Sources of Payment; Pledged Security

The Commercial Paper Notes are special and limited obligations of the District, payable solely from (a) proceeds of sale of other Commercial Paper Notes issued pursuant to the Note Resolution and used to refund outstanding Commercial Paper Notes, (b) Advances to the District by the Banks under the respective Revolving Credit Agreements and used to refund outstanding Commercial Paper Notes, (c) advances to the District by the Banks under the respective Direct Purchase Notes and used to refund outstanding Commercial Paper Notes, and (d) the sale of Bonds issued and used to pay outstanding Commercial Paper Notes.

The District, under the Note Resolution, in order to provide security for the payment of the principal of and interest on the Commercial Paper Notes and any other amounts due under the Revolving Credit Agreements as the same shall become due and payable, has granted a lien on and pledge of (subject only to the provisions of the Note Resolution permitting the application of the sources listed for purposes and on the terms and conditions set forth in the Note Resolution): (i) the proceeds from the sale of (a) any Bonds issued to pay any outstanding Commercial Paper Notes and (b) any Commercial Paper Notes issued under the Note Resolution to refund any outstanding Commercial Paper Notes; (ii) Advances; (iii) the amounts held in the Note Payment Fund, until such amounts are used for authorized purposes; (iv) the Pledged Property (a) on a parity with the lien and pledge securing the payment of the Direct Purchase Notes, the Subordinate Lien BANS, and the Advances made under the Revolving Credit Agreements, and (b) subordinate solely to the lien and pledge securing the payment of the Bonds, and (v) the amounts remaining on deposit in the Note Construction Account after the payment of all Project Costs. The Note Resolution provides that the principal of and interest on the Commercial Paper Notes and any other amounts due under the Revolving Credit Agreements shall be and are equally and ratably secured by and payable from a lien on and pledge of the sources identified in clauses (i), (ii), (iii), (iv), and (v), subject and subordinate only to the exceptions noted above.

"Pledged Property" means and includes the following property, as and when received by or for the account of the District, and in each case, pending the application or expenditure thereof in accordance with the General Bond Resolution: (i) the proceeds from the sale of any Bonds to retire the Program Notes; (ii) the proceeds of the Program Notes; (iii) all Revenues of the System; (iv) all amounts on deposit in the funds or accounts established under the General Bond Resolution, subject to the application thereof in accordance with the General Bond Resolution; (v) such other amounts as may be pledged from time to time by the District as security for the payment of the Program Notes; and (vi) all of the proceeds of the foregoing.

Rate Covenant

The District has covenanted pursuant to the General Bond Resolution, and reaffirmed under the Note Resolution, to fix, establish, maintain, and collect rates, fees, rents, and charges for the services of the System, which, together with other "Available Revenues" (as defined herein), are expected to produce Available Revenues which will be at least sufficient for each Fiscal Year to pay the sum of:

(i) an amount equal to 110% of the Aggregate Net Debt Service (as defined herein) for such Fiscal Year; and

(ii) the amount, if any, to be paid during such Fiscal Year into the Reserve Account in the Bond Fund (other than amounts required to be paid into such Account out of the proceeds of Bonds); and

(iii) all Operating Expenses (as defined herein) for such Fiscal Year as estimated in the Annual Budget; and

(iv) to the extent not included in the foregoing, an amount equal to the debt service on the Senior Subordinated Debt, any other Subordinated Debt or other debt of the District for such Fiscal Year computed as of the beginning of such Fiscal Year; and

(v) amounts necessary to pay and discharge all charges or liens payable out of the Available Revenues when due and enforceable.

"Available Revenues," as used only for purposes of the above rate covenant, means all revenues and other amounts received by the District and pledged as security for the payment of the Bonds, but excludes any interest income which is capitalized pursuant to generally accepted accounting principles.

"Aggregate Net Debt Service" means Aggregate Debt Service (as defined herein), excluding (i) interest expense which, in accordance with generally accepted accounting principles, is capitalized and which may be paid from the proceeds of debt and (ii) other amounts, if any, available or expected to be available in the ordinary course for the payment of Debt Service.

"Operating Expenses" includes all reasonable, ordinary, usual, or necessary current expenses of the District in connection with the maintenance, repair, and operation of the System, determined in accordance with generally accepted accounting principles and the enterprise basis of accounting. Operating Expenses does not include reserves for extraordinary maintenance or repairs for the System, such as extraordinary maintenance, administrative, and engineering expenses of the District which are necessary or incident to capital improvements for which debt has been issued and which may be paid from the proceeds of such debt.

Additionally, the District has separately covenanted to the Banks in the Revolving Credit Agreements and the Note Purchase Agreements to maintain rates and charges sufficient:

(i) to pay the Operating Expenses for each Fiscal Year;

(ii) to produce Net Revenues of the System, collectively or individually, as the case may be, sufficient (a) to pay an amount equal to 110% of the Aggregate Net Debt Service for such Fiscal Year, and (b) to pay the amounts required to be deposited in any reserve or contingency fund and any interest and sinking fund created and maintained for the payment and security of the Bonds in each Fiscal Year;

(iii) to produce Net Revenues of the System (after satisfaction of the amounts required to be paid in clause (ii) above), equal to at least 110% of the Aggregate Debt

Service for all Senior Subordinated Debt payable from and secured by a lien on and pledge of the Net Revenues of the System for each Fiscal Year; and.

(iv) to pay any other legal debt or obligation of the System as and when the same shall become due.

"Aggregate Debt Service" for any period means, as of any date of calculation, the sum of the amounts of Debt Service for such period.

"Net Revenues" for any period means Revenues less Operating Expenses for such period.

The summary definitions in this section are not intended to be comprehensive or definitive, and reference is made to the General Bond Resolution and "APPENDIX A – Definitions of Certain Terms and Summary of Provisions of the Note Resolution" hereto for more detail. The definitions set forth above are qualified in their entirety by reference to the General Bond Resolution. For a table illustrating the computation of historical debt service coverage, using these terms as defined in the General Bond Resolution, see "APPENDIX B – Annual Comprehensive Financial Report of the District, Fiscal Years Ended June 30, 2022 and 2021 – Comparative Schedule of Debt Service Coverage."

Outstanding Bonds of the District Issued under the General Bond Resolution

The District has previously issued its Sewer and Drainage System Revenue Bonds, which are currently outstanding in the amounts shown below (the "Outstanding Bonds"), each series of which ranks on a basis superior to the Commercial Paper Notes and the Direct Purchase Notes as to the pledge of the Pledged Property.

Outstanding Bonds of the District

Series	Dated Date	Original Principal Amount	Principal Amount Outstanding[1]
Series 2009C	November 24, 2009	$180,000,000	$180,000,000
Series 2010A	November 30, 2010	330,000,000	330,000,000
Series 2013B	May 23, 2013	119,515,000	107,515,000
Series 2014A	November 25, 2014	80,000,000	79,600,000
Series 2015A	October 21, 2015	175,000,000	170,845,000
Series 2015B	October 21, 2015	81,750,000	62,995,000
Series 2016A	August 30, 2016	150,000,000	146,540,000
Series 2016B	August 30, 2016	28,315,000	17,830,000
Series 2017A	August 22, 2017	175,000,000	143,280,000
Series 2017B	August 29, 2017	35,725,000	30,245,000
Series 2018A	March 31, 2018	60,380,000	60,380,000
Series 2020A	July 30, 2020	225,000,000	223,000,000
Series 2020B (WIFIA)[2]	March 15, 2021	96,926,900	96,926,900
Series 2020C	October 15, 2020	112,065,000	108,415,000
Series 2021A	August 17, 2021	246,555,000	227,720,000
Series 2022A	February 1, 2022	225,000,000	224,250,000
Series 2023A	May 16, 2023	49,745,000	49,745,000
Series 2023B	May 16, 2023	41,950,000	41,950,000
	TOTAL	$2,412,926,900	$2,301,236,900

(1) As of May 16, 2023
(2) The District anticipates the first draw on the WIFIA Loan to occur in 2023, with the final draw occurring in November 2026. At the final draw, the outstanding balance will be $96,926,900. The debt service on the WIFIA Loan is not included in the debt service calculation until the first draw occurs. See "RECENT AND PENDING TRANSACTIONS OF THE DISTRICT" herein for additional information on the WIFIA Loan.

As of the date of this Offering Memorandum, the District has outstanding $130,000,000 of subordinated commercial paper notes which are scheduled to mature on June 21, 2023. The District expects to issue new Commercial Paper Notes in at least that amount on June 21, 2023, pursuant to the Note Resolution. The proceeds of the new Commercial Paper Notes issued on June 21, 2023, will be used to pay the District's then-maturing subordinated commercial paper notes.

Additionally, the District has the following other Subordinate Lien debt outstanding:

Subordinate Lien Debt of the District

Series	Dated Date	Original Principal Amount	Principal Amount Outstanding[1]
2022 BAN	5-Oct-22	$226,340,000	$226,340,000
2009 GO Bonds	30-Jun-20	7,335,000	400,000
2014 GO Bonds	30-Jun-20	3,750,000	7,010,000
2017 GO Bonds	30-Jun-20	9,790,000	3,364,113
KACO	30-Jun-20	4,000,000	1,870,000
KIA A09-41	1-Jan-10	2,395,000	1,354,173
KIA A10-04	30-Jun-20	2,843,000	1,702,391
KIA A10-05	30-Jun-20	1,000,000	622,440
KIA A10-06	30-Jun-20	121,000	69,731
KIA A10-07	30-Jun-20	2,538,000	1,581,418
KIA A11-15	30-Jun-20	671,000	401,527
KIA A12-29	30-Jun-20	500,000	4,931,966
KIA A17-028 (Estimated) [2]	30-Jun-20	7,400,000	2,022,525
KIA A18-010	30-Jun-20	1,092,460	1,045,004
KIA A19-015	20-Dec-19	2,695,235	2,640,102
KIA A19-028 (Estimated) [3]	20-Dec-19	24,200,000	23,704,975
KIA B10-01	30-Nov-21	500,000	236,184
KIA B10-04	30-Nov-21	500,000	261,944
KIA B15-006	30-Nov-21	87,500	70,325
		$297,758,195	$279,628,818

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(1) Amounts as of July 1, 2022. Table does not include $130,000,000 of subordinated commercial paper notes which are scheduled to mature on June 21, 2023.
(2) Loan is not fully drawn.
(3) Principal amortization schedule has not been finalized as of July 1, 2022.

Commercial Paper Notes and Direct Purchase Notes are Subordinate to Bonds of the District

THE COMMERCIAL PAPER NOTES AND THE DIRECT PURCHASE NOTES ARE SECURED ON A BASIS INFERIOR AND SUBORDINATE TO THE BONDS AND OTHER OBLIGATIONS OF THE DISTRICT HERETOFORE ISSUED, OR TO BE ISSUED, AND SECURED BY A FIRST LIEN PLEDGE ON THE PLEDGED PROPERTY, PURSUANT TO THE GENERAL BOND RESOLUTION.

Additional Bonds

As provided in the General Bond Resolution, Additional Bonds may be issued on a parity with the Outstanding Bonds to finance the Cost of Construction and Acquisition of a Project upon the satisfaction of certain conditions. The General Bond Resolution further provides that Refunding Bonds may be issued from time to time to refund outstanding obligations. The District anticipates the future issuance of Additional Bonds in connection with the refunding of outstanding obligations and in connection with the District's Capital Improvement Program. Further, the District anticipates issuing Additional Bonds to retire the Commercial Paper Notes and Direct Purchase Notes at maturity.

The conditions for the issuance of Additional Bonds to finance the Cost of Construction and Acquisition of a Project include a certificate of an Authorized Officer of the District setting forth (i) for any period of 12 consecutive calendar months within the 24 calendar months preceding the date of the authentication and delivery of the Additional Bonds, the Net Revenues for such period, and (ii) the Aggregate Net Debt Service during the same period for which Net Revenues are computed, with respect to all Series of Bonds which were then Outstanding (excluding from Aggregate Net Debt Service any Principal Installment or portion thereof which was paid from sources other than Net Revenues), and showing that the amount set forth in clause (i) is equal to or greater than 110% of the amount set forth in clause (ii).

In addition, the conditions for the issuance of Additional Bonds to finance the Cost of Construction and Acquisition of a Project also include a certificate of an Authorized Officer of the District setting forth (a) for the last full Fiscal Year of 12 months (ending June 30) immediately preceding the date of the authentication and delivery of the Additional Bonds, the Net Revenues for such period, or, at the option of the District, for the last 12 consecutive full calendar months immediately preceding the date of the authentication and delivery of the Additional Bonds, the Net Revenues for such period, and (b) the estimated maximum Aggregate Net Debt Service in the current or any future Fiscal Year with respect to (1) all Series of Bonds which are then Outstanding and (2) the Additional Bonds then proposed to be authenticated and delivered (and for this purpose, all Series of Bonds Outstanding plus such proposed Additional Bonds shall be treated as a single Series; that is, the maximum Aggregate Net Debt Service shall be computed collectively with respect to all such Bonds, and not computed cumulatively or separately for each particular Series), and showing that the amount set forth in clause (a) is equal to or greater than 110% of the amount set forth in clause (b). For purposes of computing the amount set forth in clause (a), Net Revenues may be increased to reflect the following amounts: (1) any increases in the rates, fees, rents, and other charges for services of the System made subsequent to the commencement of such period and prior to the date of such certificate, (2) any estimated increases in Net Revenues caused by any Project or Projects having been placed into use and operation subsequent to the commencement of such period and prior to the date of such certificate, as if such Project or Projects had actually been placed into use and operation for the entire period chosen in clause (a) above, and (3) 75% of any estimated increases in Net Revenues which would have been derived from the operation of any Project or Projects with respect to which the Cost of Construction and Acquisition is to be paid from proceeds of the Additional Bonds proposed to be authenticated and delivered, as if such Project or Projects had actually been placed into use and operation for the entire period chosen in clause (a) above.

The Program Notes are inferior and subordinate as to the pledge of the Pledged Property with respect to all Outstanding Bonds, and any Additional Bonds or Refunding Bonds issued on a parity with the Outstanding Bonds.

Senior Subordinated Debt; Subordinated Revenue Bond Anticipation Notes

The General Bond Resolution permits the District to issue Senior Subordinated Debt secured by Revenues of the System, subject to the prior and senior lien on such Revenues of all Bonds issued and outstanding under the General Bond Resolution. The decision of the District from time to time whether to issue Senior Subordinated Debt or Bonds depends, among other things, upon its assessment of market conditions at the time of issuance.

The District has issued Senior Subordinated Debt to provide interim financing for capital projects. Each series of Senior Subordinated Debt that has been issued has been retired from the proceeds of Bonds issued under the General Bond Resolution or from the proceeds of another series of Senior Subordinated Debt issued to refinance an earlier series of Senior Subordinated Debt.

On October 5, 2022, the District issued its Subordinated Revenue Bond Anticipation Notes, Series 2022 (the "Series 2022 Notes") for the purpose of currently refunding the District's outstanding Subordinated Revenue Bond Anticipation Notes, Series 2021. The Series 2022 Notes were issued in the original principal amount of $226,340,000 and are currently outstanding in that same principal amount. The principal of and accrued interest on the Series 2022 Notes are payable at maturity on October 6, 2023. The Series 2022 Notes were issued in accordance with, among other things, (i) applicable provisions of Kentucky Revised Statutes Chapters 65, 58 and 76 and Section 56.513 and (ii) a Subordinated Debt Resolution adopted by the District on April 26, 2010 (the "Basic Subordinated Debt Resolution"), as amended by a Subordinated Debt Sale Resolution adopted on August 22, 2022 (the "Series 2022 Subordinated Debt Resolution").

The Series 2022 Notes shall be paid (to the extent not paid from other sources) from the proceeds of Additional Bonds issued in accordance with the terms of the General Bond Resolution to the extent other funds are not available. The Series 2022 Notes are payable upon such terms as are described in the Basic Subordinated Debt Resolution and the Series 2022 Subordinated Debt Resolution. The pledge of Revenues securing the Series 2022 Notes is subject and subordinate in all respects to the priorities, liens, and rights created by and existing under the General Bond Resolution for the security and source of payment and protection of all Bonds previously issued, the Series 2023 Bonds, and any Additional Bonds and Refunding Bonds (as such terms are defined in "APPENDIX A – Definitions of Certain Terms and Summary of Provisions of the Note Resolution" hereto or in the General Bond Resolution) which may be issued from time to time pursuant to the General Bond Resolution.

Commercial Paper Notes and Direct Purchase Notes Not Indebtedness of Louisville/Jefferson County Metro Government or the County of Jefferson, Kentucky

The Commercial Paper Notes and the Direct Purchase Notes do not constitute an indebtedness of the Louisville/Jefferson County Metro Government or the County of Jefferson, Kentucky.

SWAPS AND OTHER FINANCIAL INSTRUMENTS

The District has entered into interest rate swap agreements with two counterparties as part of the management of its outstanding debt. Generally, each interest rate swap agreement calls for periodic net payments from or to the District depending upon whether a specified market interest rate index is above or below a specified fixed rate or another specified market interest rate index during that period. Each such swap agreement allows the District, at its option, to terminate the agreement at any time. Upon any such termination, a termination payment is to be made, calculated based on the mark-to-market value of the swap agreement plus dealer's spread. The swap agreements provide that under certain circumstances the counterparty to the swap agreement (but not the District) may be required to post collateral, depending upon the credit rating of that counterparty, with the amount of collateral required based on the mark-to-market value of the swap. The interest rate swap agreements entered into by the District provide that the counterparties to the agreements must post collateral if their respective ratings fall below A+/A1. The agreements also provide the counterparties the right to terminate the agreements if the District's unenhanced bond rating is downgraded below BBB/Baa. The District's obligations under all of its outstanding swap agreements are unsecured and subordinate to all Bonds issued and outstanding under the General Bond Resolution. Certain provisions of the District's outstanding swap agreements are summarized below.

The District has from time to time entered into agreements with various counterparties to provide for the investment of amounts in various funds established under the General Bond Resolution. Generally such agreements provide for the investment of funds at a contractually fixed rate of return to the District during their respective terms and provisions for termination, at the option of the District, based on payment of a termination fee determined based on the mark-to-market value of the contract plus dealer's spread.

The District reserves the right to enter into, amend, and terminate any existing or future interest rate swap transactions or other agreements or derivative transactions, from time to time, as part of its overall debt, investment or general management strategy. See also "APPENDIX A – Definitions of Certain Terms and Summary of Provisions of the Note Resolution" hereto.

Floating-to-Fixed Swap

In 2001, the District entered into two forward-starting interest rate swaps (the "1999 Swaps") pursuant to which beginning in November 2009 the District would pay a fixed rate of 4.4215% and receive 67% of the One Month LIBOR index on a notional amount corresponding to the approximate amount needed to refund the District's Series 1999 Bonds. The District's original strategy in entering into the 1999 Swaps was to "lock in" a fixed rate for the variable rate debt that could be issued in 2009 to refund the Series 1999 Bonds. In August 2009, the District decided instead to refund the Series 1999 Bonds with proceeds of its fixed-rate Series 2009B Bonds and its fixed-rate Series 2009A Notes. The Series 2009A Notes have since been refunded by successive series of refunding notes, the latest in such series of refunding notes being the Series 2022 Notes.

In August 2009, the District reversed that portion of the 1999 Swaps which corresponded in amount and amortization schedule to the portion of the Series 2009B Bonds used to refund the Series 1999 Bonds. The reversed portion of the 1999 Swaps was terminated in April 2013. The only portion of the 1999 Swaps that remains in effect is the non-reversed portion of the 1999 Swaps, which has a termination date of May 15, 2033 and amortizes in amounts that correspond with the expected maturity structure of a future hypothetical bond issue the District may issue under the Resolution to permanently refinance the Series 2022 Notes. The District's expectation is that variable payments received under the non-reversed portion of the 1999 Swaps will hedge future interest rate movements for any fixed-rate Bonds hereafter issued under the Resolution (or any other fixed-rate renewal notes hereafter issued under the Subordinated Debt Resolution) to refinance the Series 2022 Notes. See "Note 7 – Long Term Debt" in "APPENDIX B – Annual Comprehensive Financial Report of the District, Fiscal Years Ended June 30, 2022 and 2021." As of April 30, 2023, the estimated aggregate mark-to-market value of the non-reversed portion of the 1999 Swaps was approximately *negative* $19,107,102.

The District and its counterparties to the interest rate swaps described above have each adhered to the ISDA 2020 IBOR Fallbacks Protocol as published by the International Swaps and Derivatives Association.

THE DISTRICT

General

The District was created and established pursuant to Chapters 65, 58 and 76 and Section 56.513 of the Kentucky Revised Statutes, as amended (collectively, the "Act"), as a public body corporate, in 1946, in the interest of the public health and for the purpose of providing adequate sewer and drainage facilities. The District had complete jurisdiction, control, possession, and supervision of the then existing sewer and drainage system in the City, and with the power and authority, to operate, maintain, reconstruct, and improve said sewer and drainage system and construct any additions, betterments, and extensions thereto within the limits of the District area as defined in the Act. The District assumed jurisdiction over and administration of the then existing sewer and drainage system in the City on November 16, 1946, pursuant to Ordinance No. 90, Series 1946, passed by the Board of Aldermen of the City and approved by the Mayor thereof in accordance with the requirements of the Act.

Administration and Management of the District

The business, activities, and affairs of the District are managed, controlled, and conducted by a board (the "Board"), composed of eight members, not more than five of whom shall be affiliated with the same political party. The members of the Board are appointed by the Mayor subject to the approval of the Council of the Louisville/Jefferson County Metro Government ("Metro Council"). All appointments to the Board are made for three-year terms. The present members of the Board and the expiration dates of their respective terms are as follows:

Board Members	Term Expires
Marita Willis (Chair)	June 30, 2025
Keith Jackson (Vice-Chair)	August 31, 2023
Rebecca Cox	August 31, 2023
Gerald Joiner	February 28, 2024
Ricky Mason	July 31, 2025
Carmen Moreno-Rivers	June 30, 2024
John Selent	July 31, 2024

The Board has delegated and placed the conduct of the day-to-day business affairs of the District under the direction of an Executive Director supported by administrative, engineering, legal and business staffs. Short biographies of key members of the District's senior management team are set forth below:

James A. Parrott, Executive Director and Secretary-Treasurer

James A. "Tony" Parrott has served as the Executive Director of the District since July 2015, having been appointed to this role after 30 years in the public utility business, including 10 years in the top leadership role of the Metropolitan Sewer District of Greater Cincinnati. He holds a Communications Degree from Georgetown College and sits on the Board of Directors for the National Association of Clean Water Agencies. On February 26, 2019, the District's employment agreement with Mr. Parrott to serve as Executive Director was extended through September 13, 2023.

David Johnson, Chief Engineer

David Johnson has been employed by the District for 22 years, all within the Engineering Division. He most recently served as the Development and Storm Water Services Director before being promoted to Chief Engineer in 2020. Mr. Johnson is a Licensed Professional Engineer in the Commonwealth of Kentucky and holds a Bachelor of Science and a Master of Engineering Degree from the J.B. Speed School of Engineering at the University of Louisville. On March 23, 2020, Mr. Johnson entered into an employment agreement with the District to serve as Chief Engineer through March 23, 2021, subject to automatic renewal for up to four additional one-year renewal periods.

Brian Bingham, Chief of Operations

Brian Bingham joined the District in 2004 as the Regulatory Services Director to oversee the development and implementation of the Wet Weather Consent Decree. He assumed oversight of the District's Operations Group, including Wastewater, Drainage, and Flood Protection, in 2013. His previous experience includes 20 years of engineering and program management in the private consulting engineering business. Mr. Bingham has a Bachelor of Science degree in Civil Engineering from the J. B. Speed School of Engineering at the University of Louisville.

Brad Good, Chief Financial Officer

Brad Good has been employed by the District as Controller since 2016 and was promoted to Chief Financial Officer in 2020. His previous experience includes 15 years in various accounting and finance positions in the hotel industry. Mr. Good is a certified public accountant and has a Bachelor of Science degree in Animal Science from Kansas State University and a post-baccalaureate degree in accounting from Indiana University Southeast.

Angela Akridge, Chief Strategy Officer

Angela Akridge began working for the District as an engineering cooperative education intern and upon completion of her civil engineering bachelor's and master's degrees from the University of Louisville Speed Scientific School, she joined the District as a full-time employee. Since that time she has served the community through multiple leadership, management and technical positions throughout her 27+ years at the District. She was appointed the District's Chief Engineer in 2015 and most recently appointed to the newly created position of Chief Strategy Officer for Business Transformation and Regulatory Compliance in 2019.

Lynne Fleming, Chief Human Resources Officer

Lynne Fleming has been the District's Director of Human Resources since January 2012 and was named Chief Human Resources Officer in March 2023. She has over 18 years' experience in HR having previously served the City of Louisville and Louisville Metro Government as Assistant Director of Human Resources. Ms. Fleming is a licensed attorney. During her 8 years with the City of Louisville Law Department, Ms. Fleming focused her practice in the areas of labor and employment law and civil rights litigation. She was also a litigator in the adult trial division of the Louisville-Jefferson County Public Defender's Office for the first 8 years of her legal career. Ms. Fleming has a Bachelor of Arts degree in International Affairs with a Business Concentration from Xavier University and a Juris Doctor degree from the University of Louisville Brandeis School of Law.

Kellie S. Watson, General Counsel and MSD Legal Director

Kellie Watson began at the District in May 2020 as the Equity and Compliance Officer, and was promoted to General Counsel and Legal Director in November 2022. Ms. Watson has over 20 years of experience in state and local government as the following: Chief Equity Officer, General Counsel and Legislative Liaison, and Director of Human Resources in the Office of the Mayor, Mayor Greg Fischer, Louisville Metro Government; Executive Director for the Office of Civil Rights and Small Business and Director of Personnel Management for the Kentucky Transportation Cabinet; Executive Director of Louisville Metro Human Relations Commission; and the Director of the Office of Affirmative Action for the City of Louisville. Prior to working in local government, Ms. Watson worked as a public defender for the Louisville-Jefferson County Public Defender's Office, and as an associate attorney in Cincinnati, Ohio with Peck, Shaffer, and Williams LLP. Ms. Watson has a Bachelor of Science degree in Political Science with a concentration in Policy Analysis from the University of Louisville and a Juris Doctorate degree from Vanderbilt University, School of Law.

René Patterson-Lindsay, Chief Procurement Officer

René Patterson-Lindsay has been employed by the District since 1994 and was promoted to Chief Procurement Officer in 2018. During her tenure she has worked the last 24 years in Procurement and Supplier Diversity. Ms. Lindsay is a certified public procurement officer and has a Bachelor of Science degree in Business Administration from Spalding University.

Kimberly Reed, Chief Innovation Officer

Kim Reed has been the Chief Innovation Officer of the District since March of 2019. She previously worked for the Louisville Water Company in various leadership positions. She has had a diverse career of over 20 years in the electric, gas, water, and wastewater utility industries. Ms. Reed has a Bachelor of Science in Chemical Engineering and a Master of Business Administration (MBA) degrees, both from the University of Louisville.

Paul Bagley, Chief Information Officer

Paul Bagley has been the Chief Information Officer of the District since April of 2021. His previous experience includes information technology leadership and technical positions in the software, airline, and utility industries. Mr. Bagley has over 20 years of experience in the field of information technology. He holds a bachelor's degree in industrial engineering from Georgia Tech.

Wes Sydnor, Chief of Government & Public Affairs

Wesley Sydnor, PE – is the Chief of Government and Public Affairs for Louisville MSD. Mr. Sydnor has been with Louisville MSD for over 14 years and has been active in the clean water sector for over 20 years. He has a Master of Engineering and BS in Civil Engineering from the University of Louisville and serves on various professional association and environmental boards throughout the community. He currently leads the communications, regionalization, and legislative engagement for the district.

Sharise Horne, Chief of Equity & Community Partnerships

Sharise Horne has served in various capacities at Louisville MSD for over 25 years. She currently serves as Chief of Equity and Community Partnerships, responsible for overseeing inclusive and comprehensive programs that foster partnerships, and job creation, with communities within MSD's service area. She is also responsible for leading MSD's Diversity, Equity, and Inclusion initiative. Ms. Horne holds two undergraduate degrees from Indiana Wesleyan University, both magna cum laude. She holds several professional certifications, including Certified Compliance Administrator from Morgan State University. Ms. Horne currently serves on Louisville Mayor's Equity in Contracting & Procurement Taskforce, and Co-chairs the National Association of Clean Water Agencies Environmental Justice committee. She serves on various local and national taskforce, boards, and committees.

Lopez High, Chief of Facilities, Safety & Security

Lopez High serves as MSD's Chief of Facilities, Safety & Security.

The Sewer System

The District is authorized by KRS Chapter 76 to provide wastewater collection, treatment, and disposal services in Jefferson County. Through inter-local agreements, the District also provides wastewater collection, treatment, and disposal services to portions of Oldham County and Bullitt County. The District's sewer system extends throughout much of the developed portions of Jefferson County and includes approximately 600 miles of combined sewers (which carry sanitary wastewater during dry weather and a combination of stormwater and sanitary wastewater during wet periods), 2,700 miles of sanitary sewers, more than 260 pumping stations, five regional Water Quality Treatment Centers, and an estimated 1,400 miles of lateral connections to buildings.

The District's wastewater treatment capacity as of June 30, 2022 was as follows:

WASTEWATER TREATMENT PLANT CAPACITY

Plant	Current Capacity MGD	Avg Daily Flow MGD	Eventual Capacity MGD	Customer Base Residential	Customer Base Commercial	Customer Base Industrial	Customer Base Total	Year Built	Treatment Process
Morris Forman	120.0	91.8	120.0	120,629	13,540	304	134,473	1958	Secondary added in 1976.
Derek R. Guthrie	60.0	51.0	60.0	64,238	3,758	38	68,034	1986	Secondary
Hite Creek	6.0	4.1	9.0	10,816	663	9	11,488	1970	Tertiary: sand filter
Cedar Creek	7.5	3.8	11.3	18,712	1,072	12	19,796	1995	Tertiary: sand filter
Floyd's Fork	6.5	6.5	9.8	9,987	548	5	10,540	2001	Tertiary: sand filter
Oldham County Plants	4.3	1.9	4.3	6,495	93	-	6,588	Varies	
Bullitt County Plants	1.7	1.2	1.7	3,801	115	1	3,917	Varies	
Total Treatment System	206.0	160.3	215.1	234,678	19,789	369	250,919		

MGD: Million Gallons per Day
Source: Louisville/Jefferson County Metropolitan Sewer District

The Drainage System

Under an interlocal government cooperation agreement effective January 1, 1987, the District became the sole local authority for providing flood control and storm water drainage services in the Drainage Service Area. The District is responsible for the operation, maintenance, replacement, improvements and additions to existing flood control facilities and public storm water drainage facilities within the Drainage Service Area. The stormwater drainage system is comprised of various types of facilities to collect, convey, retain, and discharge stormwater runoff into the sewers, rivers, streams, and creeks eventually draining into the Ohio River. These facilities include open channels, ditches, streams, ponds, pipes, culverts, conduits, bridge structures, detention basins, retention basins, pump stations, and other facilities. By having a single authority responsible for drainage services and a dedicated source of revenue, the community benefits by having a more efficient, cost effective drainage service program.

One Water Initiative

In January of 2012 Mayor Greg Fischer of the Louisville/Jefferson County Metro Government formed the Louisville Utilities and Public Works Advisory Group (the "Advisory Group") to examine the operations of the Louisville Water Company, a Kentucky corporation wholly owned as a public enterprise by the Louisville/Jefferson County Metro Government ("Louisville Water Company"), the District, and Metro Government's Department of Public Works & Assets ("DPW") to determine whether synergies exist between the entities that would allow for improved service or reduced costs. The Advisory Group, along with efforts of an experienced utility industry consulting corporation, and of due diligence teams of the District and Louisville Water Company, produced a final Report on Due Diligence Analysis and Recommendation in February 2014. As a result of those efforts, the District and the Board of Waterworks of the Louisville/Jefferson County Metro Government, the governing body of the Louisville Water Company (the "Board of Waterworks") entered into an Interlocal Cooperation Agreement (the "Original ILA") on March 11, 2014, as approved by the Kentucky Attorney General on March 31, 2014. The Original ILA, effective through June 30, 2033 (unless earlier terminated by either party on six months' notice), provided for, among other items, the joint and/or cooperative development, provision, sharing and management of certain back-office, administrative and/or support services.

On August 24, 2015, the District and the Board of Waterworks entered into an Amended and Restated Interlocal Cooperation Agreement (the "Amended ILA," and together with the Original ILA, the "ILA"), as approved by the Kentucky Attorney General on September 17, 2015. The Amended ILA was entered into to establish a joint administrative board known as the One Water Board and to provide for more efficient implementation and expansion of the services provided in the Original ILA. The One Water Board consists of two members each from the Board and the Board of Waterworks and a member appointed by the Mayor. The One Water Board is responsible for the overall administration of the One Water shared and/or consolidated services program. The Amended ILA is effective through June 30, 2035 (unless earlier termination by either party on 180 days' notice).

The One Water Board approves annual project plans that drive One Water efforts for both Louisville Water Company and the District. These project plans are focused on five key areas: Shared Processes, Cooperative Contracts, Shared Labor, Partnerships and Knowledge Sharing. Through the One Water Partnership, Louisville Water Company and the District strive to achieve the Partnership's mission of improving customer experience, creating efficiencies, and driving revenue growth.

THE SERVICE AREA

The combined area of the former City and the County ("Louisville Metro") is located in the north-central portion of the Commonwealth on the south bank of the Ohio River. Louisville Metro is the largest city in Kentucky and is the core of the Louisville Metropolitan Statistical Area (MSA) which includes, in addition to Louisville Metro, the counties of Bullitt, Oldham and Shelby, in Kentucky, and Clark, Floyd, and Harrison, in Indiana. The Louisville MSA has exhibited a nationally familiar pattern of population dispersion from its core urban area to the balance of Louisville Metro, and from Louisville Metro to the adjacent counties in Kentucky and Indiana.

Annual Population Estimates		
Rank	Louisville Metro[1]	Louisville MSA[2]
1970	695,000	991,801
1980	684,300	1,054,368
1990	665,200	1,058,425
2000	693,604	1,161,975
2010	742,054	1,267,691
2011	746,361	1,310,945
2014	761,725	1,269,702
2015	764,946	1,278,413
2016	767,464	1,350,207
2017	769,828	1,293,953
2018	768,101	1,297,301
2019	766,757	1,265,108
2020	782,123	1,285,058
2021	777,874	1,284,566
2022	773,399	

[1]Source: Population Division, U.S. Census Bureau website: www.census.gov (Jefferson County, KY)

[2]Source: Population Division, U.S. Census Bureau website: www.census.gov (Louisville/Jefferson County, KY-IN)

According to the Bureau of Labor Statistics, Louisville employment was at 662,503 jobs in June of 2022 compared to 636,202 jobs in June 2021, an increase of 4.13%. Major employers in the Louisville metropolitan area include United Parcel Service, Jefferson County Public Schools, Norton Healthcare, Ford Motor Company, and Humana Inc. Per capita personal income for Jefferson County, Kentucky was listed at $57,863 for 2020 which is an increase of 3.6% over the prior year. The United States Department of Labor's Bureau of Labor Statistics listed the unemployment rate for Jefferson County, Kentucky, as 3.4% in June 2022 compared to 5.5% in June of 2021.

Louisville Metro Major Employers		
Rank	Company	Employment
1	United Parcel Service, Inc.	25,169
2	Norton Healthcare, Inc.	14,413
3	Jefferson County Public Schools	13,596
4	UofL Health, Inc.	13,111
5	Ford Motor Co.	13,020
6	Humana Inc.	11,243
7	Baptist Healthcare System Inc.	9,030
8	Walmart Inc.	8,600
9	GE Appliances, a Haier company	8,100
10	University of Louisville	6,585

Source: *Louisville Business First* (7/15/22 edition)

RATES AND CHARGES

Wastewater Service and Drainage Service Charges

The District derives its revenue for wastewater service and drainage service from the collection of rates, rentals and charges established in accordance with the provisions of the Act for services rendered within the Service Area to customers served by the District's facilities. Wastewater Service Rates and Drainage Service Rates, are billed and collected by Louisville Water Company on behalf of the District under terms of an agreement executed in January 2013 and ending in December 2027. These rates are billed simultaneously with the water bill on a single statement payable in total for wastewater, drainage and water service rendered. The Louisville Water Company is currently implementing an Advanced Metering Infrastructure (AMI) project. The project automates the meter reading process and enables monthly billing. Customers are being converted to monthly billing in cycles. It is expected that all customers will be converted to monthly billing by the end of 2024. In the event of nonpayment of any such wastewater rates, rentals, or charges for a period of more than 30 days after they become due and payable, Louisville Water Company is required by law to discontinue water service. Portions of the District's Oldham County service area receive water service from Oldham County Water District. Wastewater Service Rates for these customers are billed and collected by Oldham County Water District on behalf of the District under the terms of an agreement assumed on July 1, 2020.

The District wastewater service rates include a fixed service charge based on the size of the public water meter serving the property plus a charge for each 1,000 gallons of water consumed on the premises. Each customer has the option of installing private meters to record water usage which does not enter the sewers. Industrial and commercial customers may use this option to obtain credit for water which does not enter the sewers. Drainage service rates are charged based on measured impervious areas with one equivalent service unit assigned for each 2,500 square feet of impervious area (residential unit).

The District's wastewater and drainage service revenues for the past five fiscal years were as follows:

Fiscal Year	Wastewater Revenue (dollars in thousands) Residential	Commercial	Industrial	Other	Total	Drainage Revenue (dollars in thousands) Residential	Commercial	Industrial	Other	Total
2018	116,457	66,651	24,439	3,088	210,635	23,811	35,778	3,864	415	63,868
2019	122,830	71,054	23,172	2,412	219,468	25,716	38,775	4,373	842	69,706
2020	140,125	74,134	21,759	1,789	237,807	27,684	41,960	4,815	593	75,052
2021	148,091	74,460	23,080	171	245,802	29,413	45,220	5,239	43	79,915
2022	156,764	86,010	23,558	3,734	270,066	31,497	48,526	5,670	1,111	86,804

Source: Louisville/Jefferson County Metropolitan Sewer District

Rate Making Process

To amend its Jefferson County Schedule of Rates, Rentals and Charges in effect from time to time, the District adopts and publishes a preliminary rate resolution, receives public comment for a period of 30 days, and then adopts a final rate resolution. The Metro Government's Code of Ordinances provides that, in the event the District's net revenues are less than 1.10 times the debt service on the District's outstanding revenue bonds for any consecutive six-month period, the District's Schedule of Rates, Rentals and Charges shall be amended in order to maintain such 1.10 debt service coverage, provided that the aggregate of the adjustments for any 12-month period shall not generate additional revenue from wastewater and drainage service charges in excess of 7% and that an explanation of proposed rate increases in excess of 4% shall be delivered to the Metro Council at least 60 days prior to the approval of the District's Board. Any rate increase that would generate additional revenue from wastewater and drainage service charges in excess of 7% for a 12-month period requires Metro Council approval. "Net revenues" are defined for such purpose as gross revenue from wastewater service charges less operating expenses and debt service payments other than debt service payments on the District's outstanding revenue bonds.

Wastewater rate adjustments for the District's service area in Bullitt and Oldham Counties are determined by the Interlocal Agreements by which the systems were acquired.

Rate History

The following table shows the District's rate change history for the District's service areas during the last five years.

Historical Rate Increases

	FY19	FY20	FY21	FY22	FY23
Jefferson County Service Area	6.90%	6.90%	5.00%	6.90%	5.00%
Bullitt County Service Area	NA	NA	NA	12.00%	12.00%
Oldham County Service Area	NA	NA	0.00%	0.00%	-10.00%

Source: Louisville/Jefferson County Metropolitan Sewer District

Customer Growth

The following tables show the growth in the total number of the District's wastewater customers and drainage service customers. Wastewater customer growth in fiscal year 2021 is primarily due to the District's acquisition of the former Oldham County Environmental Authority service area. This acquisition added approximately 6,000 wastewater customers.

Historical Active Wastewater Customer Totals

	FY 17	FY 18	FY 19	FY 20	FY 21	FY 22
Residential	217,979	219,186	220,412	221,796	230,157	234,362
Commercial	19,658	19,350	19,373	21,331	21,537	21,851
Industrial	340	348	360	385	390	394
Total	237,977	238,884	240,145	243,512	252,084	256,607
% Growth	0.81%	0.38%	0.53%	1.40%	3.52%	1.79%

Source: Louisville/Jefferson County Metropolitan Sewer District

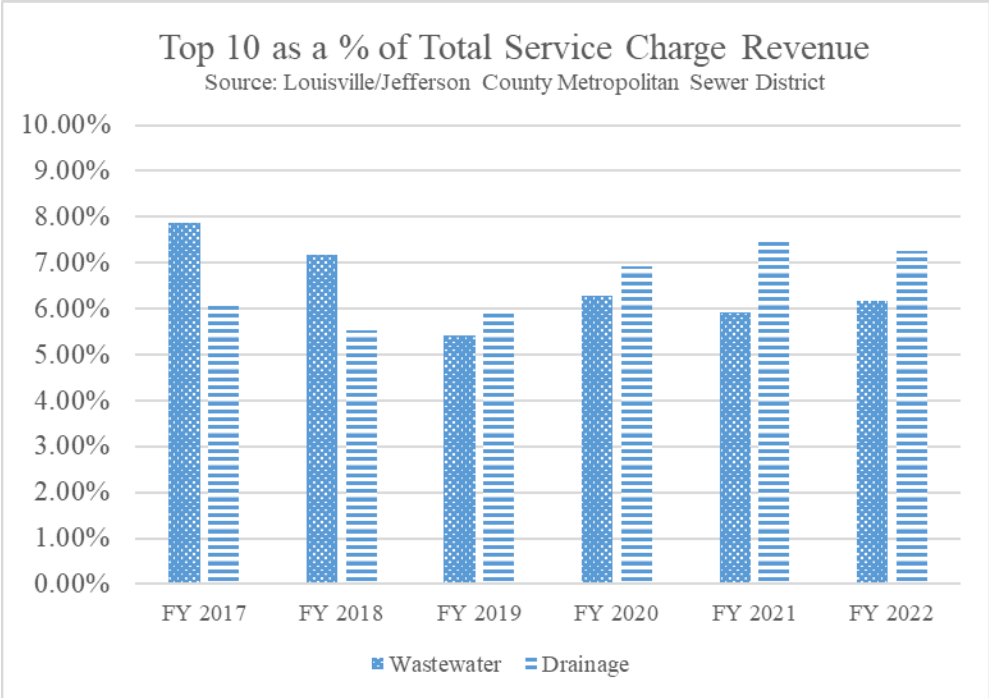
Historical Active Drainage Customer Totals

	FY19	FY 20	FY 21	FY22
Residential	206,499	207,317	208,060	209,335
Commercial	14,024	14,087	14,062	14,040
Industrial	257	271	269	274
Total	220,780	221,675	222,391	223,649
% Growth		0.41%	0.32%	0.57%

Source: Louisville/Jefferson County Metropolitan Sewer District

Top 10 Customers

The following table shows the District's top 10 wastewater and drainage customers as a % of total revenue for the past six fiscal years.



The following table shows the District's top 10 wastewater customers in fiscal year 2022.

Top 10 Wastewater Customers			
Rank	Customer Name	FY '22 Wastewater Billed	Percent Total Wastewater Revenue
1	Heaven Hill Distilleries Inc	$ 4,219,789	1.51%
2	Lubrizol Advanced Material	2,751,255	0.84%
3	The Chemours Company FC LLC	1,723,158	0.84%
4	Swift Pork Co	1,461,306	0.56%
5	Clariant Corporation	1,437,880	0.56%
6	Early Times Distillery	1,420,078	0.46%
7	Ford Motor Company	1,193,083	0.32%
8	Haier US Appliance Solutions Inc	955,585	0.30%
9	Rohm & Haas	783,570	0.29%
10	Ford Motor Company	744,470	0.24%
	Total	16,690,174	6.18%
	Total FY 22 Wastewater Revenue:	$ 270,066,040	
Source: Louisville/Jefferson County Metropolitan Sewer District			

The following table shows the District's top 10 drainage customers in fiscal year 2022.

Top 10 Drainage Customers			
Rank	Customer Name	FY 22' Drainage Billed	Percent Total Drainage Revenue
1	Regional Airport Authority	$ 1,645,863	1.93%
2	United Parcel Service	1,456,321	1.70%
3	Jeff Co Board Of Education	865,812	1.07%
4	Ford Motor Company	456,942	0.54%
5	Lit Industrial Limited Partner	346,273	0.40%
6	Kentucky State Fair Board	321,966	0.38%
7	Regional Airport Authority	320,679	0.38%
8	The U Of L Campus	308,517	0.35%
9	Churchill Downs Inc	298,224	0.34%
10	Seaboard Systm Rr-00822	273,149	0.33%
	Total	6,293,747	7.25%
	Total FY 22 Drainage Revenue:	$ 86,804,257	

Source: Louisville/Jefferson County Metropolitan Sewer District

FINANCIAL OPERATIONS

Historical Financial Operations

The District derives its revenues primarily from customer payments for wastewater and stormwater services, which accounts for 98% of operating revenues. Other operating revenues include inflow and infiltration fees, capacity charges and other miscellaneous system fees and charges, which account for the remaining 2% of operating revenues. Non-operating revenues include interest income earned on investments and the federal interest subsidy on the District's Build America Bonds. The current portion of assessments payments is also included in non-operating revenue for purposes of coverage calculations per the General Bond Resolution.

The District's Finance Department provides detailed monthly reports on cash and investments, revenues, expenses, variances to budget and capital spending to management and the Board. The following table presents historical revenues, expenses and changes in net position using information contained in the audited financial statements for fiscal years 2018 through ugh 2022. The District's audited financial statements for the fiscal year ended 2022 are set forth in "APPENDIX B – Annual Comprehensive Financial report of the District, Fiscal Years Ended June 30, 2022 and 2021" hereto.

Historical Revenues, Expenses and Changes in Net Postion
Fiscal Year ended June 30
($ in thousands)

	FY18	FY19	FY20	FY21	FY22
Operating revenue:					
Wastewater service charges	$ 210,636	$ 219,467	$ 237,807	$ 245,802	$ 270,066
Drainage service charges	63,868	69,706	75,052	79,915	86,804
Other operating income	4,645	5,195	6,198	3,701	8,497
Total operating revenue	279,149	294,368	319,057	329,418	365,367
Operating expenses:					
Service and administrative costs	142,711	154,325	167,771	170,073	169,869
Capitalization/recovery of cost	(38,147)	(38,383)	(39,643)	(41,785)	(42,166)
Capitalized overhead (over) under applied	88	-	-	-	-
Depreciation and amortization	77,954	87,882	98,872	97,874	103,964
Total operating expenses	182,606	203,824	227,000	226,162	231,667
Income (loss) from operations	96,543	90,544	92,057	103,256	133,700
Non-operating revenue (expense):					
Gain/Loss Disposal of Assets	-	15	(15,008)	(21)	124
Investment income	6,280	8,338	5,275	1,777	(1,467)
Build America bond refund	10,249	10,339	10,325	10,398	10,344
Interest expense - bonds	(95,041)	(94,831)	(92,274)	(93,067)	(86,792)
Interest expense - swaps	(7,724)	(6,468)	(8,027)	(9,793)	(9,502)
Interest expense - other	(9,873)	(13,497)	(13,129)	(13,104)	(12,873)
Amortization of debt discount/premium	15,198	14,344	12,688	17,429	17,172
Amoritzation of loss on refunding	(3,147)	(2,817)	(2,404)	(3,107)	(3,768)
Capitalized interest	21,859	18,582	13,043	12,049	7,464
Change in fair values - swaps	16,317	(13,597)	812	8,796	11,293
Total non-operating revenue (expenses), net	(45,882)	(79,592)	(88,699)	(68,643)	(68,005)
Net income / (loss) before contributions	50,661	10,952	3,358	34,613	65,695
Contributions					
Property owner assessments	-	-	-	-	-
All other	12,726	50,926	9,085	16,422	9,572
Increase (decrease) in net position	63,387	61,878	12,443	51,035	75,267
Net position, beginning of year	668,488	708,674	770,552	796,730	847,765
Net poistion, OCEA merger	-	-	13,735	-	-
Restatement for GASB 75 implementation	(23,201)	-	-	-	-
Net Position, beginning of year, as restated	645,287	708,674	784,287	796,730	847,765
Net position, end of year	$ 708,674	$ 770,552	$ 796,730	$ 847,765	$ 923,032

Source: Louisville/Jefferson County Metropolitan Sewer District

The following table presents historical senior debt service coverage for each of the last five fiscal years.

Historical Debt Service Coverage
Fiscal Year ended June 30
($ in thousands)

	2018	2019	2020	2021	2022
Revenues:					
Service charges	$ 274,504	$ 289,173	$ 312,859	$ 325,717	$ 356,870
Other operating income	4,645	5,195	6,198	3,701	8,497
Assessments	1,232	1,258	909	799	583
Investment income	16,531	18,692	15,600	12,175	8,877
Less: capitalized investment income	-	-	-	-	-
Total revenues	296,912	314,318	335,566	342,392	374,827
Operating expenses:					
Service and administrative costs[1]	131,948	142,082	149,945	151,527	161,144
Less: capitalized overhead	(38,148)	(38,383)	(39,643)	(41,785)	(42,166)
Capitalization Rate	29%	27%	26%	28%	26%
Total operating expenses	93,800	103,699	110,302	109,742	118,978
Net revenues	203,112	210,619	225,264	232,650	255,849
Aggregate debt service:					
Current maturities of long-term debt	33,906	40,358	40,637	43,802	51,597
Interest expense - senior lien	95,041	94,831	92,274	93,067	86,792
Less: capitalized interest expense	(21,859)	(18,582)	(13,043)	(12,050)	(7,464)
Aggregate net debt service	$ 107,088	$ 116,607	$ 119,868	$ 124,819	$ 130,925
Debt service coverage ratio[2]	190%	181%	188%	186%	195%

[1]Excludes the actuarial portion of changes to GASB 68 pension expense and GASB 75 OPEB for the year
[2]Excludes the actuarial portion of changes to GASB 68 pension expense and GASB 75 OPEB for the year
Source: Louisville/Jefferson County Metropolitan Sewer District

Projected Financial Operations

Both historic revenues and expenses of the District for prior fiscal years and projected revenues and expenses of the District for the current and future fiscal years are reflected in the charts below. The projected revenues reflect the increases in rates and charges adopted by the District for fiscal year 2023 and the anticipated increases in rates and charges for fiscal years 2024 through 2027. The projected financial results for fiscal years 2023 through 2027 incorporate assumptions as of the date of this Offering Memorandum. The projected debt service requirements include estimated debt service for the Series 2023 Bonds and the Commercial Paper Notes.

The information on projected revenues and expenses constitute a “forward looking statement” under federal securities law. Actual revenues, expenses, or both could differ materially from those forecasted and there can be no assurance that such estimates of future results will be achieved. For example, there can be no assurance that the Board will approve any proposed revision of the District’s Schedule of Rates, Rentals and Charges. In general, important factors that could cause actual results to differ materially from the revenues or expenses presently estimated include, but are not limited to, material changes in the size and composition of the District’s service area, unanticipated changes in law or unanticipated material litigation, a material downturn in economic activity, efficiency of operations and the capital construction and expenditure plans and results of the District.

Projected Financial Results
Fiscal Years ended/ending June 30
($ in thousands)

	FY23 Budget	FY24 Projected	FY25 Projected	FY26 Projected	FY27 Projected
Rate Increase[1]	*5.00%*	*6.90%*	*6.90%*	*6.90%*	*6.90%*
Operating Revenues					
Wastewater service charges	$ 282,643	$ 303,835	$ 321,908	$ 341,072	$ 361,128
Drainage service charges	91,599	98,524	105,305	112,554	120,303
Other operating income	4,500	4,500	4,525	4,550	4,550
Total Operating Revenues	378,742	406,859	431,738	458,176	485,981
Non-Operating Revenues					
Assessments	550	400	400	400	400
BAB refund	10,338	10,986	10,986	10,986	10,986
Investment income	1,188	2,768	2,879	2,994	3,114
Total Non-Operating Revenues	12,076	14,154	14,265	14,380	14,500
Total Available Revenue	390,818	421,013	446,003	472,556	500,481
Operating Expenses					
Total operating expenses[2]	176,668	185,017	194,588	202,682	210,071
Captialized cost	(40,634)	(43,236)	(39,807)	(39,495)	(40,939)
Net Operating Expense	136,034	141,781	154,781	163,187	169,132
Net Revenues Available for Debt Service	254,784	279,232	291,222	309,369	331,349
Debt Service					
Total senior debt service[3]	144,195	144,656	152,058	159,863	183,541
Capitalized interest	(8,222)	(8,275)	(8,671)	(9,194)	(9,826)
Total subordinated debt service	27,639	32,148	33,654	38,218	25,664
Total Outstanding & Projected Debt Service	163,612	168,529	177,041	188,887	199,379
Senior Debt Service Coverage	187%	205%	203%	205%	191%
Total Debt Service Coverage	156%	166%	164%	164%	166%
Aggregate Net Debt Service[4]	135,973	136,381	143,387	150,669	173,715
110% of Aggregate Net Debt Service	144,018	144,018	144,018	144,018	144,018
Subordinate Debt Service	27,639	32,148	33,654	38,218	25,664
110% of Subordinated Debt Service	30,403	35,363	37,019	42,040	28,230

[1] Jefferson County Rate Increase.
[2] Excludes the actuarial portion of changes to GASB 68 pension expense and GASB 75 OPEB for the year.
[3] Projections assume bonds are issued on a senior lien basis.
[4] As defined by General Bond Resolution
Source: Louisville/Jefferson County Metropolitan Sewer District May 8, 2023

CAPITAL IMPROVEMENT PROGRAM

Consulting Engineer's Report

Jacobs Engineering Group, Inc., Louisville, Kentucky (the "Consulting Engineers") has been retained by the District as its engineering consultant. The most recent report of the Consulting Engineers is appended to this Offering Memorandum as APPENDIX I. The projections shown in "APPENDIX I – Consulting Engineer's Report" are based on, among other things, the District's Capital Improvement Plan in effect as of the date of such report. Except as specifically described herein, there can be no assurance that the District will not amend or revoke the Capital Improvement Program (the "CIP") described in APPENDIX I or that the District will issue or support bonds or other funding for the Capital Improvement Program in its current form or as amended or any substitute therefor. The District's FY23 CIP Supplement Report is included as APPENDIX J. The FY23 CIP Supplement provides information on the FY23 capital budget and an update on major capital projects.

Consent Decree

In August 2005, the District entered into a joint Consent Decree agreement with the federal government and the Commonwealth of Kentucky. The Consent Decree created the framework for a 19-year program to manage and mitigate combined sewer overflows (CSOs), and eliminate sanitary sewer overflows (up to a certain storm event). In 2009, the Consent Decree was amended to address recordkeeping and Water Quality Treatment Center bypasses and treatment performance.

To meet the requirements of the Amended Consent Decree, the District developed the Integrated Overflow Abatement Program (IOAP), which was later incorporated into the Critical Repair and Reinvestment Plan. Key capital projects included in the IOAP include:

- **CSO Storage Basins.** Large storage basins are under design or construction at strategic locations in the District's combined sewer system to temporarily store flows during rain events. When capacity is available, these stored flows will be released back into the collection system for treatment. These basins are a foundation of the District's CSO control strategy and must be operational by state and federally-enforced deadlines.

- **Green Infrastructure Projects.** Green infrastructure works by capturing stormwater flows in natural systems before they can enter the underground pipe network and thus creates additional capacity within the sewer system. Additionally, these systems remove pollutants through natural filtration systems so that any flows that must pass through them carry a reduced pollutant load. The District is committed to integrating green infrastructure as part of its overflow control strategy and has implemented an innovative system of cost-sharing with other public agencies and private developers to leverage the District's investment in green infrastructure to the extent it furthers the District's service offerings.

- **Capacity, Management, Operations and Maintenance (CMOM) Projects.** An essential component to the long-term success of the IOAP is an effective CMOM program that makes sure the wastewater collection system operates effectively. Elements of this program include capital investment, sewer inspection and cleaning, repair of defects found in sewers, and removal of illicit and illegal connections to the system.

- **Nine Minimum Controls (NMC) Projects**. Reporting requirements for the NMC program will be phased out after the completion of the District's obligations under the Consent Decree. The NMC principles related to optimizing operation of the combined sewer system will remain in full force and effect, with the enforcement mechanism shifted from the Consent Decree to the Morris Forman WQTC discharge permit. One critical item that will continue after the IOAP is completed is the continued implementation and optimization of the District's Real Time Control system that maximizes storage in the collection system through a series of automated dams and gates.

The District has spent approximately $1 billion designing and constructing many of the IOAP projects and completing other projects required under the Amended Consent Decree. This work has been financed or refinanced with proceeds of the District's Sewer and Drainage System Revenue Bonds, Series 2008, Series 2009C, Series 2010A, Series 2013C, Series 2014A, Series 2015A, Series 2016A, Series 2017A, Series 2020C, Series 2021A, and Series 2022A.

All scheduled milestones on IOAP projects to mitigate sewer overflows across the service area have been met. Local waterways are safer and cleaner today as a result of these expenditures. Spending on the Amended Consent Decree work has consumed the majority of the District's capital expenditures since 2009. However, IOAP projects have only addressed a fraction of the wastewater, stormwater and flood protection assets under the District's purview. An unintended consequence of compliance with the Amended Consent Decree has been deferred asset management on the remaining infrastructure.

The District proactively approached federal and state regulators in 2019 to renegotiate the timing for completing the remaining LTCP and SSDP projects required by the Amended Consent Decree in order to reprioritize capital dollars for rehabilitation of the Districts' aging biosolids systems, failing sewer interceptors and flood protection system rehabilitation. The District, along with the federal government and the Commonwealth of Kentucky, negotiated the Second Amended Consent Decree which granted a time extension for completing the remaining LTCP and SSDP projects to 2035. In exchange, the District agreed to invest a minimum of $25 million annually for asset management projects through 2035. Additionally, the District agreed to incorporate $70 million for critical sewer rehabilitation in its 5-year capital improvement plan. These financial commitments are achievable within the Board's rate increase authority of 6.9% per year. The United States District Court granted final approval of the Second Amended Consent Decree on September 14, 2022. See "PENDING LITIGATION" and "APPENDIX I – Consulting Engineer's Report", for additional information on the Second Amended Consent Decree.

Critical Repair and Reinvestment Plan

The District's 20-year Comprehensive Facility Plan published in June 2017 ("Facility Plan") represents the District's most ambitious planning effort in a decade. Working with the Wet Weather Team Stakeholder Group and District staff, the Facility Plan Team reviewed the challenges our community faces now and in the future and has developed a roadmap to protect the area's health, economic vitality, and environment. The recommendations in this plan are the result of well-vetted analyses from some of the most experienced engineers in Louisville Metro. The recommendations are essential to maintaining reliable and properly sized facilities that will allow the District to fulfill its responsibility for safe, clean waterways and to help preserve and promote our competitiveness as a city.

Wastewater collection and treatment is the District's largest service offering and was the original reason the District was formed by state statute in 1946. Fully implementing the Facility Plan recommendations will accomplish the following wastewater service objectives:

- Fulfill the obligation of the Consent Decree, including completing all the projects contained in the IOAP on schedule
- Provide facilities that comply with the other environmental regulations the District is governed by and provide a plan to remain in compliance with future regulations currently under development

- Renew and replace aging wastewater infrastructure to provide reliable service and the lowest overall cost using a best-practice asset management approach
- Position the District to support the community's ability to grow responsibly as economic development opportunities become available

The District assumed responsibility for stormwater management, including both drainage and interior floodplain management for most of Jefferson County in 1987. The drainage system at that time had a backlog of thousands of drainage complaints that the District was expected to correct. While the District has invested hundreds of millions of dollars in drainage infrastructure since 1987, drainage problems still are found across the entire county. In addition, the increased frequency of extreme storms that have been observed in Louisville Metro have raised customer concerns about the adequacy of our drainage and interior floodplain management systems. While current development standards require mitigation of the drainage impacts of land use changes, analysis of historical trends shows a significant reduction in natural green space and an increase in impervious services that do not allow stormwater to seep into the ground. Runoff from impervious surfaces also causes increased runoff volume and greatly increased runoff peak flows. Together, these factors exacerbate the observed deficiencies in the stormwater system that the District now has responsibility for, impacting neighborhood drainage in addition to interior floodplain inundation. Implementing the Facility Plan recommendations will accomplish the following stormwater management objectives:

- Improve the level of protection against public health and property risks caused by inadequate stormwater drainage systems
- Continue support for the Project DRI neighborhood drainage solutions
- Expand the efforts of the MS4 program to reduce stormwater contamination of our waterways, primarily through BMPs and continued proactive support of green infrastructure solutions to both quantity and quality concerns
- Recognize and respond to the impact of changing weather patterns including the increased frequency of extreme storms

The Ohio River Flood Protection System (ORFPS) was developed in response to the flood of 1937. This system of levees, floodwalls, and flood pumping stations has protected Louisville since it became operational in the 1950s. While the system has an outstanding record of reliability, much of the system is more than 60 years old and includes antiquated equipment that cannot be repaired with standard parts available today. In addition, the same changing precipitation and land use patterns that affect drainage and inland floodplain management also impact the flood pumping stations and related appurtenances. Implementing the Facility Plan recommendations will accomplish the following ORFPS objectives:

- Maintain protection from Ohio River floods entering Louisville by proactive preventive and predictive maintenance activities related to the levee, floodwall, and all gates and other penetration closures that keep floodwaters at bay
- Modernize the flood pumping stations with current mechanical and electrical equipment that can provide continued reliability and a predictable cost because parts will be more readily available at a more reasonable cost
- Expand the capacity of those flood pumping stations to enhance community protection in response to changing precipitation and land use patterns

Implementing the recommendations for all three service areas will require a significant investment from the community. Based on the analyses of this Facility Plan, meeting the critical needs of the community is estimated to cost $4.3 billion over the next two decades. Unlike the IOAP, which is required by the Consent Decree to be completed, most stormwater management and flood protection capacity projects developed in the Facility Plan are not specifically required by regulation. Providing infrastructure renewal and replacement, and improving the consistent level of service in stormwater management and flood protection are local decisions driven by the District's mission to provide safe, clean waterways for the community. The District will implement the Facility Plan to the extent funding is provided through the rate-setting process. If sufficient funding is not provided to complete the recommended projects in the 20-year planning period, then projects will be deferred to the future, when funding becomes available.

Climate Change Storm Risk

As stated above, one of the objectives of the Facility Plan is to recognize and respond to the impact of changing weather patterns, including the increased frequency of extreme storms. Statistical data show an increase in the volume of rain in the District's local service area as a result of fewer but more severe and intense storms. As part of the process of developing and adopting the Facility Plan, the District has taken into account this increased frequency of extreme storms, presumably related to the effects of global climate change, with an approach aimed at providing protection to properties and buildings from surface flooding across the entire county from a 10-year storm. The Facility Plan also provides guidance on reducing (but not eliminating) the risk associated with localized, unusual weather events. The Facility Plan thus takes into account climate change as an issue affecting the resilience of the District's storm water treatment and drainage system and the effect on customer protection by focusing on the ability of the District's infrastructure to function effectively under different potential storm patterns. A discussion of the District's 5-year CIP spending for the Facility Plan drainage program is contained in Section 3.3 of the Consulting Engineer's Report included as APPENDIX I.

RECENT AND PENDING TRANSACTIONS OF THE DISTRICT

On February 1, 2022 the District issued its Sewer and Drainage System Revenue Bonds, Series 2022A (Green Bonds – Climate Bond Certified) (the "Series 2022A Bonds") in the principal amount of $225,000,000, for the purpose of paying at maturity, redeeming, and refunding Program Notes issued and outstanding as Senior Subordinated Debt, the proceeds of which were used for the purpose of financing the cost of capital improvements and additions to the District's sewer and drainage system and refinancing other Program Notes previously issued under the Program Note Resolution adopted on May 29, 2018.

On June 27, 2022 the District entered into an Assistance Agreement with KIA for a loan in the amount of $8,270,000 to the District to rehabilitate or replace several sewer pump stations in the District. The loan bears interest at the rate of 2% per annum. Repayments will commence within twelve months from project completion.

On July 25, 2022, MSD's Board adopted a resolution imposing a 5.00% increase in wastewater and drainage volume and service charges and optional and quality charge rates assessed to commercial and industrial customers in the District's Jefferson County service area, effective August 1, 2022.

Pursuant to the terms of an Interlocal Cooperation Agreement, on July 25, 2022, the MSD Board approved a $2.00 reduction in the wastewater volume charge for MSD's Oldham County service area effective August 1, 2022. Starting August 1, 2023, rate increases for wastewater service in Oldham County will not exceed 3% annually until rates for MSD's Oldham County service area equal those for its Jefferson County service area.

On September 24, 2022, MSD sold $226,340,000 of its Series 2022 Notes. See "SOURCES OF PAYMENT AND SECURITY FOR THE COMMERCIAL PAPER NOTES – Senior Subordinated Debt; Subordinated Revenue Bond Anticipation Notes" herein.

Pursuant to the terms of an Interlocal Cooperation Agreement, on December 19, 2022, the MSD Board approved a 12% increase in wastewater service and volume charges for MSD's Bullitt County service area effective January 1, 2023.

On March 27, 2023, the MSD Board approved the 2023 Program Note Resolution authorizing the issuance of MSD's Sewer and Drainage System Subordinated Program Notes in the maximum outstanding principal amount of $500,000,000, consisting of Commercial Paper Notes and Direct Purchase Notes. The maximum maturity date, initially, is July 1, 2026. Upon approval by the MSD Board, the Resolution may be amended, and the agreement extended to a date no later than July 1, 2028. Closing is anticipated to occur on or before June 21, 2023.

On April 13, 2023, MSD sold $49,745,000 of sewer and drainage system revenue bonds, Series 2023A with an average coupon rate of 5% and a true interest cost of 2.76% (the "Series 2023A Bonds"). The proceeds of the Series 2023A Bonds were used to refund the 2035 maturity of the Series 2013A sewer and drainage system revenue bonds and to pay costs of issuance of the Series 2023A Bonds. The Series 2023A Bonds will close on May 16, 2023, and mature on May 15, 2035. Net present value savings achieved with this financing was $8,265,698.

On April 13, 2023, MSD sold $41,950,000 of sewer and drainage system revenue bonds, Series 2023B with an average coupon rate of 5% and a true interest cost of 3.07% (the "Series 2023B Bonds"). The proceeds of the Series 2023B Bonds were used to refund the 2036 maturity of the Series 2013A sewer and drainage system revenue bonds and to pay costs of issuance of the Series 2023B Bonds. The Series 2023B Bonds will close on May 16, 2023, and mature on May 15, 2036. Net present value savings achieved with this financing was $5,684,774.

PENDING LITIGATION

There is no litigation or other legal proceeding pending or, to the knowledge of the District, threatened to restrain or enjoin the issuance, sale or delivery of the Commercial Paper Notes or the implementation of the plan of financing described herein, or in any way contesting or affecting the validity of the Commercial Paper Notes or the plan of financing described herein or any proceedings of the District taken with respect to the issuance or sale of the Commercial Paper Notes, the pledge or application of any moneys or securities provided for the payment of the Commercial Paper Notes or the existence or powers of the District insofar as they relate to the authorization, sale and issuance of the Commercial Paper Notes or such pledge or application of moneys and securities or the implementation of the plan of financing described herein.

There is no litigation or other legal proceeding pending or, to the knowledge of the District, threatened which challenges the authority of the District to operate the System or to collect revenues therefrom or which contests the creation, organization or existence of the District or the title of any of its Board members or executive staff to their respective offices.

After several months of negotiation, the District, Commonwealth of Kentucky and United States of America have reached an agreement on important modifications to the 2009 Amended Consent Decree entered by the United States District Court for the Western District of Kentucky, Louisville Division (the "Court"), in Civil Action No. 3:08-CV-00608-CRS. The parties have agreed to enter into a Second Amended Consent Decree which will supersede and replace the 2009 Amended Consent Decree and update the 2012 Integrated Overflow Abatement Plan ("IOAP") Modification approved on June 19, 2014 with the 2021 IOAP Modification.

The original IOAP, which included a Final Sanitary Sewer Discharge Plan ("SSDP") and CSO Long Term Control Plan ("LTCP"), was certified on December 19, 2008, and incorporated by reference into the 2009 Amended Consent Decree by an Order signed on February 12, 2010 and entered into the public record February 15, 2010. The IOAP was amended in 2012 and 2014 to improve compliance and adjust capital project schedules.

Since entry of the 2009 Amended Consent Decree, the District has spent approximately $1 billion developing and completing many of the IOAP projects, and completing other projects and compliance measures mandated by the Consent Decree. The District has completed the majority of the CSO LTCP projects and SSDP projects, as well as the development of Comprehensive Program Evaluations, Composite Correction Plans, Sewer Overflow Response Protocol, Interim Sanitary Sewer Discharge Plan, and Sanitary Capacity Assessment Plan.

The Second Amended Consent Decree, which was entered on September 15, 2022, was negotiated to effectuate additional remedial measures for CSO and SSO control and regulatory compliance. Specifically, the Second Amended Consent Decree was negotiated to integrate the development of an asset management plan that provides for a long-term maintenance and funding strategy for rehabilitation and renewal of the District's aging biosolids systems and failing critical interceptors and flood protection system. To facilitate the District's ability to reprioritize projects and capital spending, the Commonwealth of Kentucky and United States of America have agreed to extend the time for completion of remaining LTCP and SSDP projects to 2035. In exchange for the time extension, the District has agreed to invest a minimum of $25 million on average each fiscal year in asset management projects for a total of $375 million by June 30, 2035. The District has also agreed to incorporate $70 million in its 5-year CIP for critical sewer rehabilitation. The Second Amended Consent Decree sets forth stipulated penalties to be assessed should the District fail to comply.

The District is a defendant from time to time in various lawsuits. Although the outcome of these lawsuits is not presently determinable, it is the opinion of the District that resolution of these matters will not result in a material adverse effect on the operations, properties or financial condition of the District.

Except as disclosed above, there is no litigation or other legal proceeding pending or, to the knowledge of the District, threatened against or affecting the District or its Board wherein an unfavorable decision, ruling or finding might have a materially adverse effect on the operations, properties or financial condition of the District.

APPROVAL OF LEGAL PROCEEDINGS

The issuance of the Program Notes and certain legal matters incident to compliance by the District with Sections 103(b)(2) and 148 of the Code, and regulations thereunder relating to "arbitrage bonds" are subject to the approval of Note Counsel, whose approving opinion will be delivered with the Program Notes. Certain legal matters will be passed upon for the District by its General Counsel, Kellie S. Watson, Esq.

Note Counsel has reviewed legal matters incident to those sections of this Offering Memorandum entitled "THE COMMERCIAL PAPER NOTES," "SOURCES OF PAYMENT AND SECURITY FOR THE COMMERCIAL PAPER NOTES," "TAX MATTERS" and "APPENDIX A – Definitions of Certain Terms and Summary of Provisions of the Note Resolution," and is of the opinion that the statements contained in such identified sections are, as to law and legal conclusions, correct and that such sections fairly summarize the contents of documents therein described. Note Counsel assumes no responsibility for the accuracy or completeness of other statements or financial information contained in this Offering Memorandum.

TAX MATTERS

General

In the opinion of Note Counsel for the Commercial Paper Notes, based upon an analysis of existing laws, regulations, rulings, and court decisions, interest on the Tax-Exempt Notes being delivered on the Delivery Date will be excludable from gross income for federal income tax purposes. Further, Note Counsel is also of the opinion that interest on the Tax-Exempt Notes will not be a specific item of tax preference under Section 57 of the Internal Revenue Code of 1986, as amended (the "Code"), for purposes of the federal alternative minimum tax; provided, however, that interest on any Tax-Exempt Notes held by an "applicable corporation" will be included in annual "adjusted financial statement income" for purposes of calculating the alternative minimum tax imposed on all applicable corporations for tax years beginning after December 31, 2022 (see "TAX TREATMENT – Corporate Alternative Minimum Tax" herein). Furthermore, Note Counsel is also of the opinion that interest on the Tax-Exempt Notes will be exempt from income taxation by the Commonwealth of Kentucky, that interest on the Taxable Notes is not exempt from income taxation by the Commonwealth of Kentucky, and that the Commercial Paper Notes are exempt from ad valorem taxation by the Commonwealth and any of its political subdivisions.

Subsequent to the Delivery Date, the District may elect to issue the Commercial Paper Notes as Tax-Exempt Notes or as Taxable Notes.

A copy of the form of the opinion Note Counsel will deliver with respect to the Tax-Exempt Notes is set forth in "APPENDIX D-1 – Note Counsel Opinion for Tax-Exempt Notes" hereto. A copy of the form of the opinion Note Counsel will deliver with respect to the Taxable Notes is set forth in "APPENDIX D-2 – Note Counsel Opinion for Taxable Notes" hereto.

The Code imposes various restrictions, conditions, and requirements relating to the qualification of the Tax-Exempt Notes as "tax-exempt" bonds and the exclusion of the interest on the Tax-Exempt Notes from gross income of the Holders thereof for federal income tax purposes. The District has covenanted to comply with certain restrictions designed to ensure that interest on the Tax-Exempt Notes will not be includable in gross income for federal income tax purposes. Failure to comply with these covenants could result in the Tax-Exempt Notes not qualifying as "tax-exempt bonds," and thus, the interest on the Tax-Exempt Notes being includable in gross income of the Holders thereof for federal income tax purposes. Such failure to qualify and the resulting inclusion of interest could be required retroactively to the date of issuance of the Tax-Exempt Notes. The opinion of Note Counsel assumes compliance with these covenants. However, Note Counsel has not undertaken to determine (or to inform any person) whether any actions taken (or not taken) or events occurring (or not occurring) after the date of issuance of the Commercial Paper Notes may adversely affect either the federal or Kentucky tax status of the Commercial Paper Notes.

Certain requirements and procedures contained or referred to in the Commercial Paper Notes, the Note Resolution, and any other relevant documents may be changed, and certain actions (including, without limitation, defeasance of the Commercial Paper Notes) may be taken or omitted under the circumstances and subject to the terms and conditions set forth in such documents. Note Counsel expresses no opinion as to any Commercial Paper Notes or the tax status of the interest thereon if any such change occurs or action is taken or omitted upon the advice or approval of note counsel other than Dinsmore & Shohl LLP.

Although Note Counsel is of the opinion that interest on the Tax-Exempt Notes will be excludible from gross income for federal and Kentucky income tax purposes, the ownership or disposition of, or the accrual or receipt of interest on, the Commercial Paper Notes may otherwise affect a Holder's federal, state, or local tax liabilities. The nature and extent of these other tax consequences may depend upon the particular tax status of the Holder or the Holder's other items of income or deduction. Note Counsel expresses no opinions regarding any tax consequences other than what is set forth in its opinion and each Holder or potential Holder is urged to consult with tax counsel with respect to the effects of purchasing, holding, or disposing the Commercial Paper Notes on the tax liabilities of the individual or entity.

Receipt of tax-exempt interest, ownership, or disposition of the Commercial Paper Notes may result in other collateral federal, state, or local tax consequences for certain taxpayers. Such effects may include, without limitation, (i) increasing the federal tax liability of certain foreign corporations subject to the branch profits tax imposed by Section 884 of the Code, (ii) increasing the federal tax liability of certain insurance companies under Section 832 of the Code, (iii) increasing the federal tax liability and affecting the status of certain S Corporations subject to Section 1362 and Section 1375 of the Code, (iv) increasing the federal tax liability of certain individual recipients of Social Security or Railroad Retirement benefits under Section 86 of the Code, and (v) limiting the amount of the Earned Income Credit under Section 32 of the Code that might otherwise be available. The ownership of any Commercial Paper Notes may also result in the limitation of interest and certain other deductions for financial institutions and certain other taxpayers under Section 265 of the Code. Finally, residence of a Holder of the Commercial Paper Notes in a state other than Kentucky, or a Holder being subject to tax in a state other than Kentucky, may result in income or other tax liabilities being imposed by such states or their political subdivisions based on the interest or other income received from the Commercial Paper Notes.

The District has ***not*** designated the Tax-Exempt Notes as "qualified tax-exempt obligations" under Section 265 of the Code.

Corporate Alternative Minimum Tax

The Inflation Reduction Act of 2022 imposes a new corporate alternative minimum tax equal to 15% of the "adjusted financial statement income" of "applicable corporations," as defined in Section 59(k) of the Code. Generally, an applicable corporation includes any corporation (as defined for federal income tax purposes, other than S corporation, regulated investment companies, and real estate investment trusts) having an "average annual adjusted financial statement income" of more than $1,000,000,000 over any preceding period of three tax (ending with a tax year that ends after December 31, 2021). The corporate alternative minimum tax applies for tax years beginning after December 31, 2022. Under the Inflation Reduction Act, interest on tax-exempt bonds, such as interest on the Tax-Exempt Notes, is included (i) in computing "average annual adjusted financial statement income" for the purpose of determining whether a corporation is an "applicable corporation" and (ii) in determining an applicable corporation's "adjusted financial statement income" for purposes of calculating the alternative minimum tax imposed on applicable corporations under Section 55 of the Code, regardless of the issue date of such tax-exempt bonds.

FINANCIAL STATEMENTS

The financial statements of the District for the fiscal years ended June 30, 2022 and 2021 set forth in "APPENDIX B – Annual Comprehensive Financial Report of the District, Fiscal Years Ended June 30, 2022 and 2021" to this Offering Memorandum and an integral part of this Offering Memorandum, have been audited by Crowe LLP, independent auditors, as stated in their report.

RATINGS

Moody's Investors Service, Inc. ("Moody's") has assigned a "P-1" short-term rating to the Commercial Paper Notes and an "A1" rating to the Bank Notes. S&P Global Ratings, a division of Standard & Poor's Financial Services LLC ("S&P"), has assigned an "A-1+" short-term rating to the Commercial Paper Notes. Such ratings reflect only the views of the respective rating agencies. An explanation of the significance of the rating given by Moody's may only be obtained from Moody's at Moody's Investors

Service, Inc., 250 Greenwich Street, New York, New York 10007, (212) 553-1653; and an explanation of the rating given by S&P may be obtained from Standard & Poor's Global Ratings at 130 East Randolph Street, Suite 2900, Chicago IL 60601 (312) 233-7000. There is no assurance that such ratings will continue for any given period of time or that they will not be revised downward or withdrawn entirely by such organizations if, in the judgment of such organizations, circumstances so warrant. Any such downward revision or withdrawal of such ratings could have adverse effects on the market price of the Commercial Paper Notes.

THE DEALERS AND CERTAIN RELATIONSHIPS AND POTENTIAL CONFLICTS OF INTEREST

BofA Securities is the Dealer for the Commercial Paper Notes, Sub-Series 2023A-1, pursuant to the Sub-Series 2023A-1 Commercial Paper Dealer Agreement.

J.P. Morgan is the Dealer for the Commercial Paper Notes, Sub-Series 2023A-2, pursuant to the Sub-Series 2023A-2 Commercial Paper Dealer Agreement.

BofA Securities and J.P. Morgan Securities and their respective affiliates comprise full service financial institutions engaged in various activities, which may include securities trading, commercial and investment banking, financial advisory, investment management, lending, principal investment, hedging, financing and brokerage activities.

Accordingly, each Dealer and its respective affiliates may have, from time to time (a) engaged, and may in the future engage, in transactions with the District, and (b) performed, and may in the future perform, various services for the District that involve or relate to assets, securities and/or instruments of the District (whether directly, as collateral securing other obligations or otherwise) and/or persons and entities with relationships with (or that are otherwise involved with transactions by) the District.

In particular, such services provided by either Dealer and its respective affiliates may include investment banking services for the District for which they received or will receive customary fees and expenses. Under certain circumstances, either Dealer and its respective affiliates also may have certain creditor and/or other rights against the District and its affiliates in connection with such transactions and/or services. In addition, each Dealer and its respective affiliates may currently have and may in the future have investment and commercial banking, trust and other relationships with parties that may relate to assets of, or be involved in the issuance of securities and/or instruments by, the District and any affiliates thereof.

In connection with certain of such activities, from time to time, the District may cause all or a portion of the proceeds of any issue of Commercial Paper Notes to be paid or directed to a Dealer or any of its respective affiliates, including in connection with any of the Commercial Paper Note that such Dealer may own from time to time to repay Commercial Paper Notes from time to time. Specifically, the District may (a) use such amounts, from time to time, to repay a Dealer or any of its respective affiliates, in connection with the repayment or retirement of a loan or other credit facility extended to the District, and/or its affiliates, or (b) otherwise direct, from time to time, the proceeds to a Dealer or its respective affiliates.

In taking any action with respect to the transactions described herein, each Dealer is acting solely for its own benefit as a dealer in respect of the Commercial Paper Note and not as fiduciary or in any other capacity on behalf of the District, the holders of the Commercial Paper Notes or any other person. The District, each Dealer, the Issuing and Paying Agent and each of their respective affiliates acting in the capacities described herein in connection with such transactions will have only the duties and responsibilities expressly agreed to by each such entity in the relevant capacity and none of them will, by virtue of its or any of its affiliates' acting in any other capacity, be deemed to have other duties or responsibilities or be deemed to be held to a standard of care other than as expressly provided with respect to each such capacity.

BofA Securities, one of the Dealers of the Commercial Paper Notes, has entered into a distribution agreement with its affiliate Merrill Lynch, Pierce, Fenner & Smith Incorporated ("MLPF&S''). As part of this arrangement, BofA Securities may distribute securities to MLPF&S, which may in turn distribute such securities to investors through the financial advisor network of MLPF&S. As part of this arrangement, BofA Securities may compensate MLPF&S as a dealer for their selling efforts with respect to the Commercial Paper Notes.

BofA Securities, the Dealer for the Commercial Paper Notes, Sub-Series 2023A-1 and BANA, the credit provider for the Commercial Paper Notes, Sub-Series 2023A-1 pursuant to the BANA Revolving Credit agreement, are both wholly-owned, indirect subsidiaries of Bank of America Corporation.

FINANCIAL ADVISOR

Robert W. Baird & Co. Incorporated has been employed as Financial Advisor to the District in connection with the Program Notes. The Financial Advisor's fee for services rendered with respect to the sale of the Program Notes is contingent upon the issuance and delivery thereof. The Preliminary Offering Memorandum was prepared and distributed by the Financial Advisor. The information set forth herein was obtained from the District and other sources believed to be reliable but is not guaranteed as to accuracy or completeness by, and is not to be construed as a representation of the Financial Advisor.

CONTINUING DISCLOSURE

In accordance with Securities and Exchange Commission Rule 15c2-12 (the "Rule"), the District will agree, pursuant to a Continuing Disclosure Certificate to be dated and delivered as of the date of issuance and delivery of the Program Notes (the "Disclosure Certificate"), to cause the following information to be provided:

(i) to the Municipal Securities Rulemaking Board (the "MSRB"), certain annual financial information and operating data, including audited financial statements prepared in accordance with generally accepted accounting principles as applied to governmental units, generally consistent with the information contained herein under the heading "THE DISTRICT" "RATES AND CHARGES – Rate History," and in "APPENDIX B – Annual Comprehensive Financial Report of the District, Fiscal Years Ended June 30, 2022 and 2021" hereto; such information shall be provided on or before the January 1 following the fiscal year ending on the preceding June 30, commencing with the fiscal year ended June 30, 2023; provided that the audited financial statements may not be available by such date, but will be made available immediately upon delivery thereof by the auditor to the obligated person;

(ii) In a timely manner not in excess of ten business days after the occurrence of the event to the MSRB, notice of the occurrence of the following events, with respect to the Program Notes:

(a) Principal and interest payment delinquencies;
(b) Non-payment related defaults, if material;
(c) Unscheduled draws on debt service reserves reflecting financial difficulties;
(d) Unscheduled draws on credit enhancements reflecting financial difficulties;
(e) Substitution of credit or liquidity providers, or their failure to perform;

(f) Adverse tax opinions, the issuance by the Internal Revenue Service of proposed or final determinations of taxability, Notices of Proposed Issue (IRS Form 5701-TEB) or other material notices or determinations with respect to the tax status of the security, or other material events affecting the tax-exempt status of the security;

(g) Modifications to rights of security holders, if material;

(h) Bond calls, if material, and tender offers (except for mandatory scheduled redemptions not otherwise contingent upon the occurrence of an event);

(i) Defeasances;

(j) Release, substitution or sale of property securing repayment of the securities, if material;

(k) Rating changes;

(l) Bankruptcy, insolvency, receivership or similar event of the obligated person (Note: For the purposes of this event, the event is considered to occur when any of the following occur: The appointment of a receiver, fiscal agent or similar officer for an obligated person in a proceeding under the U.S. Bankruptcy Code or in any other proceeding under state or Federal law in which a court or governmental authority has assumed jurisdiction over substantially all of the assets or business of the obligated person, or if such jurisdiction has been assumed by leaving the existing governing body and officials or officers in possession but subject to the supervision and orders of a court or governmental authority, or the entry of an order confirming a plan of reorganization, arrangement or liquidation by a court or governmental authority having supervision or jurisdiction over substantially all of the assets or business of the obligated person);

(m) The consummation of a merger, consolidation, or acquisition involving an obligated person or the sale of all or substantially all of the assets of the obligated person, other than in the ordinary course of business, the entry into a definitive agreement to undertake such an action or the termination of a definitive agreement relating to any such actions, other than pursuant to its terms, if material; and

(n) Appointment of a successor or additional trustee or the change of name of a trustee, if material;

(o) Incurrence of a financial obligation of the obligated person, if material, or agreement to covenants, events of default, remedies, priority rights, or other similar terms of a financial obligation of the obligated person, any of which affect security holders, if material; and

(p) Default, event of acceleration, termination event, modification of terms, or other similar events under the terms of the financial obligation of the obligated person, any of which reflect financial difficulties.

(iii) in a timely manner, to the MSRB, notice of a failure of an obligated person to provide the required Annual Financial Information on or before the date specified in the Disclosure Certificate.

The Disclosure Certificate provides holders of the Program Notes, including beneficial owners of the Program Notes, with certain enforcement rights in the event of a failure by the District to comply with the terms thereof; however, a default under the Disclosure Certificate does not constitute an event of default under the Note Resolution. The Disclosure Certificate may also be amended or terminated under certain circumstances in accordance with the Rule as more fully described therein. Holders of the Program Notes are advised that the Disclosure Certificate, the form of which is obtainable from the Financial Advisor, should be read in its entirety for more complete information regarding its contents.

Pursuant to outstanding continuing disclosure undertakings (the "Existing Undertakings") the District is required to file certain annual financial information with the MSRB by January 1 of each year. The District has filed its annual financial information in accordance with the Existing Undertakings and, to the best of the District's knowledge, is in material compliance with the continuing disclosure undertaking requirements of the Rule in connection with its outstanding obligations that are subject to such requirements. In the past five years, the District has been made aware that there have been changes to the credit ratings on certain obligations of the District resulting from changes to the credit rating of credit enhancers providing bond insurance for those obligations, for which continuing disclosure event notices were not filed (such changes to the credit ratings were made without any formal notice of the change to the District).

CONCLUDING STATEMENT

The foregoing summaries or descriptions of provisions in the Note Resolution and all references to other materials not purporting to be quoted in full, are only brief outlines of certain provisions thereof and do not purport to be complete statements of such documents and provisions. Reference is hereby made to the complete documents, copies of which will be furnished by the District upon request, for further information.

Certain statements contained in this Offering Memorandum are "forward-looking statements." Particularly because of the evolving nature of the current public health crisis, no assurances can be given that any projected future results described herein will be achieved, and actual results may differ materially from the projected future results described herein. In this respect, the words "estimate," "forecast," "project," "anticipate," "expect," "intend," "believe," "budget" and similar expressions are intended to identify forward-looking statements. All projections, forecasts, assumptions and other forward-looking statements in this Offering Memorandum are expressly qualified in their entirety by this cautionary statement.

Any statements in this Offering Memorandum involving matters of opinion, whether or not expressly so stated, are intended as such and not as representations of fact. This Offering Memorandum is not to be construed as a contract or agreement between the District and the purchasers or holders of any of the Program Notes.

This Offering Memorandum has been approved by the District as of the date set forth on the cover hereof.

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT

By: /s/ Marita Willis
Chair

By: /s/Brad Good
Chief Financial Officer

APPENDIX A

DEFINITIONS OF CERTAIN TERMS AND SUMMARY OF PROVISIONS OF THE NOTE RESOLUTION

The descriptions and summaries set forth herein are not intended to be comprehensive or definitive, and reference is made to the Note Resolution for the complete details of all terms and conditions. All statements herein are qualified in their entirety by reference to the Note Resolution and, where applicable, the General Bond Resolution, the Note Resolution and the Agreements. Terms not otherwise defined herein shall have the meaning set forth in the General Bond Resolution. Copies of the Note Resolution, the General Bond Resolution and the Agreements are available from the District.

DEFINITIONS

"Act" means, collectively, Chapters 65, 58 and 76 and Section 56.513 of the Kentucky Revised Statutes, as amended.

"Additional Bonds" has the meaning set forth in the General Bond Resolution.

"Advance" means (i) all Loans made under the terms and conditions of the Revolving Credit Agreements, and (ii) any obligations of the District to the Banks under the Revolving Credit Agreements or the Fee Letters, as applicable.

"Aggregate Debt Service" has the meaning set forth in the General Bond Resolution.

"Aggregate Net Debt Service" has the meaning set forth in the General Bond Resolution.

"Agreements" means, with respect to either Bank, the Revolving Credit Agreement and the Note Purchase Agreement to which such Bank is a party.

"Annual Budget" has the meaning set forth in the General Bond Resolution.

"Authorized Denomination" means (i) with respect to the Commercial Paper Notes, $100,000 or any integral multiple of $1,000 in excess of $100,000, and (ii) with respect to the Direct Purchase Notes, $1,000,000 or any integral multiple of $100,000 in excess of $1,000,000.

"Authorized Representative" means one or more of the following officers, officials, employees, or representatives of the District, acting in concert or individually: the Chair, the Vice-Chair, the Chief Financial Officer, the Secretary-Treasurer, any Assistant Secretary-Treasurer, or any other officer or employee of the District that is designated in writing by the Chair or Vice-Chair of the Board or the Chief Financial Officer, and approved by the Board, to act as an Authorized Representative of the District.

"Available Commitment," with respect to each Bank, means, and in no event shall it exceed, $250,000,000, such initial amount adjusted from time to time as follows: (a) downward in an amount equal to the Principal Component plus the Interest Component of any Loan, plus the principal amount of each Direct Purchase Note purchased by the applicable Bank from time to time pursuant to such Bank's Note Purchase Agreement; (b) upward in an amount equal to the Principal Component and the Interest Component of any Loan that is repaid pursuant to the terms of Section 2.03 or 2.07 of such Bank's Revolving Credit Agreement and the principal amount of any Direct Purchase Notes repaid pursuant to such Bank's Note Purchase Agreement; and (c) downward by an amount that bears the same proportion to the Available Commitment immediately prior to such reduction as the amount of any reduction in the applicable Bank's Commitment bears to such Bank's Commitment immediately prior to such reduction; provided, however, that after giving effect to any such adjustment, the Available Commitment shall never exceed $250,000,000. Any adjustments pursuant to clause (a), (b), or (c) above shall occur simultaneously with the event requiring such adjustment.

"BANA" means Bank of America, N.A., and its successors and assigns under the BANA Revolving Credit Agreement and the BANA Note Purchase Agreement.

"BANA Bank Note" means the promissory note issued by the District to the order of BANA, evidencing and securing the obligation of the District to repay the Loan by BANA to the District from the sources set forth in the Note Resolution and the BANA Revolving Credit Agreement, substantially in the form set forth in Exhibit A to the BANA Revolving Credit Agreement, with appropriate completions, and any and all renewals, extensions, and modifications thereof.

"BANA Commitment" means $250,000,000, the maximum amount available to be drawn under the BANA Revolving Credit Agreement for the payment of the principal of and interest on the Commercial Paper Notes, Sub-Series 2023A-1, as this aggregate amount may be reduced and reinstated from time to time, as provided in the BANA Revolving Credit Agreement, including in connection with the purchase of BANA Direct Purchase Notes by BANA under the BANA Note Purchase Agreement.

"BANA Direct Purchase Notes" means Program Notes issued as direct purchase notes under the terms of the Note Resolution, to be purchased by BANA in accordance with the terms of the BANA Note Purchase Agreement.

"BANA Fee Letter" means any fee letter or similar agreement by and between the District and BANA in connection with the BANA Revolving Credit Agreement and the BANA Note Purchase Agreement.

"BANA Note Purchase Agreement" means the Note Purchase Agreement by and between the District and BANA, as the same may be amended, supplemented, extended, or restated from time to time by the parties thereto, under which the purchase of the BANA Direct Purchase Notes shall be governed.

"BANA Revolving Credit Agreement" means the Revolving Credit Agreement by and between the District and BANA, as the same may be amended, supplemented, extended, or restated from time to time by the parties thereto, together with any BANA Bank Notes, such instruments being intended to provide liquidity support for the Commercial Paper Notes, Sub-Series 2023A-1.

"Bank" means either BANA or JPMCB, and "Banks" means, collectively, BANA and JPMCB.

"Bank Note" or "Bank Notes" means a promissory note or notes issued under the Note Resolution and either of the Revolving Credit Agreements (including any Bank Notes, as defined in the Revolving Credit Agreement), including the BANA Bank Note and the JPMCB Bank Note, to evidence and secure the Advances made by the Banks, having the terms and characteristics contained in, and issued in accordance with, the applicable Revolving Credit Agreement.

"Board" means the governing body of the District.

"Bond Fund" means the debt service fund for the Bonds so designated in and established under the General Bond Resolution.

"Bonds" means a series or issue of bonds, notes, or similar obligations (other than the Program Notes, the Bank Notes, the Revolving Credit Agreements, and any other obligations of the District issued on a basis of security subordinate to any of the foregoing instruments) issued or incurred by the District under the General Bond Resolution, payable from and secured solely by a lien on and pledge of the Pledged Property, superior in rank and dignity to the lien and pledge of the Pledged Property securing the payment of the Subordinate Lien BANS and the Program Notes.

"Business Day" means any day other than (i) a Saturday, (ii) a Sunday, (iii) a day on which banking institutions in the Commonwealth of Kentucky or the State of New York are authorized or obligated by law or executive order to be closed, (iv) a day on which the New York Stock Exchange is authorized or obligated by law or executive order to be closed, (v) a day on which banks are authorized or obligated by law or executive order to be closed in (a) the city in which the office of the Paying Agent is located, (b) the city in which the principal office of any Dealer is located or the city in which the offices of either of the Banks is located, and (vi) a Commonwealth of Kentucky legal holiday.

"Code" means the Internal Revenue Code of 1986, as amended.

"Commercial Paper Notes" means the Program Notes issued as commercial paper notes under the terms of the Note Resolution and shall include, except when the context requires otherwise, the Bank Notes.

"Commercial Paper Notes, Sub-Series 2023A-1" means the Commercial Paper Notes issued under the BANA Commitment.

"Commercial Paper Notes, Sub-Series 2023A-2" means the Commercial Paper Notes issued under the JPMCB Commitment.

"Commitment," in the case of each Bank, means an amount equal to the Commitment of such Bank to make Loans to the District, as such amount may be terminated and/or reduced pursuant to Section 2.06 or Section 7.01 of such Bank's Revolving Credit Agreement. As of the Effective Date, each Bank's respective Commitment is in an amount equal to $250,000,000.

"Commitments" means, collectively, the BANA Commitment and the JPMCB Commitment.

"Cost of Construction and Acquisition" has the meaning set forth in the General Bond Resolution.

"Dealer" means, (i) with respect to the Commercial Paper Notes, Sub-Series 2023A-1, BofA Securities, Inc., and (ii) with respect to the Commercial Paper Notes, Sub-Series 2023A-2, J.P. Morgan Securities LLC.

"Dealer Agreement" means (i) the Dealer Agreement entered into by and between the District and BofA Securities, Inc., with respect to the Commercial Paper Notes, Sub-Series 2023A-1, and (ii) the Dealer Agreement entered into by and between the District and J.P. Morgan Securities LLC, with respect to the Commercial Paper Notes, Sub-Series 2023A-2, as the same may be amended, supplemented, extended, or restated from time to time by the parties thereto.

"Debt Service" has the meaning set forth in the General Bond Resolution.

"Designated Office" means, (i) with respect to the Commercial Paper Notes, the corporate trust office of the Issuing and Paying Agent designated as the place for payment, transfer, and exchange of the Commercial Paper Notes, initially, the corporate trust office of the Issuing and Paying Agent in New York, New York, and (ii) with respect to the Direct Purchase Notes, the corporate office of the Note Paying Agent designated as the place for payment, transfer, and exchange of the Direct Purchase Notes, initially, the corporate trust office of the Note Paying Agent in Louisville, Kentucky.

"Direct Purchase Notes" means the Program Notes issued as direct purchase notes under the terms of the Note Resolution, to be purchased by each Bank in accordance with the terms of the related Note Purchase Agreement.

"Direct Purchase Payment Fund" means the account so designated in and established under the Note Resolution, as further described therein.

"District" means the Louisville and Jefferson County Metropolitan Sewer District, a public body corporate and politic and a political subdivision established and existing under the laws of the Commonwealth of Kentucky.

"DTC" means The Depository Trust Company, New York, New York.

"DTC Participant" means the securities brokers, securities dealers, banks, trust companies, clearing corporations, and certain other organizations on whose behalf DTC was created to hold securities to facilitate the clearance and settlement of securities transactions among DTC Participants.

"Eligible Investments" means any or all of the authorized investments described in Section 66.480 of the Kentucky Revised Statutes, as amended from time to time, in which the District may purchase, sell, and invest its funds and any funds under its control.

"Eligible Project" means the acquisition, construction, installation, or equipping of improvements, additions, or extensions to the System, including capital assets and facilities incident and related to their operation, maintenance, and administration of the System, all as provided in the Act.

"Facility Fee" has the meaning set forth in the Fee Letter.

"Fee Letters" means, collectively, the BANA Fee Letter, the JPMCB Fee Letter, and any other agreement by and between the District and a different liquidity provider executed and delivered in substitution for or replacement of either the BANA Fee Letter or the JPMCB Fee Letter, in connection with the Revolving Credit Agreements and the Note Purchase Agreements.

"Fiscal Year" means the twelve month financial accounting period used by the District in connection with the operation of the System, which shall be the period commencing on July 1 of any calendar year and ending on June 30 of the immediately following calendar year.

"General Bond Resolution" means the Sewer and Drainage System Revenue Bond Resolution as adopted by the Board of the District on December 7, 1992, as amended on March 4, 1993, June 30, 1993, December 14, 1994, January 25, 1996, and February 24, 2003, as the same may be further amended, supplemented, and restated by the District from time to time in accordance with its terms.

"Holder" or "Noteholder" means any person, firm, association, or corporation who is in possession of any Program Note drawn, issued, or endorsed (i) to that person, firm, association, or corporation, (ii) to the order of that person, firm, association, or corporation, (iii) to bearer, or (iv) in blank, including, unless the context shall otherwise require, the Banks.

"Governmental Authority" means (i) as used in the BANA Revolving Credit Agreement and the BANA Note Purchase Agreement, the government of the United States or any other nation, or of any political subdivision thereof, whether state or local, and any agency, authority, instrumentality, regulatory body, court, central bank or other entity exercising executive, legislative, judicial, taxing, regulatory or administrative powers or functions of or pertaining to government (including, without limitation, the Financial Conduct Authority, the Prudential Regulation Authority and any supra-national bodies such as the European Union or the European Central Bank), and (ii) as used in the JPMCB Revolving Credit Agreement and the JPMCB Note Purchase Agreement, the government of the United States of America or any other nation or any political subdivision thereof or any governmental or quasi-governmental entity, including any court, department, commission, board, bureau, agency, administration, central bank, service, district or other instrumentality of any governmental entity or other entity exercising executive, legislative, judicial, taxing, regulatory, fiscal, monetary or administrative powers or functions of or pertaining to government (including any supra national bodies such as the European Union or European Central Bank), or any arbitrator, mediator or other Person with authority to bind a party at law.

"Interest Component," in respect of any Loan, means the portion of such Loan equal to the accrued interest on maturing Commercial Paper Notes which is paid with the proceeds of such Loan.

"Issuing and Paying Agent," "Paying Agent/Registrar," or "Registrar" means the agent appointed to serve in such capacity pursuant to the Note Resolution, or any successor to the agent. The initial Issuing and Paying Agent, Paying Agent/Registrar, and Registrar is U.S. Bank Trust Company, National Association.

"Issuing and Paying Agent Agreement" means the agreement by and between the District and the Issuing and Paying Agent, as the same may be amended, supplemented, extended, or restated from time to time by the parties thereto, relating to the Commercial Paper Notes.

"JPMCB" means JPMorgan Chase Bank, National Association, and its successors and assigns under the JPMCB Revolving Credit Agreement and the JPMCB Note Purchase Agreement.

"JPMCB Commitment" means $250,000,000, the maximum amount available to be drawn under the JPMCB Revolving Credit Agreement for the payment of the principal of and interest on the Commercial Paper Notes, Sub-Series 2023A-2, as this aggregate amount may be reduced and reinstated from time to time, as provided in the JPMCB Revolving Credit Agreement, including in connection with the purchase of JPMCB Direct Purchase Notes by JPMCB under the JPMCB Note Purchase Agreement.

"JPMCB Direct Purchase Notes" means the Program Notes issued as direct purchase notes under the terms of the Note Resolution, to be purchased by JPMCB in accordance with the terms of the JPMCB Note Purchase Agreement.

"JPMCB Fee Letter" means any fee letter or similar agreement by and between the District and JPMCB in connection with the JPMCB Revolving Credit Agreement and the JPMCB Note Purchase Agreement.

"JPMCB Note Purchase Agreement" means the Note Purchase Agreement by and between the District and JPMCB, as the same may be amended, supplemented, extended, or restated from time to time by the parties thereto, under which the purchase of JPMCB Direct Purchase Notes shall be governed.

"JPMCB Revolving Credit Agreement" means the Revolving Credit Agreement by and between the District and JPMCB, as the same may be amended, supplemented, extended, or restated from time to time by the parties thereto, together with any JPMCB Bank Notes, such instruments being intended to provide liquidity support for the Commercial Paper Notes, Sub-Series 2023A-2.

"Loan" means each revolving loan made by either Bank to the District pursuant to the applicable Revolving Credit Agreement or Note Purchase Agreement.

"Maximum Interest Rate" means 10% per annum for the Tax-Exempt Notes and 12% per annum for the Taxable Notes.

"Maximum Maturity Date" means, initially, June 18, 2026, but may be extended one or more times to a date no later than June 21, 2028, upon the District's consent to the amendment and extension of the Fee Letters, the Note Purchase Agreements, the Revolving Credit Agreements, and the Dealer Agreements to reflect such extension.

"MSRB" means the Municipal Securities Rulemaking Board.

"Net Revenues," for any period, means Revenues less Operating Expenses for such period.

"Note Construction Account" means the account so designated in and established under the Note Resolution.

"Note Counsel" means a nationally recognized municipal bond attorney or firm of municipal bond attorneys, acceptable to the District.

"Note Paying Agent" means U.S. Bank Trust Company, National Association as the Paying Agent/Registrar for the Direct Purchase Notes.

"Note Payment Fund" means the fund so designated in and established under the Note Resolution for the payment of the Commercial Paper Notes, which constitutes an account within the Senior Subordinated Debt Fund established under the General Bond Resolution.

"Note Purchase Agreements" means, collectively, the BANA Note Purchase Agreement, the JPMCB Note Purchase Agreement, and any other agreement by and between the District and a different liquidity provider executed and delivered in substitution for or replacement of either the BANA Note Purchase Agreement or the JPMCB Note Purchase Agreement, under which the purchase of the Direct Purchase Notes shall be governed, as the same shall be amended, restated, or supplemented from time to time by the parties thereto.

"Note Resolution" means the 2023 Program Note Resolution with respect to the Program Notes adopted by the Board of the District on March 27, 2023.

"Operating Expenses" means the reasonable, ordinary, usual, or necessary current expenses of the District in connection with the maintenance, repair, and operation of the System, determined in accordance with generally accepted accounting principles and the enterprise basis of accounting. Operating Expenses shall include (i) any expenses not annually recurring; (ii) any administrative and engineering expenses (to the extent not paid or reimbursed as a Project Cost), payments to pension or retirement funds properly chargeable to the System, insurance premiums, fees and expenses of Paying Agents, and legal expenses; (iii) any other expenses required to be paid by the District under the provisions of the General Bond Resolution or by law; and (iv) any amounts reasonably required to be set aside in reserves for operating items or expenses, the payment of which is not then immediately required. However, Operating Expenses shall exclude (i) any reserves for extraordinary maintenance or repairs for the System, allowance for depreciation, deposits or transfers to the credit of the Bond Fund or the Renewal and Replacement Account, and amounts paid or required to be paid to the United States of America under the General Bond Resolution (except to the extent that such rebate amounts must be paid from Revenues other than the investment income that generated the liability to the United States); (ii) non-capital Project Costs or other costs, to the extent composed of non-capital expenses, salaries, wages, and fees that are necessary or incidental to capital improvements for which debt has been issued, and which may be paid from the proceeds of such debt; (iii) losses from the sale, abandonment, reclassification, revaluation, or other disposition of properties of the System and such property items, including taxes and fuel, which are capitalized under the then existing accounting practice of the District, and (iv) principal of and redemption premium, if any, and interest on the Senior Subordinated Debt.

"Ordinance" means the Ordinance adopted by the Louisville/Jefferson County Metro Government approving the Note Resolution.

"Outstanding," with respect to the Bonds, has the meaning set forth in the General Bond Resolution.

"Parity Lien Obligations" means the obligations of the District under the Program Notes, the Note Purchase Agreements, the Revolving Credit Agreements, and any other debt issued or incurred by or on behalf of the District secured by all or any portion of the Revenues, the payment of which ranks on parity with the Bank Notes and the Loans.

"Paying Agent and Registrar Agreement" means the agreement by and between the District and the Note Paying Agent, as the same may be amended, supplemented, extended, or restated by the parties thereto from time to time, relating to the Direct Purchase Notes.

"Pledged Property" means and includes the following property, as and when received by or for the account of the District, and in each case, pending the application or expenditure thereof in accordance with the General Bond Resolution: (i) the proceeds of the sale of any Bonds to retire the Program Notes, (ii) the proceeds of the Program Notes, (iii) all Revenues of the System, (iv) all amounts on deposit in the funds or accounts established under the General Bond Resolution, subject to the application thereof in accordance with the General Bond Resolution, (v) such other amounts as may be pledged from time to time by the District as security for the payment of the Program Notes, and (vi) all proceeds of the foregoing.

"Principal Component," in respect of any Loan, means the portion of such Loan equal to the principal amount of the Commercial Paper Notes paid with the proceeds of such Loan.

"Principal Installment," with respect to any Bonds, has the meaning set forth in the General Bond Resolution.

"Prior Program Notes" means the notes issued by the District under the Prior Program Resolution.

"Prior Program Resolution" means the Program Note Resolution adopted by the Board of the District on May 29, 2018, authorizing the Prior Program Notes, as amended and supplemented from time to time, including as supplemented by the resolution adopted by the Board of the District on November 16, 2020.

"Program Notes" shall mean the Commercial Paper Notes and the Direct Purchase Notes issued as notes under the terms of the Note Resolution.

"Project" has the meaning set forth in the General Bond Resolution.

"Project Costs" means all costs and expenses incurred in relation to Eligible Projects, including, without limitation, (i) design, planning, engineering, and legal costs; (ii) the costs of acquiring land, interests in land, rights-of-way, and easements; (iii) construction costs; (iv) costs of machinery, equipment, and other capital assets incident and related to the operation, maintenance, and administration of an Eligible

Project; (v) financing costs, including interest during construction and thereafter, underwriter's discount, and fees for legal, financial, and other professional services; and (vi) reimbursement for any Project Costs attributable to Eligible Projects incurred before the issuance of any Program Notes.

"Project Notes" has the meaning set forth in the General Bond Resolution.

"Refunding Bonds" has the meaning set forth in the General Bond Resolution.

"Regulations" means all applicable temporary, proposed, and final regulations and procedures promulgated by the U.S. Department of the Treasury under the Code or the Internal Revenue Code of 1954, to the extent applicable to the Code.

"Related Documents" means, collectively, the Note Resolution, the General Bond Resolution, the Ordinance, the Program Notes, the Bank Notes, this Offering Memorandum, the Note Purchase Agreements, the Revolving Credit Agreements, the Fee Letters, the Dealer Agreements, the Issuing and Paying Agent Agreement, the Paying Agent and Registrar Agreement, and any exhibit or schedule to any of the foregoing documents, as the same may be amended, modified, or supplemented from time to time in accordance with their respective terms and the terms of the Note Resolution.

"Renewal and Replacement Account" has the meaning set forth in the General Bond Resolution.

"Renewal and Replacement Fund" means the fund so designated in and established under the General Bond Resolution.

"Reserve Account" has the meaning set forth in the General Bond Resolution.

"Revenue Fund" means the fund so established and designated in the General Bond Resolution.

"Revenues" means the sum of all revenues, rates, fees, rents, and charges and any other operating income and receipts, as derived by or for the account of the District from or for the operation, use, or services of the System, determined in accordance with generally accepted accounting principles and the enterprise basis of accounting. Revenues shall include (i) revenue from capital charges recovered or reimbursed to the District, capacity charges, and service connection fees; (ii) acquisition surcharges and assessments levied by the District (regardless of whether any of the same are allocated or designated by the District for capital expenditures); and (iii) interest or other income received or to be received from any source, including interest or other income received or to be received on any monies or securities held under the General Bond Resolution. Revenues shall not include customer deposits and contributions in aid of construction, except to the extent the same would constitute revenues or income in accordance with generally accepted accounting principles.

"Revolving Credit Agreement" means the BANA Revolving Credit Agreement, the JPMCB Revolving Credit Agreement, and any other agreement by and between the District and a liquidity provider executed and delivered in substitution for or replacement of either the BANA Revolving Credit Agreement or the JPMCB Revolving Credit Agreement and providing a credit or liquidity facility supporting the Commercial Paper Notes, including any Bank Notes to be issued and delivered under the agreement evidencing any loans made or to be made to the District, providing additional security and liquidity for the payment of the Program Notes, as any of the foregoing agreements may be amended, supplemented, extended, or restated from time to time by the parties thereto.

"Senior Subordinated Debt" means, collectively, the Program Notes, the Loans, the Advances, and the Subordinated Lien BANS.

"Senior Subordinated Debt Fund" means the fund so designated in and established under the General Bond Resolution for the payment of the Senior Subordinated Debt.

"Series" has the meaning set forth in the General Bond Resolution.

"Specified Debt" means (i) any bonds, notes, certificates, debentures, or other evidence of similar indebtedness issued by or on behalf of the District and secured by all or any portion of the Revenues, the payment of which ranks senior to or on parity with the Bank Notes and the Loans; (ii) the obligations of the District under any Swap Contract (other than termination payments under any Swap Contract), the payment of which is secured by all or any portion of the Revenues and which ranks senior to or on parity with the Bank Notes and the Loans, providing interest rate support with respect to any Debt which ranks senior to or on parity with the Bank Notes; (iii) any obligation of the District as lessee under a capital lease, the payment of which is secured by all or any portion of the Revenues, and which ranks senior to or on parity with the Bank Notes and the Loans, and which is not subject to appropriation or abatement; (iv) any guarantee by the District, the payment of which ranks senior to or on parity with the Bank Notes and the Loans so specified (provided, however, that the failure to pay any such guarantee as a result of any set-off, recoupment, counterclaim, or any other defense of the District shall not constitute a failure to pay Specified Debt for purposes of the Revolving Credit Agreements); and (v) direct obligations of the District arising under letters of credit (including standby and commercial), credit agreements, bankers' acceptances, bank guaranties, surety bonds, and similar instruments, the payment of which ranks senior to or on parity with the Bank Notes and the Loans.

"Subordinate Lien BANS" means the Louisville and Jefferson County Metropolitan Sewer District Sewer and Drainage System Subordinated Bond Anticipation Notes, Series 2022 dated October 5, 2022, and any renewals thereof, issued under the authority of the Subordinated Debt Resolution adopted by the Board of the District on April 26, 2010, as the same may be amended and supplemented from time to time.

"Subordinated Debt" means any indebtedness of the System which is subordinate to the Bonds issued under the General Bond Resolution, including the Senior Subordinated Debt.

"System" means, collectively, (i) the sewer facilities, the drainage facilities, and all facilities appurtenant thereto, or any other facilities owned, operated, or controlled by the District from time to time; (ii) any Eligible Project; and (iii) all improvements, additions, extensions, and betterments to the foregoing that may be hereafter acquired by the District by any means whatsoever; provided, however, that notwithstanding the foregoing, and to the extent authorized or permitted by law, the term "System" shall not include facilities of any kind which are declared not to be a part of the System and which special facilities are acquired or constructed by the District, individually or in participation with others, with the proceeds from the issuance of "Special Facilities Bonds," which are defined as being special revenue obligations of the District that are not Bonds, Program Notes, or Subordinate Lien BANS, but which are payable from and secured by other liens on and pledges of any revenues, sources, or payments not pledged to the payment of the Bonds, Program Notes, or Subordinate Lien BANS, including special contract revenues or payments received from any other legal entity in connection with such special facilities.

"Taxable Notes" means the Program Notes not designated by the District as Tax-Exempt Notes, the interest on which is includable in the gross income of the Holders thereof for federal income tax purposes.

"Tax-Exempt Notes" means the Program Notes designated by the District as obligations described in Section 103 of the Code, the interest on which is not includable in the gross income of the Holders thereof for federal income tax purposes.

SUMMARY OF PROVISIONS OF THE NOTE RESOLUTION

Authorization; Designation; Principal Amount of Program Notes.

In the Note Resolution, the Board of the District, acting under the authority of the Act, reauthorized the District's commercial paper and direct purchase note program previously utilized by the District through the issuance of the Program Notes, to be designated as the "LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT SEWER AND DRAINAGE SYSTEM SUBORDINATED PROGRAM NOTES." The Program Notes may be issued in an aggregate principal amount not to exceed $500,000,000 at any one time outstanding for the purposes of financing the Project Costs of Eligible Projects and refinancing, renewing, or refunding any Bonds, any Program Notes issued under the Note Resolution, or any Prior Program Notes issued under the Prior Program Resolution. The Program Notes may be issued as Commercial Paper Notes or as Direct Purchase Notes.

Program Notes.

The Commercial Paper Notes have been authorized to be issued and sold and delivered from time to time as Taxable Notes or as Tax-Exempt Notes in principal amounts as determined by an Authorized Representative in Authorized Denominations, numbered in ascending consecutive numerical order in the order of their issuance and to mature and become due and payable on the dates as an Authorized Representative shall determine at the time of sale; provided, however, that no Commercial Paper Note shall (i) mature after the Maximum Maturity Date, (ii) have a term in excess of 270 days or (iii) be issued in a manner that would cause the District to violate the covenants set forth in the Note Resolution. Interest, if any, on Commercial Paper Notes shall be payable at maturity with principal.

The Direct Purchase Notes have been authorized to be issued and sold as Tax-Exempt Notes and delivered from time to time in principal amounts as determined by an Authorized Representative in Authorized Denominations, numbered in ascending consecutive numerical order in the order of their issuance and to mature and become due and payable on the dates as an Authorized Representative shall determine at the time of sale; provided, however, that no Direct Purchase Note shall (i) mature after the Maximum Maturity Date or (ii) be issued in a manner that would cause the District to violate the covenants set forth in the Note Resolution. Interest on Direct Purchase Notes shall be payable on the dates and in the manner set forth in the applicable Note Purchase Agreement.

An Authorized Representative is required to notify the Banks and the applicable Dealer of each new issuance of Program Notes and confirm that at the time of the new issuance (after giving effect to the new issuance), the aggregate principal amount of Program Notes and Advances outstanding does not exceed $500,000,000.

Issuance and Sale of the Program Notes.

Completion of the Commercial Paper Notes. The Commercial Paper Notes shall be completed and delivered by the Issuing and Paying Agent in accordance with telephonic, electronic or written instructions of the Authorized Representative and the Issuing and Paying Agent Agreement. To the extent instructions are not written, they shall be confirmed in writing by the Authorized Representative within twenty-four hours. The instructions shall specify the Commercial Paper Notes to be sold, whether the Commercial Paper Notes are designated as Tax-Exempt Notes or as Taxable Notes, the applicable Commitment under which the Commercial Paper Notes are being issued (Commercial Paper Notes, Sub-Series 2023A-1 or Commercial Paper Notes, Sub-Series 2023A-2, as applicable) and the principal amounts, dates of issue, maturities, rates of discount or interest, or the formula or method of calculating interest and the basis upon which it is to be computed and other terms and conditions which may be determined by the Authorized Representative at the time of sale of the Commercial Paper Notes. The instructions shall include the purchase price of the Commercial Paper Notes, and, if the Commercial Paper Notes are not held in accordance with a book-entry only system, a request that the Issuing and Paying Agent authenticate the Commercial Paper Notes by counter signature of its authorized officer or employee and deliver them to the named purchaser upon receipt of payment in accordance with the custom then prevailing in the New York financial market in regard to the Commercial Paper Notes. The rules of the New York Clearinghouse shall apply. The instructions shall also contain provisions representing that all action on the part of the District necessary for the valid issuance of the Commercial Paper Notes then to be issued has been taken, that all provisions of Kentucky and federal law necessary for the valid issuance of the Commercial Paper Notes designated as Tax-Exempt Notes with provision for interest exemption from federal income taxation have been complied with, if applicable, and that the Commercial Paper Notes in the hands of the Holders will be valid and enforceable obligations of the District according to their terms, subject to the exercise of judicial discretion in accordance with general principles of equity and bankruptcy, insolvency, reorganization, moratorium and other similar laws affecting creditors' rights to the extent constitutionally applicable and that, if applicable, based upon the advice of Note Counsel, the stated interest on the Commercial Paper Notes designated as Tax-Exempt Notes is exempt from federal income taxation. The instructions shall also certify that:

(i) no Event of Default under the Note Resolution has occurred and is continuing as of the date of the instructions and that the Issuing and Paying Agent has not received a Notice of No-Issuance (as defined in the Revolving Credit Agreements);

(ii) the District has been advised by Note Counsel that the projects to be financed with the proceeds of the Commercial Paper Notes will constitute Eligible Projects or that the obligations to be refunded were issued in connection with Eligible Projects;

(iii) the District is in compliance with the covenants set forth in the Note Resolution as of the date of the instructions;

(iv) the District has been advised by Note Counsel that the proposed expenditure of the proceeds of Commercial Paper Notes for Eligible Projects and the refunding of Commercial Paper Notes issued for Eligible Projects will not cause the District to be in violation of its covenants set forth in the Note Resolution;

(v) the sum of the interest payable on the Commercial Paper Note will not exceed a yield (calculated on the principal amount of the Commercial Paper Note on the basis of actual number of days elapsed, and a 365-day year) to the maturity date of the Commercial Paper Note in excess of the Maximum Interest Rate;

(vi) all action on the part of the District necessary for the valid issuance of the Commercial Paper Notes then to be issued has been taken;

(vii) all provisions of Kentucky and federal law necessary for the valid issuance of the Commercial Paper Notes have been complied with;

(viii) the Commercial Paper Notes held by the Holders will be valid and enforceable obligations of the District according to their terms, subject to the exercise of judicial discretion in accordance with general principles of equity and bankruptcy, insolvency, reorganization, moratorium and other similar laws affecting creditors' rights, to the extent constitutionally applicable; and

any and all conditions to the issuance of Commercial Paper Notes under the Revolving Credit Agreements have been fully satisfied.

Completion of the Direct Purchase Notes. The Direct Purchase Notes shall be completed and delivered by the applicable Note Paying Agents in accordance with telephonic, electronic or written instructions of the Authorized Representative and the Paying Agent/Registrar Agreement. To the extent instructions are not written, they shall be confirmed in writing by the Authorized Representative within twenty-four (24) hours. The instructions shall specify the Direct Purchase Notes to be sold, the applicable Commitment under which the Direct Purchase Notes are being issued and the principal amounts, dates of issue, maturities and other terms and conditions which may be determined by the Authorized Representative at the time of sale of the Direct Purchase Notes. The Direct Purchase Notes will bear interest at the rates and in the manner set forth in the applicable Note Purchase Agreement. The instructions shall include the purchase price of the Direct Purchase Notes, and a request that the applicable Paying Agent/Registrar authenticate the Direct Purchase Notes by counter signature of its authorized officer or employee and deliver them to the named purchaser upon receipt of payment. The instructions shall also contain provisions representing that all action on the part of the District necessary for the valid issuance of the Direct Purchase Notes then to be issued has been taken, that all provisions of Kentucky and federal law necessary for the valid issuance of the Direct Purchase Notes as Tax-Exempt Notes with provision for interest exemption from federal income taxation have been complied with, and that the Direct Purchase Notes in the hands of the applicable Bank will be valid and enforceable obligations of the District according to their terms, subject to the exercise of judicial discretion in accordance with general principles of equity and bankruptcy, insolvency, reorganization, moratorium and other similar laws affecting creditors' rights to the extent constitutionally applicable and that, if applicable, based upon the advice of Note Counsel, the stated interest on the Direct Purchase Notes is exempt from federal income taxation. The instructions shall also certify that:

(i) no Event of Default under the Note Resolution has occurred and is continuing as of the date of the instructions;

(ii) the District has been advised by Note Counsel that the projects to be financed with the proceeds of the Direct Purchase Notes will constitute Eligible Projects or that the obligations to be refunded were issued in connection with Eligible Projects;

(iii) the District is in compliance with the covenants set forth in the Note Resolution as of the date of the instructions;

(iv) the District has been advised by Note Counsel that the proposed expenditure of the proceeds of Direct Purchase Notes for Eligible Projects and the refunding of Direct Purchase Notes issued for Eligible Projects will not cause the District to be in violation of its covenants set forth in the Note Resolution;

(v) any and all conditions to the issuance of Direct Purchase Notes under the applicable Note Purchase Agreement have been fully satisfied;

(vi) all action on the part of the District necessary for the valid issuance of the Direct Purchase Notes then to be issued has been taken;

(vii) all provisions of Kentucky and federal law necessary for the valid issuance of the Direct Purchase Notes have been complied with; and

(viii) the Direct Purchase Notes held by the applicable Bank will be valid and enforceable obligations of the District according to their terms, subject to the exercise of judicial discretion in accordance with general principles of equity and bankruptcy, insolvency, reorganization, moratorium and other similar laws affecting creditors' rights, to the extent constitutionally applicable.

Proceeds of Sale of Program Notes.

Commercial Paper Note Proceeds. The proceeds of the sale of any Commercial Paper Notes (net of all expenses and costs of sale and issuance) shall be applied for any or all of the following purposes as directed by an Authorized Representative:

(i) Proceeds shall first be used for the payment of outstanding Commercial Paper Notes at or prior to maturity and the repayment in full of Advances and any other amounts due under the Revolving Credit Agreements shall be deposited to the Note Payment Fund;

(ii) Proceeds not retained in the Note Payment Fund as provided in subparagraph (i) above shall be transferred and deposited to the Note Construction Account and used and applied in accordance with the provisions of the Note Resolution; and

(iii) Proceeds to be used for the payment of outstanding Bonds or Subordinate Lien BANS (if prior approval is given by the Board and the Banks) shall be transferred to the appropriate account or fund established pursuant to the proceedings authorizing the issuance of the Bonds or Subordinate Lien BANS, as applicable.

Direct Purchase Note Proceeds. The proceeds of the sale of any Direct Purchase Notes (net of all expenses and costs of sale and issuance) shall be applied for any or all of the following purposes as directed by an Authorized Representative:

(i) Proceeds shall first be used for the payment of outstanding Direct Purchase Notes at or prior to maturity and the payment in full of any amounts due under the applicable Note Purchase Agreement shall be deposited to the Direct Purchase Payment Fund;

(ii) Proceeds not retained in the Direct Purchase Payment Fund as provided in subparagraph (i) above shall be transferred and deposited to the Note Construction Account and used and applied in accordance with the provisions of the Note Resolution; and

(iii) Proceeds to be used for the payment of outstanding Bonds or Subordinate Lien BANS (if prior approval is given by the Board and the Banks) shall be transferred to the appropriate account or fund established pursuant to the proceedings authorizing the issuance of the Bonds or Subordinate Lien BANS, as applicable.

Limitation on Issuance.

Unless the Board amends the Note Resolution in accordance with the applicable provisions of the Note Resolution, the District has covenanted in the Note Resolution that there will not be issued and outstanding at any time under the Note Resolution more than $500,000,000 in aggregate principal amount of Program Notes.

Punctual Payment.

In the Note Resolution, the District has covenanted that it will punctually pay or cause to be paid the principal of and interest on the Program Notes and the Bank Notes (but only from the sources pledged by the Note Resolution), in conformity with the Program Notes, the Note Resolution, the Revolving Credit Agreements or the Note Purchase Agreements.

Payment and Performance on Business Days.

Whenever under the terms of the Note Resolution or the Program Notes, the performance date of any of their provisions, including the payment of principal of or interest on the Program Notes, shall occur on a day other than a Business Day, then performance, including the payment of principal of and interest on the Program Notes, need not be made on that day but may be performed or paid on the next succeeding Business Day with the same force and effect as if made on that day.

Execution; Authentication.

The Note Resolution requires that the Program Notes be executed on behalf of the District by the Chair or Vice-Chair of the Board, and attested by the Secretary-Treasurer under its seal reproduced or impressed thereon, all as provided in the Note Resolution (or in case of the Master Note and the Bank Notes, executed on behalf of the District by the Chair, the Vice-Chair or the Chief Financial Officer of the District). The signatures appearing on the Program Notes (including the Master Note) may be manual or facsimile. Program Notes bearing the manual or facsimile signatures of individuals who are or were the proper officers of the District on the date of passage of the Note Resolution are duly executed on behalf of the District, regardless of whether any individual ceases to hold office at the time of the initial sale and delivery of Program Notes or at the time Program Notes are delivered in future sales, exchanges and transfers.

No Commercial Paper Note is entitled to any right or benefit under the Note Resolution, or be valid or obligatory for any purpose, unless there appears on the Commercial Paper Note a certificate of authentication executed by the Issuing and Paying Agent by manual signature, or, in the case of the Master Note, the Issuing and Paying Agent has executed the Master Note, and the execution of any Commercial Paper Note by the Issuing and Paying Agent is the only evidence necessary for the Commercial Paper Note to be duly certified or registered and delivered.

No Direct Purchase Note is entitled to any right or benefit under the Note Resolution, or be valid or obligatory for any purpose, unless there appears on the Direct Purchase Note a certificate of authentication executed by the Note Paying Agent by manual signature, and the execution of any Direct Purchase Note by the Note Paying Agent is the only evidence necessary for the Direct Purchase Note to be duly certified or registered and delivered.

Negotiability, Registration and Exchangeability.

The obligations issued under the Note Resolution, including the Bank Notes, shall be, and shall have all of the qualities and incidents of, a negotiable instrument under the laws of the Commonwealth of Kentucky, and each successive Holder, in accepting any obligation, agrees that the obligations shall be and have all of the qualities and incidents of a negotiable instrument under the laws of the Commonwealth of Kentucky.

The books and records relating to the registration, payment, transfer, and exchange of the Commercial Paper Notes (the “Commercial Paper Note Registration Books”) shall, at all times, be kept and maintained by the District at the Designated Office of the Registrar, and the Registrar shall obtain, record and maintain in the Commercial Paper Note Registration Books the name and address of each registered owner of the Commercial Paper Notes, except for Commercial Paper Notes registered to bearer, issued under the Note Resolution, and the Registrar shall provide the information to the District as required by the Note Resolution. Any Commercial Paper Note may, in accordance with its terms and the terms of the Note Resolution, be transferred or exchanged for Commercial Paper Notes of like tenor and character and in Authorized Denominations upon the Commercial Paper Note Registration Books by the Holder in person or by its duly authorized agent, upon surrender of the Commercial Paper Note to the Registrar for cancellation, accompanied by a written instrument of transfer or request for exchange duly executed by the Holder or by its duly authorized agent, in form satisfactory to the Registrar.

Upon surrender for transfer of any Commercial Paper Note at the Designated Office of the Registrar, the Registrar is required to register and deliver, in the name of each designated transferee (or to bearer, as appropriate), one or more new Commercial Paper Notes executed on behalf of, and furnished by, the District of like tenor and character and in Authorized Denominations and having the same maturity, bearing interest at the same rate or rates and of a like aggregate principal amount as the Commercial Paper Note or Commercial Paper Notes surrendered for transfer.

Commercial Paper Notes may be exchanged for other Commercial Paper Notes of like tenor and character and of Authorized Denominations and having the same maturity, bearing the same rate or rates of interest and of like aggregate principal amount as the Commercial Paper Notes surrendered for exchange, upon surrender of the Commercial Paper Notes to be exchanged at the Designated Office of the Registrar. Whenever any Commercial Paper Notes is surrendered for exchange, the Registrar is required to register and deliver new Commercial Paper Notes of like tenor and character as the Commercial Paper Notes exchanged, executed on behalf of, and furnished by, the District to the Holder requesting the exchange.

The District and the Registrar may charge the Noteholder a sum sufficient to reimburse them for any expenses incurred in making any exchange or transfer after the first exchange or transfer. The Registrar or the District may also require payment from the Holder of a sum sufficient to cover any tax, fee or other governmental charge that may be imposed in relation thereto. These charges and expenses shall be paid before a new Commercial Paper Note shall be delivered.

New Commercial Paper Notes delivered upon any transfer or exchange shall be valid obligations of the District, evidencing the same debt as the Commercial Paper Notes surrendered, shall be secured by the Note Resolution and shall be entitled to all of the security and benefits of the Note Resolution to the same extent as the Commercial Paper Notes surrendered.

The District reserves the right to change the registration and transferability provisions of the Commercial Paper Notes at any time on or prior to the delivery of Commercial Paper Notes in order to comply with applicable laws and regulations of the United States in effect at the time of their issuance.

The Paying Agent/Registrar shall maintain books and records for the registration, payment, transfer, and exchange of the Direct Purchase Notes (the "Direct Purchase Note Registration Books") in the manner provided in the applicable Paying Agent/Registrar Agreement.

Establishment of Funds and Accounts.

The Note Resolution establishes the Note Payment Fund, the Direct Purchase Payment Fund, and the Note Construction Account.

Note Payment Fund. The Note Resolution creates, establishes and directs to be maintained, a separate and special fund within the Subordinated Debt Fund to be held and administered by the Issuing and Paying Agent designated as the "Louisville and Jefferson County Metropolitan Sewer District Sewer and Drainage System Subordinated Program Notes, Commercial Paper Sub-Series Note Payment Fund" (Note Payment Fund). Moneys on deposit in the Note Payment Fund shall be used to pay principal of and interest on Commercial Paper Notes as the same shall become due and payable as provided in the Note Resolution and to repay any Advances and any other obligations of the District to the Banks under the Revolving Credit Agreements (evidenced by the Bank Notes). Amounts remaining in the Note Payment Fund not then necessary for the payment of Commercial Paper Notes or the repayment of Advances may be transferred to the Note Construction Account at the request of an Authorized Representative; provided, that if any amount is due and payable under the Bank Notes or the Revolving Credit Agreements, no amounts shall be transferred to the Note Construction Account without the prior written consent of the Banks.

Additionally, all proceeds of Advances shall be deposited into the Note Payment Fund and used to pay the principal of and interest on the Commercial Paper Notes.

Pending the expenditure of moneys in the Note Payment Fund for authorized purposes, moneys deposited therein may be invested at the direction of the Chief Financial Officer or the designee thereof in Eligible Investments; provided, that moneys received by the District under the terms of the Revolving Credit Agreements and moneys received in connection with a rollover of Commercial Paper Notes shall remain uninvested. Any investment income shall be deposited, as received, into the Revenue Fund established by the General Bond Resolution and shall not be considered an amount held in the Note Payment Fund.

Direct Purchase Payment Fund. The Note Resolution creates, establishes, and directs to be maintained by the District, a separate and special fund within the Subordinated Debt Fund designated as the "Louisville and Jefferson County Metropolitan Sewer District Sewer and Drainage System Subordinated Program Notes, Commercial Paper Sub-Series Payment Fund" (Direct Purchase Payment Fund). Within the Direct Purchase Payment Fund, there is created, established and directed to be maintained by the District two subaccounts designated as the "BANA Direct Purchase Account" and the "JPMCB Direct Purchase Account." Moneys on deposit in the Direct Purchase Payment Fund shall be used to pay principal of and interest on Direct Purchase Notes as the same shall become due and payable as provided in the Note Resolution and the Note Purchase Agreements. In the Note Resolution, the District has agreed that it will timely transfer funds to the Paying Agent/Registrar in amounts sufficient to pay the interest on and principal of the Direct Purchase Notes when due, no later than the date payment of principal and interest is due and payable. Amounts remaining in the Direct Purchase Payment Fund not then necessary for the payment of Direct Purchase Notes may be transferred to the Note Construction Account at the request of an Authorized Representative.

Pending the expenditure of moneys in the Direct Purchase Payment Fund for authorized purposes, moneys deposited therein may be invested at the direction of the Chief Financial Officer or the designee thereof in Eligible Investments. Any investment income shall be deposited, as received, into the Revenue Fund established by the General Bond Resolution and shall not be considered an amount held in the Direct Purchase Payment Fund.

Note Construction Account. The Note Resolution creates, establishes and directs to be maintained by the District, a separate account designated as the "Louisville and Jefferson County Metropolitan Sewer District Sewer and Drainage System Subordinated Program Notes Note Construction Account" (Note Construction Account). The Note Construction Account shall be held by the District with the District's depository bank, currently U.S. Bank Trust Company, National Association. The District shall account for moneys deposited into the Note Construction Account from Commercial Paper Notes and Direct Purchase Notes issued. Moneys deposited in the Note Construction Account shall be expended to pay for Project Costs, and to refund Bonds, Subordinated Lien BANS or Program Notes issued in connection with Eligible Projects, and shall not be used for any other purpose, except as provided below, and pending their expenditure, moneys therein may be invested at the direction of the Chief Financial Officer of the District or his designee in Eligible Investments. Any investment income received (except as otherwise required to be rebated to the United States of America) shall be deposited, as received, into the Revenue Fund established by the General Bond Resolution and shall not be considered an amount held in the Note Construction Account.

Amounts on deposit in the Note Construction Account funded with proceeds of Commercial Paper Notes and designated by an Authorized Representative as eligible to pay interest during construction and up to one year after construction is completed may be transferred from time to time at the direction of an Authorized Representative to the credit of the Note Payment Fund for use to pay principal of and interest on Commercial Paper Notes and to repay any Advances and any other obligations of the District to the Banks. Any amounts that were funded with the proceeds of Commercial Paper Notes remaining in the Note Construction Account after the payment of all Project Costs shall be paid into the Note Payment Fund and used either for the payment of the maturities of the Commercial Paper Notes coming due as may be selected by an Authorized Representative or for the payment of Advances or other amounts owing under the Revolving Credit Agreements. In the event no Commercial Paper Notes are outstanding and there are no outstanding Advances or other amounts owing under the Revolving Credit Agreements, any amounts in the Note Construction Account that were originally provided from the proceeds of Commercial Paper Notes not anticipated to be needed to pay Project Costs shall be transferred to the debt service fund established for the payment of the Bonds, when issued.

Amounts on deposit in the Note Construction Account funded with proceeds of Direct Purchase Notes and designated by an Authorized Representative as eligible to pay interest during construction and up to one year after construction is completed may be transferred from time to time at the direction of an Authorized Representative to the credit of the Direct Purchase Payment Fund, to pay principal of an interest on the Direct Purchase Notes. Any amounts that were funded with the proceeds of Direct Purchase Notes remaining in the Note Construction Account after the payment of all Project Costs shall be paid into the Direct Purchase Payment Fund and used for the payment of the maturities of the Direct Purchase Notes coming due as may be selected by an Authorized Representative. In the event no Direct Purchase Notes are outstanding, any amounts in the Note Construction Account that were originally funded from the proceeds of Direct Purchase Notes not anticipated to be needed to pay Project Costs shall be transferred to the debt service fund established for the payment of the Bonds, when issued.

Pledge; Payments.

The Program Notes (including the Bank Notes) and any obligations of the District to the Banks under the Revolving Credit Agreements, the Note Purchase Agreements and the Fee Letters are obligations of the District payable from and secured solely by the pledged funds pursuant to the Note Resolution. The District has agreed to make payments into the Note Payment Fund and the Direct Purchase Payment Fund at the times and in the amounts as are necessary to provide for the full payment of the principal of and the interest on the Commercial Paper Notes and the Direct Purchase Notes, as the case may be, when due, and the repayment of Advances made under and pursuant to the Revolving Credit Agreements and any obligations of the District to the Banks under the Revolving Credit Agreements, the Note Purchase Agreements and the Fee Letters.

To provide security for the payment of the principal of and interest on the Commercial Paper Notes and any other amounts due under the Revolving Credit Agreement as the same shall become due and payable, the District has granted a lien on and pledge of, subject only to the provisions of the Note Resolution permitting the application of the sources listed for purposes and on the terms and conditions set forth in the Note Resolution, (i) the proceeds from (a) the sale of bonds issued and to be used to pay outstanding Commercial Paper Notes and (b) the sale of Commercial Paper Notes issued pursuant to the Note Resolution and to be used to refund outstanding Commercial Paper Notes, (ii) Advances, (iii) the amounts held in the Note Payment Fund until those amounts are used for authorized purposes, (iv) the Pledged Property (a) on a parity with the lien and pledge securing the payment of the Direct Purchase Notes, the Subordinate Lien BANS and the lien and pledge securing the payment of Advances made under and pursuant to the Revolving Credit Agreements, and (b) subordinate to the lien on and pledge securing the payment of Bonds, and (v) the amounts remaining on deposit in the Note Construction Account after the payment of all Project Costs. The principal of and interest on the Commercial Paper Notes and any other amounts due under the Revolving Credit Agreements shall be and are equally and ratably secured by and payable from a lien on and pledge of the sources identified in clauses (i), (ii), (iii), (iv), and (v) subject and subordinate only to the exceptions noted above.

To provide security for the payment of the principal of and interest on Advances and any other amounts due under the Revolving Credit Agreements and the Fee Letters as the same shall become due and payable, the District has granted a lien on and pledge of the Pledged Property, subject only to the provisions of the Note Resolution permitting the application of Pledged Property for purposes and on the terms and conditions set forth in the Note Resolution; however, this lien on and pledge of the Pledged Property, and the lien and pledge securing the Commercial Paper Notes, the Direct Purchase Notes and the Subordinate Lien BANS is subordinate only to the lien on and pledge of the Pledged Property securing the payment of Bonds and the debt service and reserve funds relating to the Bonds, and being on a parity and of equal dignity with the lien and pledge securing the payment of the Program Notes and the Subordinate Lien BANS. The payment obligations under the Bank Notes are secured by a lien on the Pledged Property, and such lien is valid, binding and fully perfected on the adoption of the Note Resolution without physical delivery or transfer of control of the Pledged Property, the filing of the Note Resolution or any other act.

To provide security for the payment of the principal of and interest on the Direct Purchase Notes and any other amounts due under the Note Purchase Agreements and the Fee Letters as the same shall become due and payable, the District has granted a lien on and pledge of, subject only to the provisions of the Note Resolution permitting the application of the sources listed for purposes and on the terms and conditions set forth in the Note Resolution, (i) the proceeds from (a) the sale of Bonds issued and to be used to pay outstanding Direct Purchase Notes and (b) the sale of Direct Purchase Notes issued pursuant to the Note Resolution and to be used to refund outstanding Direct Purchase Notes, (ii) the amounts held in the Direct Purchase Payment Fund until those amounts are used for authorized purposes, (iii) the Pledged Property (a) on a parity with the lien and pledge securing the payment of the Commercial Paper Notes, the Subordinate Lien BANS and the lien and pledge securing the payment of Advances made under and pursuant to the Revolving Credit Agreements, and (b) subordinate to the lien on and pledge securing the payment of Bonds, and (iv) the amounts remaining on deposit in the Note Construction Account after the payment of all Project Costs. The principal of and interest on the Direct Purchase Notes shall be and are equally and ratably secured by and payable from a lien on and pledge of the sources identified in clauses (i), (ii), (iii) and (iv) subject and subordinate only to the exceptions noted above.

The pledge made in the Note Resolution is valid and effective, without the need for further filing or perfection. If Kentucky law is amended at any time while the Program Notes or the Bank Notes are outstanding or any amount is owing under the Revolving Credit Agreements, the Note Purchase Agreements or the Fee Letters such that the pledge of the Pledged Property granted by the District is to be subject to the filing requirements of Chapter 355.9 of the Kentucky Revised Statues, as amended (the Kentucky Uniform Commercial Code), then to preserve to the Noteholders and the Banks the perfection of the security interest in the pledge, the District has agreed to take measures as it determines are reasonable and necessary under Kentucky law to comply with the applicable provisions of Chapter 355.9 of the Kentucky Revised Statues, as amended, and enable a filing to perfect the security interest in the pledge to occur.

Maintenance of Available Credit and Liquidity Facilities Requirement.

Except as provided in the paragraph below, the District has covenanted that at all times up to and including the Maximum Maturity Date, unless the Commercial Paper Notes are no longer outstanding, it will maintain credit or liquidity facilities with banks, assuming that all then outstanding Commercial Paper Notes were to become due and payable immediately, in amounts available for borrowing under the credit or liquidity facilities sufficient at that time to pay principal and interest of all Commercial Paper Notes. No Commercial Paper Note shall be issued if after giving effect to its issuance and, if applicable, the immediate application of its proceeds to retire other Commercial Paper Notes secured by the credit or liquidity facility, the aggregate principal and interest amount of all Commercial Paper Notes secured by the credit or liquidity facility would exceed the amount of the Commitment under the credit or liquidity facility. The availability for borrowing of amounts under the credit or liquidity facilities may be subject to reasonable conditions precedent, including, but not limited to, bankruptcy of the District. In furtherance of this covenant, the District has agreed that it will not issue any Commercial Paper Notes or make any borrowings which will result in a violation of the covenant, will not amend the Revolving Credit Agreements in a manner which will cause a violation of the covenant and, if and to the extent necessary to maintain compliance with the covenant, will arrange for new credit or liquidity facilities.

The provisions of the paragraph above notwithstanding, the Board may amend the Note Resolution by a supplemental resolution, to provide that Commercial Paper Notes issued under authority of the Note Resolution may be issued without support of liquidity and/or credit facilities. To exercise the authority reserved by this Paragraph, the District shall provide written notice to each Dealer, the Issuing and Paying Agent and the Rating Agencies (as defined in the Issuing and Paying Agent Agreement) of the Board's determination to amend the Note Resolution to permit Commercial Paper Notes to be issued without liquidity and/or credit support. This notice shall be provided no later than 90 days prior to the proposed date the Board is to consider for adoption a Note Resolution amending the Note Resolution for the purpose described in this Paragraph. The District shall cause written notice to be provided to the Noteholders no less than 15 days prior to the date the Board enacts the amendatory Note Resolution. No amendatory Note Resolution shall be adopted if, on or before the date the Board considers the amendatory Note Resolution, the ratings to be assigned to the Commercial Paper Notes not being supported by a liquidity and/or credit facility are lower than A-1 or its equivalent. Commercial Paper Notes issued under the Note Resolution with liquidity and/or credit facility support shall be retired in full either through the issuance of Bonds or with the proceeds of Commercial Paper Notes issued without the support of a liquidity and/or credit facility.

Note Resolution Constitutes a Contract; Equal Security.

In consideration of the acceptance of the Program Notes and the Bank Notes by those who shall hold the same from time to time, the Note Resolution constitutes a contract between the District and the Holders from time to time of the Program Notes and the Banks (with respect to the Bank Notes) and the pledge made in the Note Resolution by the District and the covenants and agreements set forth in the Note Resolution to be performed by the District shall be for the equal and proportionate benefit, security and protection of all Holders of the Program Notes and the Bank Notes, without preference, priority or distinction as to security or otherwise of any of the Program Notes or the Bank Notes authorized by the Note Resolution over any of the others by reason of time of issuance, sale or maturity or otherwise for any cause, except as expressly provided in or permitted by the Note Resolution or, with respect to Advances, the Revolving Credit Agreements.

Application of Prior Covenants.

The covenants and agreements (to the extent the same do not conflict with the covenants and agreements in the Note Resolution) contained in the General Bond Resolution authorizing the issuance of the Bonds are incorporated by reference into the Note Resolution and are for the benefit and protection of the Holders from time to time of the Commercial Paper Notes and for the protection of the Banks and their rights under and pursuant to the Revolving Credit Agreements and the Note Purchase Agreements and the Holders of the Program Notes in like manner as applicable to the Bonds and Subordinate Lien BANS; provided, however, in the event of any conflict between the terms, covenants and agreements contained in the Note Resolution and the terms, covenants and agreements contained in the General Bond Resolution authorizing the issuance of the Bonds, the provisions of the General Bond Resolution authorizing the issuance of the Bonds shall control.

Rates and Charges.

In the Note Resolution, the District has agreed and reaffirmed its covenants to the holders of the Bonds and covenanted to the Banks and the Holders of the Program Notes that it will at all times maintain rates and charges for the services furnished, provided, and supplied by the System which shall comply with the provisions of the General Bond Resolution, be reasonable and non-discriminatory and produce Revenues in each Fiscal Year from the System sufficient:

1. To pay the System's Operating Expenses,

2. To produce Net Revenues of the System, collectively or individually, as the case may be, sufficient (i) to pay the amounts required to be deposited in any reserve or contingency fund and interest and sinking fund maintained for the payment and security of the Bonds and (ii) to satisfy any annual debt service coverage requirement specified in the General Bond Resolution.

3. To comply with any provisions contained in the Revolving Credit Agreements and the Note Purchase Agreements and to the extent the same are incurred or reasonably anticipated to be paid with Pledged Property, to pay the interest on and principal of the Subordinate Lien Ban or the repayment of Advances or the Bank Notes or the Direct Purchase Notes and any other amounts due the Banks under the Revolving Credit Agreements, the Note Purchase Agreements and the Fee Letters, as and when the same shall become due; and

4. To pay any other legal debt or obligation of the System, either or both, as and when the same shall become due.

System Funds.

In the Note Resolution, the District has reaffirmed its covenants to the holders of the Bonds, and covenanted to the Holders of the Program Notes and to the Banks, as follows:

All Revenues shall be promptly deposited by the District upon receipt thereof into the Revenue Fund.

There shall be withdrawn in each month the following amounts from the Revenue Fund, for deposit as set forth below and in the order of priority set forth below.

> FIRST: (i) to the debt service account established for the Bonds under the General Bond Resolution (Bond Fund) the amount, if any, required so that the balance therein shall equal the accrued aggregate debt service as of the last day of the then current month or, if interest or principal are required to be paid to the holders of Bonds during the next succeeding month on a day other than the first day of such month, accrued aggregate debt service as of the day through and including which such interest or principal is required to be paid and (ii) to the reserve account established for the Bonds under the General Bond Resolution (the "Reserve Fund") the amount, if any, required for such Reserve Fund, after giving effect to any surety bond, insurance policy, letter of credit or other similar obligation deposited in such Reserve Fund pursuant to the General Bond Resolution, to equal one-twelfth (1/12) of the difference between (A) the amount then in the Reserve Fund immediately preceding such deposit and (B) the actual debt service reserve requirement as of the last day of the then current month; and

> SECOND: to the Senior Subordinated Debt Fund the amount, if any, required to pay interest on, redemption premium on, or principal of when due of Senior Subordinated Debt for such month and make deposits, if any, for reserves therefor, in accordance with the provisions of, and subject to the priorities and limitations and restrictions provided in, the Senior Subordinated Debt; and

> THIRD: such amounts as are necessary to meet Operating Expenses and pay interest on, redemption premium on, or principal of when due of Subordinated Debt other than Senior Subordinated Debt for such month; and

> FOURTH: to the Renewal and Replacement Account, a sum equal to 1/12 of the amount, if any, provided in the District's annual budget to be deposited in the Renewal and Replacement Account during the then current Fiscal Year; provided that, if any such monthly allocation to the Renewal and Replacement Account shall be less than the required amount, the amount of the next succeeding monthly payment shall be increased by the amount of such deficiency.

The balance of monies remaining in the Revenue Fund after the above required payments have been made may be used by the District for any lawful purpose relating to the System; provided, however, that none of the remaining monies shall be used for any purpose other than those hereinabove specified unless all current payments and including all deficiencies in prior payments, if any, have been made in full and unless the District shall have complied fully with all the covenants and provisions of the General Bond Resolution.

Compliance with General Bond Resolution and Other Documents.

In the Note Resolution, the District has covenanted that it will comply with the terms and provisions of the General Bond Resolution, and any other resolution or contract to which the District is a party, the non-compliance with which would materially adversely affect the ability of the District to make payments on the Program Notes (including the Bank Notes) when due.

Tax-Exempt Program Notes to Remain Tax Exempt.

In the Note Resolution, the District has covenanted to take any action to assure, or refrain from any action which would adversely affect, the treatment of Program Notes designated as Tax-Exempt Notes and further covenanted as follows:

(a) to take any action to assure that no more than 10% of the proceeds of the Tax-Exempt Notes or the projects financed with the proceeds thereof (less amounts deposited to a reserve fund, if any) are used for any "private business use", as defined in Section 141(b)(6) of the Code or, if more than 10% of the proceeds are so used, that amounts, whether received by the District, with respect to the private business use, do not, under the terms of the Note Resolution or any underlying arrangement, directly or indirectly, secure or provide for the payment of more than 10% of the debt service on the Tax-Exempt Notes, in contravention of Section 141(b)(2) of the Code;

(b) to take any action to assure that in the event that the "private business use" described in subsection (a) exceeds 5% of the proceeds of the Tax-Exempt Notes or the projects financed with the proceeds thereof (less amounts deposited into a reserve fund, if any) then the amount in excess of 5% is used for a "private business use" which is "related" and not "disproportionate", within the meaning of Section 141(b)(3) of the Code, to the governmental use;

(c) to take any action to assure that no amount which is greater than the lesser of $5,000,000, or 5% of the proceeds of the Tax-Exempt Notes (less amounts deposited into a reserve fund, if any) is directly or indirectly used to finance loans to persons, other than state or local governmental units, in contravention of Section 141(c) of the Code;

(d) to refrain from taking any action which would otherwise result in the Tax-Exempt Notes being treated as "private activity bonds" within the meaning of Section 141(b) of the Code;

(e) to refrain from taking any action that would result in the Tax-Exempt Notes being "federally guaranteed" within the meaning of Section 149(b) of the Code;

(f) to refrain from using any proceeds of the Tax-Exempt Notes, directly or indirectly, to acquire or to replace funds which were used, directly or indirectly, to acquire "investment property" (as defined in Section 148(b)(2) of the Code) which produces a materially higher yield over the term of the Tax-Exempt Notes, other than investment property acquired with:

1. proceeds of Tax-Exempt Notes invested for a reasonable temporary period until the proceeds are needed for the purpose for which the obligations are issued,

2. amounts invested in a bona fide debt service fund, within the meaning of Section 1.148-1(b) of the Regulations, and

3. amounts deposited in any reasonably required reserve or replacement fund to the extent the amounts do not exceed 10% of the proceeds of the Tax-Exempt Notes;

(g) to otherwise restrict the use of the proceeds of the Tax-Exempt Notes or amounts treated as proceeds of the Tax-Exempt Notes, as may be necessary, so that the Tax-Exempt Notes do not otherwise contravene the requirements of Section 148 of the Code (relating to arbitrage) and, to the extent applicable, Section 149(d) of the Code (relating to advance refundings);

(h) to pay to the United States of America at least once during each five-year period (beginning on the date of delivery of the Tax-Exempt Notes) an amount that is at least equal to 90% of the "Excess Earnings", within the meaning of Section 148(f) of the Code, and to pay to the United States of America, not later than sixty days after the Tax-Exempt Notes have been paid in full, 100% of the amount then required to be paid as a result of Excess Earnings under Section 148(f) of the Code; and

(i) to timely file the information required by Section 149(e) of the Code with the Secretary of the Treasury on the forms, at the places and in the manner as may be prescribed by law.

In order to facilitate compliance with the above clause (g), a "Rebate Fund" is established by the District for the sole benefit of the United States of America, and the Rebate Fund shall not be subject to the claim of any other person, including without limitation the Holders. The Rebate Fund is established for the additional purpose of compliance with Section 148 of the Code.

Ongoing Continuing Disclosure Covenant.

To the extent required by the provisions of Rule 15c2-12 (Rule) promulgated by the U.S. Securities and Exchange Commission, the District has agreed to enter into an agreement to file financial information and operating data with respect to the Commercial Paper Notes with the Electronic Municipal Marketplace Access (EMMA) system administered by the MSRB. The District has agreed to provide the Banks a written copy of the District's continuing disclosure undertaking filings in connection with its Bonds or Subordinate Lien BANS that it files with the MSRB.

Events of Default.

If one or more of the following events shall occur:

(a) if default in the due and punctual payment of any installment of principal of and interest on any Subordinated Program Note occurs, when and as the same shall become due and payable, whether at maturity, by declaration or otherwise;

(b) an "Event of Default" shall have occurred and be continuing under any Revolving Credit Agreement and notice, if required under the terms of the applicable Revolving Credit Agreement, of the event shall have been furnished to the District by either of the Banks;

(c) an "Event of Default" shall have occurred and be continuing under either of the Note Purchase Agreements and notice, if required under the terms of the applicable Note Purchase Agreement, of the event shall have been furnished to the District by the applicable Bank;

(d) if default by the District in the performance or observance of any other of the covenants, agreements or conditions on its part in the Note Resolution or in the Commercial Paper Notes occurs, and the default shall continue for a period of 60 days after written notice has been received by the District from either of the Banks, a Holder of the Program Notes, either Dealer or the Issuing and Paying Agent; provided, however, if the default cannot be cured within the 60 day period but corrective action to cure the default is commenced and diligently pursued by the District until the default is corrected, the default shall not be an Event of Default; and provided, further, that so long as the Revolving Credit Agreements are in effect and neither of the Banks has failed to honor a properly presented and conforming request for an Advance under the Revolving Credit Agreements, no Event of Default shall be deemed to have occurred under this clause (d) unless the notice provided above to the District has been consented to in writing by the Bank;

(e) if there shall occur the dissolution (without a successor being named to assume the rights and obligations) or liquidation of the District or the filing by the District of a voluntary petition in bankruptcy, or adjudication of the District as a bankrupt, or assignment by the District for the benefit of its creditors, or the entry by the District into an agreement of composition with its creditors, or the approval by a court of competent jurisdiction of a petition applicable to the District in any proceeding for the adjustment of its debts instituted under the provisions of the Bankruptcy Code, as amended, or under any similar act in any jurisdiction which may is in effect or enacted; or

(f) if an order or decree shall be entered, with the consent or acquiescence of the District, appointing a receiver or receivers of the System, or any part of the System, or of the rents, fees, charges or other revenues of the System, or if an order or decree, having been entered without the consent or acquiescence of the District shall not be vacated or discharged or stayed within 90 days of its entry; then any event described above is an "Event of Default" under the Note Resolution.

In case any Event of Default occurs, then the Holder of any Subordinated Program Note at the time outstanding, is entitled to proceed to protect and enforce its rights by appropriate judicial proceeding as the Holder or either of the Banks, respectively, determines most effectual to protect and enforce its rights, either by suit in equity or by action at law, whether for the specific performance of any covenant or agreement contained in the Note Resolution, or in aid of the exercise of any power granted in the Note Resolution, or to enforce any other legal or equitable right vested in the Holders of any Program Notes by the Note Resolution or the Program Notes or by law. The provisions of the Note Resolution shall be a contract with each and every Holder of Program Notes and the duties of the District shall be enforceable by any Noteholder or the Bank, respectively, by mandamus or other appropriate suit, action or proceeding in any court of competent jurisdiction.

No remedy conferred upon or reserved to the Banks or the Holders of Program Notes by the Note Resolution is intended to be exclusive of any other remedy, and every remedy shall be cumulative, and may be exercised at any time or from time to time, and as often as may be necessary, by either of the Banks or the Holder of any one or more of the Program Notes.

Supplemental Note Resolutions Require Consent of Banks.

Except as permitted by the Note Resolution, with respect to the issuance or incurrence of additional obligations of the District secured by the Pledged Property, the District will not adopt any supplemental resolutions with respect to the Pledged Property, pursuant to the General Bond Resolution authorizing the issuance of Bonds or otherwise, without the prior written consent of the Banks.

Amendments or Modifications Without Consent of Holders of Program Notes.

The Note Resolution and the rights and obligations of the District and of the Holders of Program Notes may be modified or amended at any time by a supplemental resolution, without notice to or the consent of any Holders, but only to the extent permitted by law, and, subject to the rights of the Banks and the Holders of the Program Notes:

(a) to add to the covenants and agreements of the District in the Note Resolution, other covenants and agreements thereafter to be observed, or to surrender any right or power therein reserved to or conferred upon the District by the Note Resolution;

(b) to increase the principal amount of Subordinate Lien BANS that may be outstanding at any one time under the terms of the Subordinated BANS Resolution authorizing the issuance of Subordinate Lien BANS, or to issue additional commercial paper notes under the Act; provided that, with respect to the

Commercial Paper Notes, the District satisfies either (i) the requirements of the Note Resolution in providing liquidity or credit support with respect to the increased principal amount of Commercial Paper Notes authorized to be outstanding at any one time or (ii) the requirements of the Note Resolution hereof to issue the increased principal amount of Commercial Paper Notes without liquidity and/or credit support;

(c) to cure any ambiguity or inconsistency, or to cure or correct any defective provision contained in the Note Resolution, upon receipt by the District of an approving opinion of Note Counsel, that the amendment is necessary or advisable, and will more clearly express the intent of the Note Resolution;

(d) to effect changes the Board determines are necessary or advisable in connection with exercising the authority reserved to the District in the Note Resolution; or

(e) to supplement the security for the Program Notes, replace or provide additional credit or liquidity facilities, or to obtain or maintain the granting of a rating on the Program Notes by a nationally recognized municipal bond rating agency, or change the form of the Program Notes, or make any other changes in the provisions that are necessary or desirable and which shall not materially adversely affect the security, rights or interests of the Banks or the Holders of the Program Notes;

provided, however, that no amendment to the Note Resolution or of the Program Notes is permitted to:

A. Make any change in the maturity of any outstanding Program Notes or the Bank Notes;

B. Reduce the rate of interest borne by any outstanding Program Notes or the Bank Notes;

C. Reduce the amount of the principal payable on any outstanding Program Notes or the Bank Notes;

D. Modify the terms of payment of principal of or interest on the outstanding Program Notes or the Bank Notes, or impose any conditions with respect to their payment;

E. Affect the security, rights or interests of the Banks or the Holders of less than all of the outstanding Program Notes; or

F. Reduce or restrict the pledge made pursuant to the Note Resolution for payment of the Program Notes or the Bank Notes;

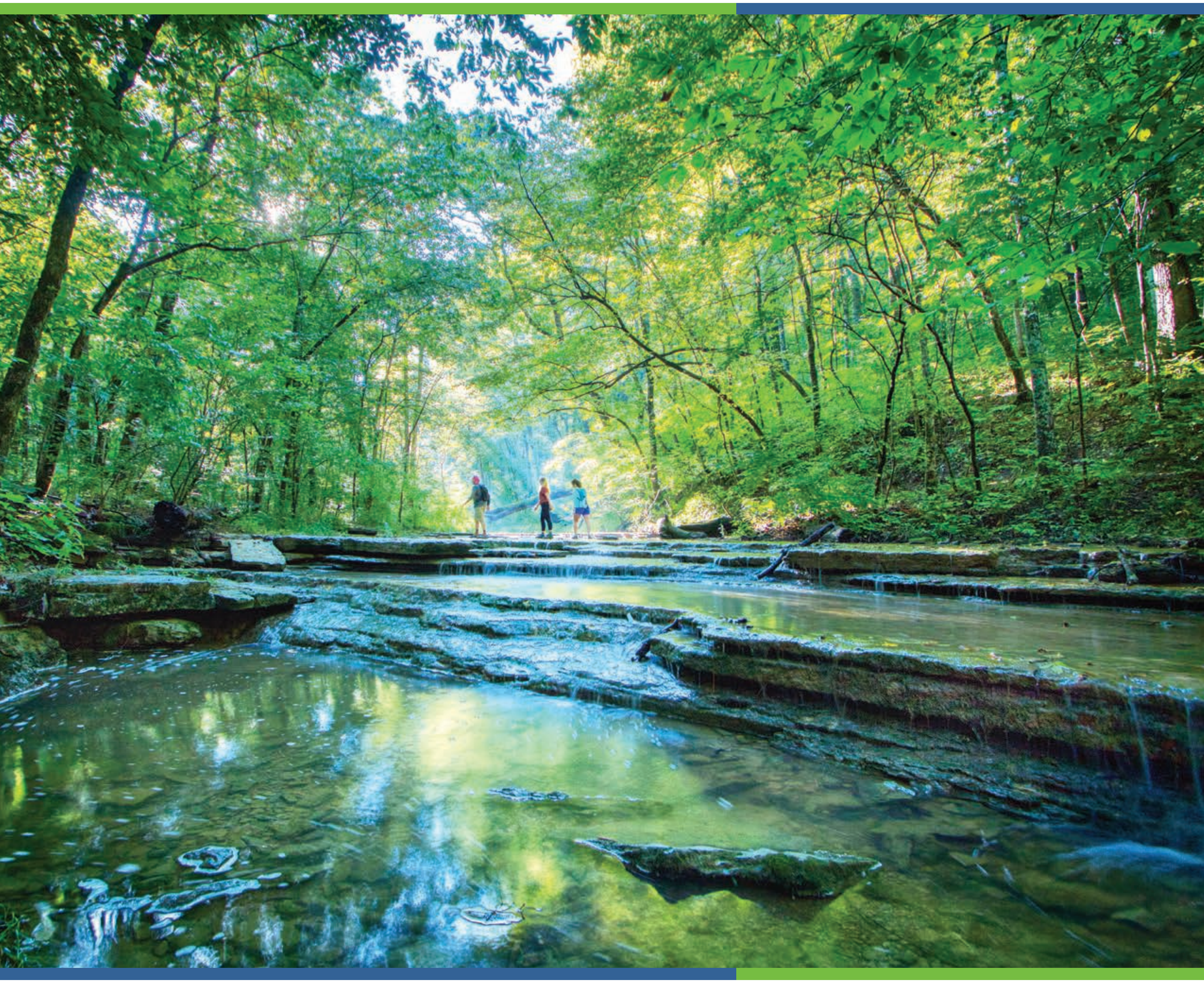
and provided, further, that no change, modification or amendment shall be made in the Note Resolution or become valid and effective (i) without the approval of the change, modification or amendment by the Legislative Council of the Louisville/Jefferson County Metro Government (the "Council"), to the extent required by the Act, and (ii) without the prior written consent of the Banks (which, in the case of an amendment authorizing an increase in the principal amount of Program Notes at any one time outstanding, means the written consent of the Banks providing, as of the effective date of the authority to issue additional Program Notes in excess of the maximum principal amount of Program Notes then authorized at any one time to be outstanding, the liquidity or credit support, if any, required by the Note Resolution).

APPENDIX B
ANNUAL COMPREHENSIVE FINANCIAL REPORT OF THE DISTRICT, FISCAL YEARS ENDED JUNE 30, 2022 AND 2021

Louisville and Jefferson County
Metropolitan Sewer District

ANNUAL COMPREHENSIVE FINANCIAL REPORT

Fiscal Years Ended June 30, 2022 and 2021



Safe, clean waterways

A Component Unit of Louisville
Jefferson County Metro Government
Commonwealth of Kentucky

ANNUAL COMPREHENSIVE FINANCIAL REPORT

Louisville/Jefferson County Metropolitan Sewer District
Louisville, Kentucky

A Component Unit of Louisville/Jefferson County Metro Government
Commonwealth of Kentucky

Fiscal Years Ended June 30, 2022 and 2021

Prepared by the Department of Finance
Brad Good, Chief Financial Officer

TABLE OF CONTENTS

Introductory Section

Letter of Transmittal i
Government Finance Officers Association Certificate of Achievement v
Vision, Mission and Values vi
Structure vii
Organization Chart viii
Strategic Plan ix

Financial Section

Independent Auditor’s Report 1

Management’s Discussion and Analysis 4

Basic Financial Statements:
Comparative Statement of Net Position 17-18
Comparative Statement of Revenues, Expenses, and Changes in Net Position 19
Comparative Statement of Cash Flow 20-21
Notes to the Comparative Financial Statement 22

Required Supplementary Information:
Schedule of Proportionate Share of the Net Pension Liability 68-69
Schedule of Employer Contributions - Pension 70
Schedule of Proportionate Share of the Net OPEB Liability 71
Schedule of Employer Contributions – OPEB 72

Statistical Section

Ten Year Comparative Statement of Net Position 73-74
Ten Year Comparative Statement of Revenues, Expenses, and Changes in Net Position 75
Ten Year Comparative Statement of Cash Flows 76
Ten Year Comparative Summary of Operating Revenue 77
Ten Year Average Residential Water and Drainage Charge 78
Top 10 Wastewater and Drainage Customers 79
Schedule of Debt Service Coverage 80
Ten Year Comparative Schedule of Outstanding Debt 81
Ten Year Comparative Schedule of Plant, Lines, and Other Facilities 82
Ten Year Comparative Summary of Service and Administration Costs 83
Budgetary Comparison Schedule 84
Ten Year Comparative Schedule of Miscellaneous Operating Indicators 85
Wastewater Treatment Plant Capacity 86
Ten Year Comparative Summary of Employers of One Thousand or More in Greater Louisville 87
Miscellaneous Demographic Information 88

INTRODUCTORY SECTION
(Unaudited)

Community gardens sprout atop MSD-owned land, which holds vital infrastructure deep below the soil.

Safe, clean waterways

700 West Liberty Street | Louisville, KY 40203-1911
Phone: 502.540.6000 | LouisvilleMSD.org

October 24, 2022

Letter of Transmittal

To the customers and investors of Louisville and Jefferson County Metropolitan Sewer District,

I am pleased to present the Annual Comprehensive Financial Report for the fiscal year ended June 30, 2022. MSD's financial statements have been prepared in accordance with U.S. Generally Accepted Accounting Principles (GAAP). In accordance with Kentucky Revised Statute 65A.030, MSD is required to undergo an annual independent audit of its financial statements.

Responsibility for the accuracy, completeness and fairness of the data presented herein, including all disclosures, rests with MSD. To provide a reasonable basis for making these representations, the management of MSD has established a comprehensive internal control framework that is designed to both protect its assets from loss, theft, or misuse and to compile sufficient reliable information for the preparation of MSD's financial statements in conformity with GAAP. MSD's internal control framework has been designed to provide reasonable, rather than absolute assurance, that the financial statements as of June 30, 2022 and 2021 are free from material misstatement. Reasonable assurance recognizes that (1) the cost of a control should not exceed the benefits derived and (2) the valuation of costs and benefits requires the use of estimates and judgements by management. To the best of my knowledge and belief, the accompanying data is accurate in all material respects and is reported in a manner designed to present fairly the financial position and results of the operations of MSD. All disclosures necessary to enable the reader to understand MSD's financial activities have been included.

GAAP requires that management provide a narrative to accompany the basic financial statements in the form of Management's Discussion and Analysis which is found beginning on page 4. This letter of transmittal is intended to be read in conjunction with that analysis.

Crowe LLP has been retained by MSD to serve as its independent auditors and has issued an unmodified opinion on MSD's financial statements for the years ended June 30, 2022 and 2021. The independent auditor's report can be found at the beginning of the financial section of this report.

As a recipient of federal funding, MSD is required to undergo a Single Audit in conformity with the Single Audit Act of 1984 and the Single Audit Act Amendments of 1996 and U.S. Office of Management and Budget Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards 2CFR200 (Uniform Guidance). Information related to the Single Audit, including the Schedule of Expenditures of Federal Awards, findings and recommendations and the auditor's reports on internal controls is provided in a separate report.

Profile:

MSD was created in 1946 as a public body corporate and subdivision of the Commonwealth of Kentucky. MSD has complete control, possession and supervision of the sewer, drainage and flood protection systems within the majority of Louisville Metro, which comprises all of Jefferson County, Kentucky. In addition, MSD has control, possession and supervision of the sewer system in portions of Oldham County and Bullitt County, Kentucky. Chapter 76 of the Kentucky Revised Statutes authorizes MSD to construct additions, betterments, and extensions within its service area and to recover the cost of its services in accordance with rate schedules adopted by its Board.

MSD is a component unit of the Louisville/Jefferson County Metro Government. The Louisville Metro Mayor appoints, with the approval of the Louisville Metro Council, the members to MSD's governing Board, its Executive Director, Chief Engineer and Secretary/Treasurer. The Board, which has statutory authority to enter into contracts and agreements for the management, regulation and financing of MSD, manages its business and activities. The Board has full statutory responsibility for approving and revising MSD's annual budgets, for financing deficits and for disposition of surplus funds. MSD has no special financial relationship with the Louisville Metro Government; however, effective July 1, 2006, MSD began providing free wastewater and drainage services to Louisville Metro Government. The value of these services in fiscal year 2022 was $6,796,857.

Customer Base:

MSD's revenue is derived from wastewater and drainage service charges collected from residential, commercial, and industrial customers. Wastewater service charges are distributed to respective customer classes on the basis of actual costs incurred to collect and treat wastewater. For fiscal year 2022, 59% of MSD's wastewater service charge revenue came from residential customers, 32% came from commercial customers and 9% from industrial customers. MSD's top 10 wastewater customers remained stable from fiscal year 2021 to fiscal year 2022. The top 10 customers provided $16,690,174, or 6.2%, of MSD's total wastewater revenue in fiscal year 2022. Drainage service charges are assessed based on the equivalent service units (ESU) for each parcel of property. An ESU is defined by MSD as 2,500 square feet of impervious area. For fiscal year 2022, 37% of MSD's drainage service charge revenue came from residential customers, 56% came from commercial customers and 7% from industrial customers. MSD's top 10 drainage customers remained stable from fiscal year 2021 to fiscal year 2022. The top 10 customers provided $6,293,747 or 7.3%, of MSD's total drainage revenue in fiscal year 2022.

Local Economy:

Louisville is the largest city in the Commonwealth of Kentucky and home to the Kentucky Derby and a bourbon-centric tourism industry. The U.S. Census Bureau estimated that there were 771,874 residents in Louisville as of July 1, 2021. This is a decrease of 0.7% from the last estimate taken April 1, 2020. The Louisville metropolitan area has a population of over 1.2 million residents.

According to the Bureau of Labor Statistics, Louisville employment was at 662,503 jobs in June of 2022 compared to 636,202 jobs in June 2021, an increase of 4.13%. MSD's employment base has grown 4.0% over the last fiscal year with 674 full time employees at June 30, 2022 compared to 648 full time employees at June 30, 2021. Major employers in the Louisville metropolitan area include United Parcel Service, Jefferson County Public Schools, Norton Healthcare, Ford Motor Company, and Humana Inc.

Per capita personal income for Jefferson County, Kentucky was listed at $57,863 for 2020 which is an increase of 3.6% over the prior year. The United States Department of Labor's Bureau of Labor Statistics listed the unemployment rate for Jefferson County, Kentucky, as 3.4% in June 2022 compared to 5.5% in June of 2021. Additional information on demographic and economic conditions for Louisville can be found in the Statistical Section of this report.

Financial Planning:

MSD is focused on continuously strengthening its financial position through planning and analysis in order to meet its short-term and long-term operational and infrastructure plans.

MSD's short-term plan looks forward five years at a time. Formalized budgets are developed and approved annually by the Board for operating and capital spending. Budgets are developed with an eye toward maintaining operational efficiency and achieving incremental improvement of MSD's critical debt service coverage and debt to operating ratios.

MSD's long-term financial planning window is twenty years and is supported by the Critical Repair and Reinvestment Program and a twenty year comprehensive financial model. The financial model enables MSD to analyze alternative scenarios in order to optimize resources in the face of competing priorities. Key long-term considerations are debt service coverage, maintaining level debt service payments, and maintaining adequate cash reserves.

Major Initiatives:

- *Waterway Protection Tunnel:* MSD's largest infrastructure project to date, the Waterway Protection Tunnel, was capped on May 16, 2022 and placed into service in early June. The Waterway Protection Tunnel stretches four miles from 11th and Rowan streets to Grinstead Drive and Lexington Road. The tunnel can store up to 55 million gallons of combined stormwater drainage and wastewater until sewage treatment capacity is available, preventing the water from passing untreated into the Ohio River and Beargrass Creek. The Waterway Protection Tunnel will ultimately prevent 439 million gallons of a mixture of rainwater and wastewater from overflowing and polluting the Ohio River and Beargrass Creek in a typical rainfall year.

- *Bullitt County Sanitation District (BCSD) Acquisition:* MSD completed a multi-year effort to acquire the adjacent Bullitt County wastewater system on November 30, 2021. MSD now provides wastewater service to approximately 4,200 former customers of BSCD, Hunter's Hollow Treatment Plant and Big Valley Sewer Utility. Among the many benefits of the acquisition, MSD will begin to decommission some of Bullitt County's smaller treatment plants that have passed their useful life and manage that service through MSD's larger regional treatment facilities. One of MSD's first projects will divert wastewater flow from the former Hunters Hollow Treatment Plant and Big Wood Pump Station to MSD's recently constructed large sewer line in southern Jefferson County, the Mud Lane Interceptor. In addition, MSD will develop a long-term facility plan to identify capital improvements or elimination plans for all of the wastewater treatment plants within the Bullitt County service area.

- *Consent Decree Update:* MSD is making significant progress toward its amended consent decree requirements of mitigating sewer overflows that pollute the Ohio River and our streams. Through all of the consent decree work to date, including completing the required combined sewer overflow basins and the Waterway Protection Tunnel, overflows to local waterways have reduced from approximately 6.5 billion gallons to less than 650 million gallons in a typical rainfall year. The basins and tunnel hold the contents until system capacity is available for proper treatment and release to the Ohio River.

  MSD proactively approached federal and state regulators in 2019 to renegotiate the timing for completing the remaining projects required by the amended consent decree in order to reprioritize capital dollars for rehabilitation of MSD's aging biosolids systems, failing sewer interceptors and flood protection system rehabilitation. MSD, along with the federal government and the Commonwealth of Kentucky, have negotiated the second amended consent decree which grants a time extension for completing the remaining projects to 2035. In exchange, MSD has agreed to invest a minimum of $25 million annually for asset management projects through 2035. Additionally, MSD agreed to incorporate $70 million for critical sewer rehabilitation in its 5-year capital improvement plan. These financial commitments are achievable within the MSD Board's rate increase authority of 6.9% per year. The United States District Court granted final approval of the second amended consent decree on September 14, 2022.

- *Community Benefits Program:* MSD launched a community benefits program in 2019 to leverage economic, environmental and social impacts through the district's large-scale engineering, construction and professional service projects. The program focuses on MSD's construction contracts over $2 million or professional service contracts over $200,000. During the contractor proposal stage, MSD encourages contractors to voluntarily submit community benefit commitments they will pursue if awarded the project. These can include charitable contributions, volunteer hours, or in-kind services to area nonprofits or schools. In June of 2022 the program passed the $2 million local impact threshold.

- *Climate Bonds:* On February 1, 2022, MSD issued its first certified climate bond to pay at maturity commercial paper notes previously issued to finance capital improvements to MSD's wastewater, drainage and flood protection systems. This $225 million issuance was certified by an independent verifier. The issuance achieved its certification by financing projects that improve wastewater, drainage, flood protection systems, and mitigate overflows with green infrastructure. The climate bond certification allowed MSD to connect the programmatic work associated with its mission to the financings that support it.

- *Credit Rating:* MSD strives continuously to maintain strong financial performance and bond ratings. The credit ratings on our senior lien bonds remained at Aa3, AA, and AA- by Moody's Investors Service, Standard and Poor's Ratings Services, and Fitch, respectively, during fiscal year 2022. Strong credit ratings enable MSD is issue debt at lower interest rates which reduces ratepayer costs over the long term.

- *Rate Increase:* On August 1, 2021, MSD rates for wastewater and drainage service charges in Jefferson County increased by 6.9%. The average monthly residential wastewater bill (based on

4,000 gallons of water consumed per month) increased by $3.54 from $51.45 to $54.99. The monthly residential drainage service charge increased by $0.77 from $11.11 to $11.88.

Awards

Government Finance Officers Association of the United States and Canada (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to MSD for its annual comprehensive financial report for the fiscal year ended June 30, 2021. This was the 31st consecutive year that MSD has achieved this prestigious award. In order to be awarded a Certificate of Achievement, MSD must publish an easily readable and efficiently organized annual financial report. This report must satisfy both generally accepted accounting principles and applicable legal requirements.

A Certificate of Achievement is valid for a period of one year only. We believe that our 2022 Annual Comprehensive Financial Report continues to meet the Certificate of Achievement Program's requirements and we will submit it to GFOA to determine its eligibility for another certificate.

Acknowledgements

The Finance division of MSD has worked hard to make possible timely publication of the fiscal year 2022 Annual Comprehensive Financial Report and I would like to thank them for their individual contributions. I would also like to take this opportunity to thank the MSD Board of Directors and the Executive Leadership Team for their continued support.

Respectfully Submitted,

Brad Good
Chief Financial Officer

Government Finance Officers Association

Certificate of Achievement for Excellence in Financial Reporting

Presented to

Louisville and Jefferson County Metropolitan Sewer District Kentucky

For its Annual Comprehensive Financial Report For the Fiscal Year Ended

June 30, 2021

Christopher P. Morrill

Executive Director/CEO

OUR VISION

The Innovative, regional utility for safe, clean waterways.

OUR MISSION

Provide quality wastewater, stormwater and flood protection services to protect public health and safety through sustainable solutions, fiscal stewardship, and strategic partnerships.

CRITICAL SUCCESS FACTORS

Sustain Quality and Compliant Wastewater, Stormwater, and Flood Protection Services:
Champion the protection of public health and safety and the environment through sustainable solutions, sound management practices, and effective operational processes and support systems.

Earn the Community's Trust Daily as the Leading Provider of Quality Wastewater, Stormwater, and Flood Protection Services:
Earn community trust through consistent delivery of quality services and respectful interactions with our customers.

Transform into an Employer of Purpose Where Employees are Provided the Opportunity to Thrive:
Attract, equip and retain an effective workforce, reflective and supportive of our community, which consistently delivers high-quality service to customers internally and externally.

Ensure Financial Stewardship and Sustainability of Community Resources:
Meet today's operating and capital investment needs while managing risk and long-term affordability for the future.

Realize Operational Efficiencies and Revenue Generation through Strategic Partnerships and Innovation:
Implement innovative ideas and partnerships that drive organizational resiliency and sustainability.

Sunset reflected in the water at the Falls of the Ohio.

Structure

MSD is governed by an eight-member Board of Directors appointed to serve our community by the Louisville Metro Mayor. Board members are residents of Louisville Metro and represent State Senatorial Districts in our city ensuring a broad-based representation for the entire community. No more than five members of the Board can be affiliated with one political party. The MSD Board meets monthly and has established the following standing committees who meet as needed: Audit Committee, Customer Service Committee, Finance Committee, Infrastructure Committee, and the Personnel Committee. The Board has delegated and placed the conduct of the day-to-day business affairs of the District under the direction of an Executive Director supported by administrative, engineering, legal and business staffs.

Fiscal Year 2022 Board of Directors

Board Members	State Senate District	Political Party	Term Expires
Marita Willis - Chair	20th	Democrat	June 30, 2025
Keith Jackson - Vice Chair	14th	Independent	August 31, 2023
Rebecca Cox	37th	Democrat	August 31, 2023
Gerald Joiner	33rd	Democrat	February 28, 2024
Ricky Mason	35th	Independent	July 31, 2022
Carmen Moreno-Rivera	19th	Democrat	June 30, 2024
John Selent	26th	Democrat	July 31, 2024
JT Sims	36th	Republican	August 31, 2022

Fiscal Year 2022 Principal Staff Members

James A. Parrott, Executive Director, Secretary/ Treasurer

Angela Akridge, Chief Strategy Officer for Business Transformation and Regulatory Compliance

Paul Bagley, Chief Information Officer

Brian Bingham, Chief Operations Officer

Lynne Fleming, Human Resources Director

Brad Good, Chief Financial Officer

David Johnson, Chief Engineer

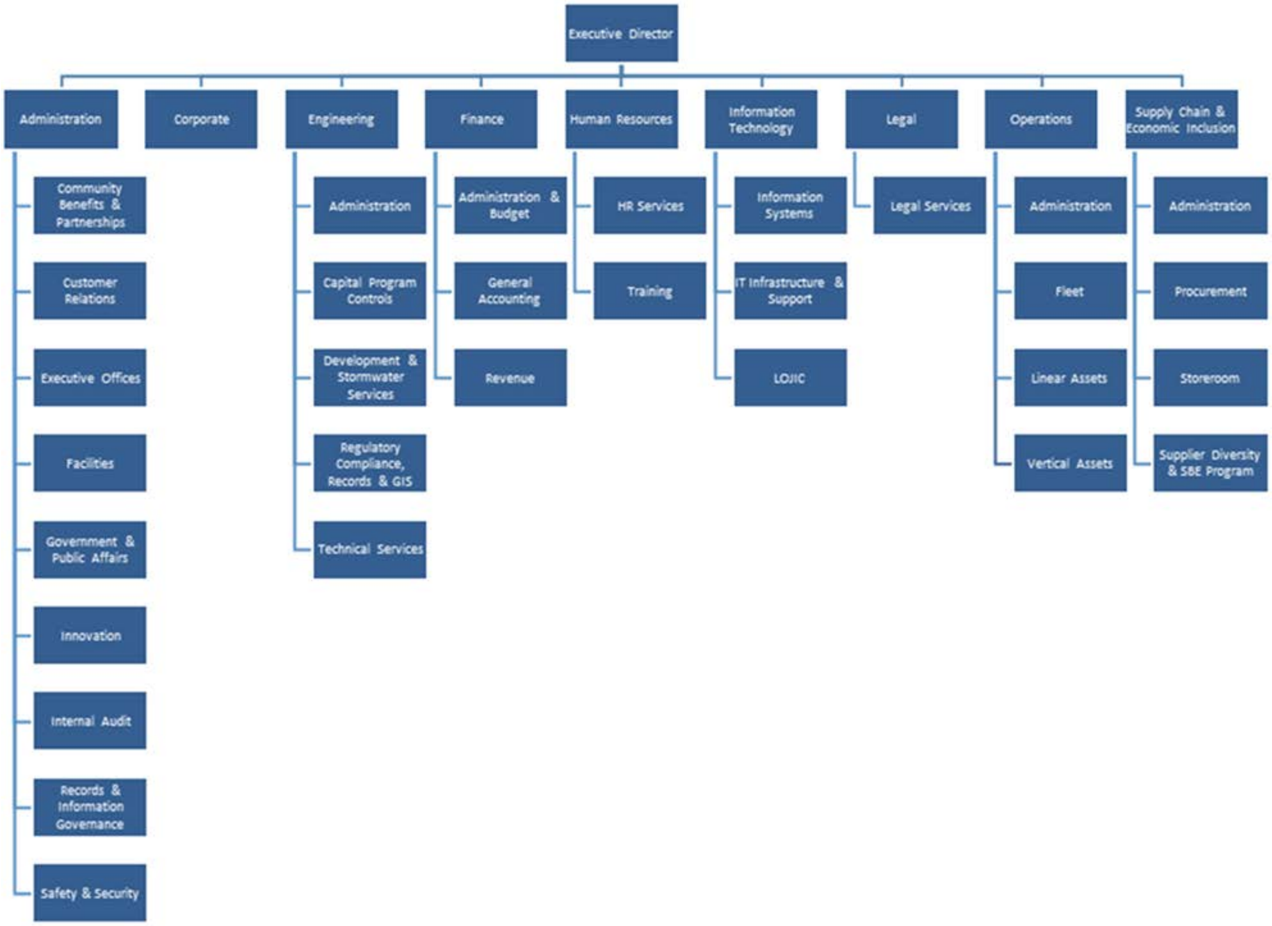
Rene Lindsay, One Water Chief Procurement Officer

Paula Middleton Purifoy, General Counsel and Legal Director

Kim Reed, Chief Innovation Officer

Wes Sydnor, Chief of Government and Public Affairs

Organizational Chart



Strategic Plan

MSD's Strategic Business Plan, branded as Blueprint 2025, now forms the foundational vision, mission, and critical success factors necessary for MSD's transformation into a Utility of the Future. Our aspirational vision under Blueprint 2025 is the driving force behind our mission to provide wastewater, stormwater, and flood protection to protect public health and safety through sustainable solutions, fiscal stewardship, and strategic partnerships. Blueprint 2025 desired outcomes are as follows:

- Guide alignment and allocation of organizational resources
- Deliver MSD's three core business functions in a collaborative, efficient and innovative manner to meet regulatory requirements and community level of service through a sustainable, purpose-driven, and appropriately-skilled workforce
- Be the trusted regional provider of wastewater, stormwater and flood protection services

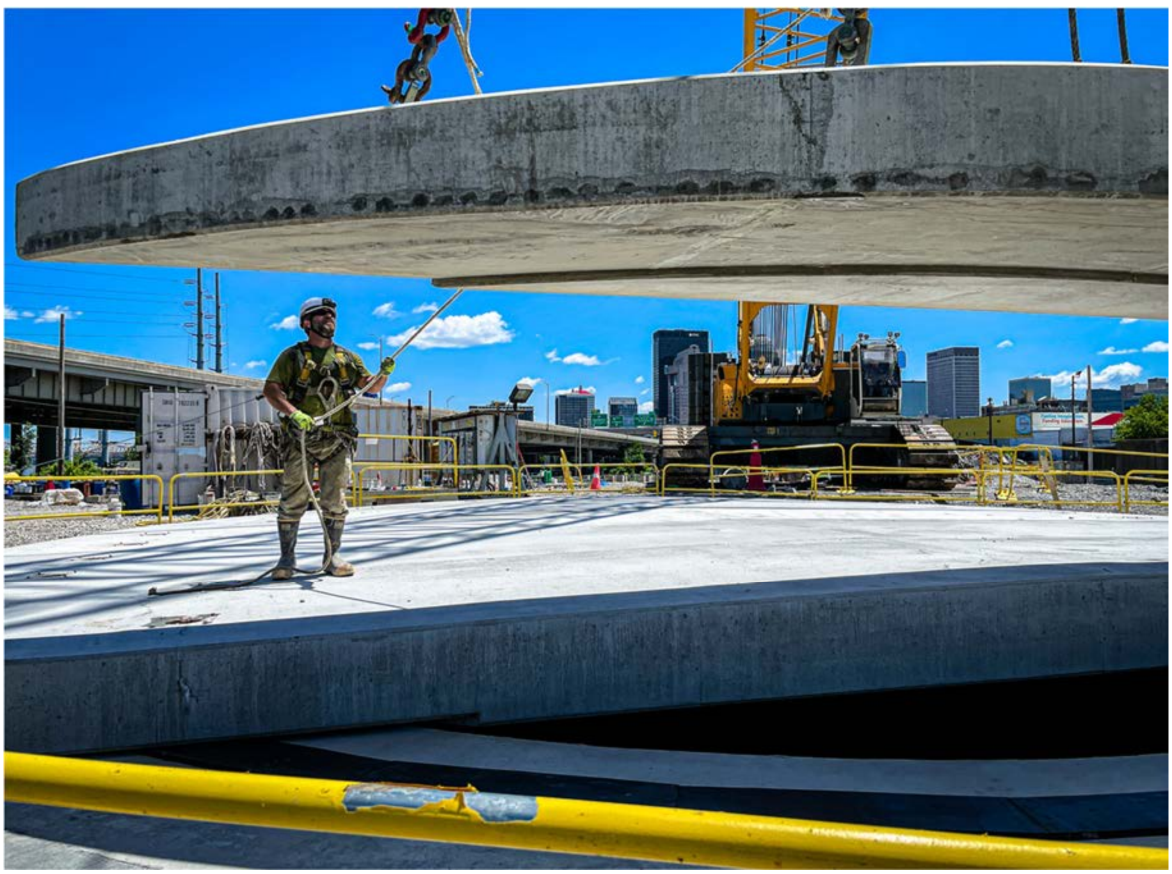
Blueprint 2025 provides a structured approach for MSD's success, positioning the organization to deliver our three core business services to the community with confidence by providing clarity for every employee about our vision, mission, and critical success factors. It represents a plan designed to unite us and strengthen our bond as we target specific initiatives and metrics in support of the services we provide to the our customers.

MSD establishes annual organizational performance goals that are in alignment with Blueprint 2025. Each goal category has two focus areas: (1) business activities critical to the attainment of the goal category desired outcome and (2) strategic transformational initiatives designed to enhance the attainment of each critical success factor. There are four overarching goal areas in our fiscal year 2022 organizational performance goals:

Goal Area 1: Sustain Quality & Compliant Wastewater, Stormwater and Flood Protection Services		
Component 1:	**Component 2:**	**Component 3:**
Reclaimed Water Effluent Quality	Infrastruture System Inspections	Completion of Strategic Business Plan Intiatives
Flood Protection Readiness	Preventive Maintenance	
Goal Area 2: Earn Community's Trust Daily as Leading Provider of Wastewater, Stormwater and Flood Protection Services		
Component 1:	**Component 2:**	**Component 3:**
Responsiveness to Customers	Responsiveness to Supply Chain Partners	Completion of Strategic Business Plan Intiatives
Goal Area 3: Transform into an Employer of Purpose Where Employees Have the Opportunity to Thrive		
Component 1:	**Component 2:**	**Component 3:**
Management Effectiveness	Employee Training and Development	Completion of Strategic Business Plan Intiatives
Goal Area 4: Ensure Financial Stewardship and Sustainability of Community Resources		
Component 1:	**Component 2:**	**Component 3:**
Capital Budget Utilization	Operating Budget Utilization	Completion of Strategic Business Plan Intiatives

Strategic Business Plan Initiatives are developed for each goal area and assigned as team performance goals. These initiatives involve creating programs or processes that didn't previously exist and guide enhancement of existing programs, processes and tools to improve efficiencies within the organization. Blueprint 2025 includes a Blueprint for Organizational Performance Management Framework that ensures alignment of organizational goals, division/department goals, team goals and individual contributor goals. These goals are directly tied to annual performance evaluations for each employee.

FINANCIAL SECTION



Crews lower the cap on the working shaft of the Waterway Protection Tunnel, allowing the tunnel to begin service.

Crowe LLP
Independent Member Crowe Global

INDEPENDENT AUDITOR'S REPORT

Board of Directors
Louisville and Jefferson County Metropolitan Sewer District
Louisville, Kentucky

Report on the Audit of the Financial Statements

Opinion

We have audited the financial statements of the Louisville and Jefferson County Metropolitan Sewer District, a component unit of the Louisville-Jefferson County Metro Government, as of and for the years ended June 30, 2022 and 2021, and the related notes to the financial statements, which collectively comprise the Louisville and Jefferson County Metropolitan Sewer District's basic financial statements as listed in the table of contents.

In our opinion, the accompanying financial statements referred to above present fairly, in all material respects, the financial position of the Louisville and Jefferson County Metropolitan Sewer District, as of June 30, 2022 and 2021, and the changes in financial position and its cash flows for the years then ended in accordance with accounting principles generally accepted in the United States of America.

Basis for Opinion

We conducted our audits in accordance with auditing standards generally accepted in the United States of America (GAAS) and the standards applicable to financial audits contained in *Government Auditing Standards (Government Auditing Standards)*, issued by the Comptroller General of the United States. Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Financial Statements section of our report. We are required to be independent of the Louisville and Jefferson County Metropolitan Sewer District, and to meet our other ethical responsibilities, in accordance with the relevant ethical requirements relating to our audits. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Responsibilities of Management for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with accounting principles generally accepted in the United States of America, and for the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is required to evaluate whether there are conditions or events, considered in the aggregate, that raise substantial doubt about the Louisville and Jefferson County Metropolitan Sewer District's ability to continue as a going concern for twelve months beyond the financial statement date, including any currently known information that may raise substantial doubt shortly thereafter.

Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance but is not absolute assurance and therefore is not a guarantee that an audit conducted in accordance with GAAS and *Government Auditing Standards* will always detect a material misstatement when it exists. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control. Misstatements are considered material if there is a substantial likelihood that, individually or in the aggregate, they would influence the judgment made by a reasonable user based on the financial statements.

In performing an audit in accordance with GAAS and *Government Auditing Standards*, we

- Exercise professional judgment and maintain professional skepticism throughout the audit.
- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Louisville and Jefferson County Metropolitan Sewer District's internal control. Accordingly, no such opinion is expressed.
- Evaluate the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluate the overall presentation of the financial statements.
- Conclude whether, in our judgment, there are conditions or events, considered in the aggregate, that raise substantial doubt about the Louisville and Jefferson County Metropolitan Sewer District's ability to continue as a going concern for a reasonable period of time.

We are required to communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit, significant audit findings, and certain internal control-related matters that we identified during the audit.

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the Management's Discussion and Analysis on pages 4 through 16, the Schedule of Proportionate Share of the Net Pension Liability on page 68, the Schedule of Employer Contributions – Pension on page 70, the Schedule of Proportionate Share of the Net OPEB Liability on page 71, and the Schedule of Employer Contributions – OPEB on page 72 be presented to supplement the basic financial statements. Such information is the responsibility of management and, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Supplementary Information

Our audits were conducted for the purpose of forming an opinion on the financial statements that collectively comprise the Louisville and Jefferson County Metropolitan Sewer District's basic financial statements. The introductory and statistical sections are presented for purposes of additional analysis and are not a required part of the basic financial statements. Such information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the basic financial statements. The information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the introductory and statistical sections are fairly stated, in all material respects, in relation to the basic financial statements as a whole.

Other Reporting Required by *Government Auditing Standards*

In accordance with *Government Auditing Standards,* we have also issued our report dated October 24, 2022 on our consideration of the Louisville and Jefferson County Metropolitan Sewer District's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is solely to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the Louisville and Jefferson County Metropolitan Sewer District's internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the Louisville and Jefferson County Metropolitan Sewer District's internal control over financial reporting and compliance.

Crowe LLP

Crowe LLP

Louisville, Kentucky
October 24, 2022

The management of Louisville and Jefferson County Metropolitan Sewer District (MSD) present this Management's Discussion and Analysis (MD&A) for the fiscal year ended June 30, 2022 and 2021. This narrative provides the reader with condensed comparative financial data, an analysis of the results of our operations, a description of capital asset and long term debt activity, and a discussion of future economic factors that will impact our operations. This MD&A is intended to be read in conjunction with the financial statements immediately following this section.

FINANCIAL HIGHLIGHTS

Fiscal Year 2022:

- Total net position increased from fiscal 2021 to fiscal 2022 by $75.2 million, or 8.9%.
- Total assets and deferred outflows of resources increased $128.2 million, or 3.4%, from fiscal 2021 to fiscal 2022.
- Operating revenues increased $35.9 million, or 10.9%, from fiscal 2021 to fiscal 2022.
- Service and administrative costs increased $9.2 million, or 8.4%, from fiscal 2021 to fiscal 2022.
- MSD maintained unrestricted cash and investments totaling $118.6 million as of June 30, 2022 compared to $107.4 million as of June 30, 2021.
- MSD had 269 days cash on hand at June 30, 2022 compared to 259 days cash on hand at June 30, 2021.
- Senior debt coverage was 1.95x for fiscal 2022 compared to 1.86x for fiscal 2021.

Fiscal Year 2021:

- Total net position increased from fiscal 2020 to fiscal 2021 by $51.0 million, or 6.4%.
- Total assets and deferred outflows of resources increased $167.8 million, or 4.6%, from fiscal 2020 to fiscal 2021.
- Operating revenues increased $10.3 million, or 3.2%, from fiscal 2020 to fiscal 2021.
- Service and administrative costs decreased $0.5 million, or 0.5%, from fiscal 2020 to fiscal 2021.
- MSD maintained unrestricted cash and investments totaling $107.4 million as of June 30, 2021 compared to $100 million as of June 30, 2020.
- MSD had 259 days cash on hand at June 30, 2021 compared to 242 days cash on hand at June 30, 2020.
- Senior debt coverage was 1.86x for fiscal 2021 compared to 1.88x for fiscal 2020.

OVERVIEW OF THE FINANCIAL STATEMENTS

MSD uses the accrual basis of accounting to prepare its financial statements wherein revenues are recorded when earned and expenses are recorded at the time a liability is incurred. MD&A serves as a narrative introduction to the financial statements which consist of the following parts:

- *Statement of Net Position:* This statement includes all of MSD's assets, liabilities and deferred outflow and inflow of resources. It provides information about the nature and amounts of investments in assets and the obligations to creditors. In addition, it provides the basis for computing rate of return, evaluating the capital structure of MSD and assessing the liquidity and financial flexibility of the organization.

- *Statement of Revenues, Expenses and Changes in Net Position:* This statement identifies the revenues generated and expenses incurred during the fiscal year and helps the user to assess the financial efficiency of MSD during the time period for which the statement relates.

- *Statement of Cash Flows*: This statement provides information related to MSD's cash receipts and cash expenditures during the fiscal year. It reports cash receipts, cash payments, and net changes in cash resulting from operations, investing, and financing activities.

- *Notes to the Financial Statements:* The notes contain descriptions of the policies underlying the amounts displayed in the financial statements along with other information that is essential to a full understanding of the data provided in the financial statements.

- *Required Supplementary Information:* Information is presented related to MSD's pension and Other Post-Employment Benefits (OPEB) including annual contributions made to the plans and annual investment returns.

Other supplemental information is presented for comparative analysis and is not part of the basic financial statements. Other supplemental information consists of:

- *Statistical Section:* Ten years of financial statement information, operating indicators, and demographic information is presented for comparative analysis.

STATEMENT OF NET POSITION

MSD's total net position at June 30, 2022 was $923.0 million, an increase of $75.2, or 8.9%, from June 30, 2021 (see Figure 1). Total assets and deferred outflows increased $128.2 million, or 3.4%, to $3.9 billion. Total liabilities and deferred inflows increased $52.9 million, or 1.8%, to $3.0 billion.

MSD's total net position at June 30, 2021 was $847.7 million, an increase of $51.0 or 6.4%, from June 30, 2020 (see Figure 1). Total assets and deferred outflows increased $167.8 million, or 4.6%, to $3.8 billion. Total liabilities and deferred inflows increased $116.7 million, or 4.1%, to $2.9 billion.

FIGURE 1 - CONDENSED NET POSITION INFORMATION				2022-2021		2021-2020	
(amounts in thousands)	FY 2022	FY 2021	FY 2020	Increase (Decrease)	% Change	Increase (Decrease)	% Change
Unrestricted current assets	$ 153,423	$ 143,541	$ 136,424	$ 9,882	6.9%	$ 7,117	5.2%
Restricted current assets	33,735	21,181	17,776	12,554	59.3%	3,405	19.2%
Capital assets	3,293,005	3,168,614	3,014,066	124,391	3.9%	154,548	5.1%
Unrestricted non-current assets	7,138	10,478	12,776	(3,340)	(31.9%)	(2,298)	(18.0%)
Restricted non-current assets	80,331	82,930	79,555	(2,599)	(3.1%)	3,375	4.2%
Other non-current assets	302,370	306,175	305,714	(3,805)	(1.2%)	461	0.2%
Total assets	3,870,002	3,732,919	3,566,311	137,083	3.7%	166,608	4.7%
Deferred outflows of resources	72,110	80,984	79,767	(8,874)	(11.0%)	1,217	1.5%
Total assets and deferred outflows	3,942,112	3,813,903	3,646,078	128,209	3.4%	167,825	4.6%
Current liabilities	20,395	29,099	24,176	(8,704)	(29.9%)	4,923	20.4%
Current liabilities from restricted assets	103,924	118,469	105,856	(14,545)	(12.3%)	12,613	11.9%
Non-current liabilities	2,846,272	2,808,293	2,702,796	37,979	1.4%	105,497	3.9%
Total liabilities	2,970,591	2,955,861	2,832,828	14,730	0.5%	123,033	4.3%
Deferred inflows of resources	48,489	10,277	16,520	38,212	371.8%	(6,243)	(37.8%)
Total liabilities and deferred inflows	3,019,080	2,966,138	2,849,348	52,942	1.8%	116,790	4.1%
Net investment in capital assets	850,316	762,848	684,412	87,468	11.5%	78,436	11.5%
Restricted, net	84,607	84,429	80,421	178	0.2%	4,008	5.0%
Unrestricted	(11,891)	488	31,897	(12,379)	(2536.7%)	(31,409)	(98.5%)
Total net position	923,032	847,765	796,730	75,267	8.9%	51,035	6.4%
Total liabilities, deferred inflows & net position	$ 3,942,112	$ 3,813,903	$ 3,646,078	$ 128,209	3.4%	$ 167,825	4.6%

Following is a discussion of significant changes in assets, liabilities and net position between fiscal years 2022 and 2021, and between fiscal years 2021 and 2020, respectively.

Fiscal Year 2022: The largest portion of MSD's net position is its net investment in capital assets. Net investment in capital assets increased $87.4 million, or 11.5%, in fiscal 2022. Capital asset construction and acquisitions were funded in fiscal 2022 by $135 million of commercial paper notes[1], draws on State Revolving Fund loans[2], cash generated from operations and contributions in aid of construction from developers.

Funds restricted for a specific purpose by the 1993 Sewer and Drainage System Revenue Bond Resolution (the General Bond Resolution) are classified as restricted net position. MSD is required by the General Bond Resolution to make monthly transfers to its debt service accounts sufficient to meet the semi-annual debt service payments on outstanding bonds. The General Bond Resolution sets a debt service reserve requirement equal to at least 10% of the face amount of all bonds issued under the resolution, 100% of the maximum aggregate net debt service in the current or any future fiscal year or 125% of the average aggregate net debt service in the current or any future fiscal year. MSD funds the reserve at the lowest of these three with a combination of cash, investments and a $75 million debt service reserve surety policy[3]. Restricted net position increased $178 thousand from fiscal 2021 to fiscal 2022 due to higher cash and investment balances on hand for debt service, debt reserves and construction.

The remaining balance of MSD's net position is unrestricted and may be used for any allowable purpose. Unrestricted net position decreased $12.3 million from fiscal 2021 to fiscal 2022 primarily as the result of the increased net investment in capital assets.

Fiscal Year 2021: The largest portion of MSD's net position is its net investment in capital assets. Net investment in capital assets increased $78.4 million in fiscal 2021. Capital asset construction and acquisitions were funded in fiscal 2021 by $120 million of commercial paper notes[4], a draw on a State Revolving Fund loan, cash generated from operations and contributions in aid of construction from developers.

The remaining balance of MSD's net position is unrestricted and may be used for any allowable purpose. Unrestricted net position decreased $31.4 million from fiscal 2020 to fiscal 2021 primarily as the result of increases to the net pension and net OPEB liabilities.

STATEMENT OF REVENUES, EXPENSES AND CHANGES IN NET POSITION

The increase in net position at June 30, 2022 was $24.2 million, or 47.5%, as compared with June 30, 2021 (see Figure 2). MSD's total operating revenues increased by 10.9 % to $365.3 million and total operating expenses increased by 2.4% to $231.6 million.

The increase in net position at June 30, 2021 was $38.5 million, or 310.2%, as compared with June 30, 2020 (see Figure 2). MSD's total operating revenues increased by 3.2% to $329.4 million and total operating expenses decreased by 0.4 % to $226.1 million.

[1] See Note 7 – Long-Term Debt.
[2] See Note 7 – Long-Term Debt.
[3] See Note 3 – Restricted Cash, Cash Equivalents, and Investments.
[4] See Note 7 – Long-Term Debt.

FIGURE 2 - CONDENSED STATEMENT OF REVENUES, EXPENSES AND CHANGES IN NET POSITION INFORMATION							
				2022-2021		2021-2020	
(amounts in thousands)	FY 2022	FY 2021	FY 2020	Increase (Decrease)	% Change	Increase (Decrease)	% Change
Operating revenues							
Service charges	$ 356,870	$ 325,717	$ 312,859	$ 31,153	9.6%	$ 12,858	4.1%
Other operating income	8,497	3,701	6,198	4,796	129.6%	(2,497)	(40.3%)
Total operating revenues	365,367	329,418	319,057	35,949	10.9%	10,361	3.2%
Non-operating revenues	9,001	12,154	592	(3,153)	(25.9%)	11,562	1953.0%
Total revenues	374,368	341,572	319,649	32,796	9.6%	21,923	6.9%
Operating expenses							
Service and administrative costs	118,978	109,741	110,302	9,237	8.4%	(561)	(0.5%)
GASB 68/75 pension expense	8,725	18,547	17,826	(9,822)	(53.0%)	721	4.0%
Depreciation & amortization expense	103,964	97,874	98,872	6,090	6.2%	(998)	(1.0%)
Total operating expenses	231,667	226,162	227,000	5,505	2.4%	(838)	(0.4%)
Non-operating expenses							
Interest expense	101,703	103,915	100,387	(2,212)	(2.1%)	3,528	3.5%
Amortization of debt discount/premium	(13,404)	(14,322)	(10,284)	918	(6.4%)	(4,038)	39.3%
Change in fair value - swaps	(11,293)	(8,796)	(812)	(2,497)	28.4%	(7,984)	983.3%
Total non-operating expenses	77,006	80,797	89,291	(3,791)	(4.7%)	(8,494)	(9.5%)
Total expenses	308,673	306,959	316,291	1,714	0.6%	(9,332)	(3.0%)
Income before capital contributions	65,695	34,613	3,358	31,082	89.8%	31,255	930.8%
Capital contributions	9,572	16,422	9,085	(6,850)	(41.7%)	7,337	80.8%
Increase (decrease) in net position	75,267	51,035	12,443	24,232	47.5%	38,592	310.2%
Net position - Beginning	847,765	796,730	770,552	51,035	6.4%	26,178	3.4%
Net position - OCEA Merger	-	-	13,735	-	0.0%	(13,735)	0.0%
Net position - Ending	$ 923,032	$ 847,765	$ 796,730	$ 75,267	8.9%	$ 51,035	6.4%

Following is a discussion of the primary reasons for changes in MSD's revenues and expenses between fiscal years 2022 and 2021, and between fiscal years 2021 and 2020, respectively.

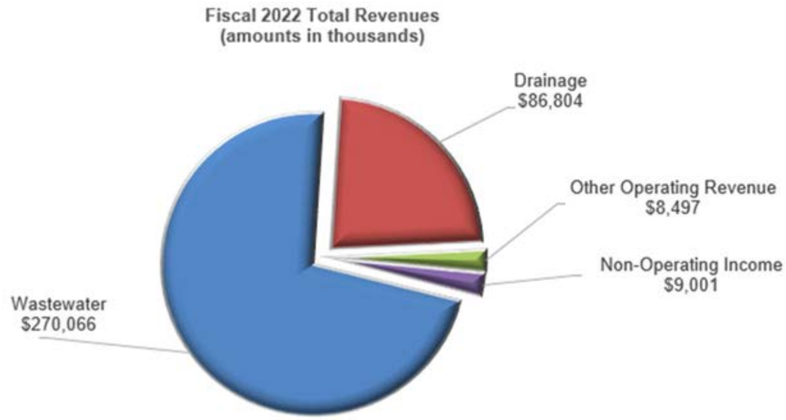
Fiscal Year 2022: Operating revenues increased by $35.9 million, or 10.9%, to $365.3 million primarily due to a 6.9% rate increase effective August 1, 2021 to wastewater and drainage service charges and the acquisition of the Bullitt County Sanitation system on November 30, 2021 which added $2.2 million in operating revenue to fiscal 2022.

Operating expenses increased by $5.5 million, or 2.4%, to $231.6 million primarily due to higher insurance premiums, chemical cost and depreciation and amortization expense. These expenses were partially offset by a reduction in GASB 68 and GASB 75 pension expense.

Fiscal Year 2021: Operating revenues increased by $10.3 million, or 3.2%, to $329.4 million primarily due to a 5.0% rate increase effective August 1, 2020 to wastewater and drainage service charges.

Operating expenses decreased by $838 thousand, or 0.4%, to $226.1 million primarily due reductions in contractual services expenses and utility expenses. These reductions were partially offset by an increase in GASB 68 pension and GASB 75 OPEB expenses.

Fiscal 2022 Total Revenues:



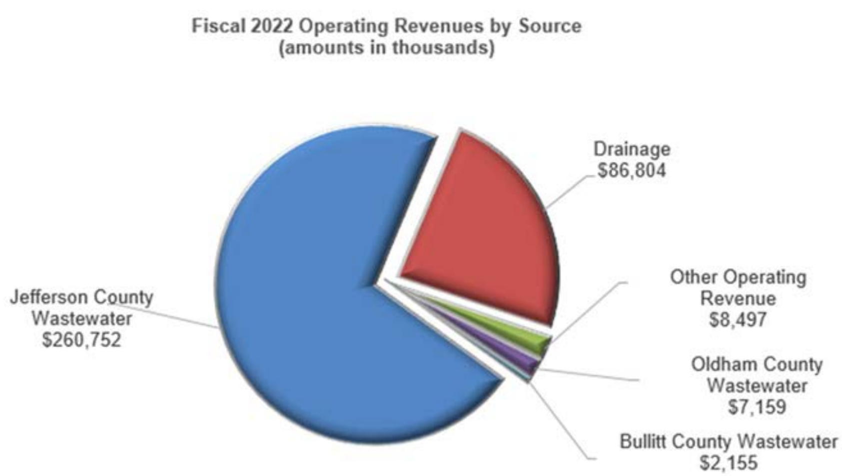
Wastewater service charges totaled $270.0 million which is an increase of $24.2 million, or 9.8%, from fiscal 2021. Wastewater service charge rates in Jefferson County increased 6.9% on August 1, 2021.

Drainage service charges totaled $86.8 million which is an increase of $6.8 million, or 8.6%, from fiscal 2021. Drainage service charge rates in Jefferson County increased 6.9% on August 1, 2021.

Other operating income totaled $8.4 million, which is a increase of $4.7 million, or 129.5%, from fiscal 2021. This increase was driven by higher capacity fees and inflow and infiltration fees in fiscal 2022.

Non-operating revenues, which represent gain or loss on disposal of assets, interest income earned on investments and the federal interest subsidy on MSD's Build America Bonds totaled $9.0 million, which is a decrease of $3.1 million, or 25.9%, from fiscal 2021. This reduction was driven primarily by a decrease in the market value of MSD's investment portfolio.

Fiscal 2022 Operating Revenues by Source:



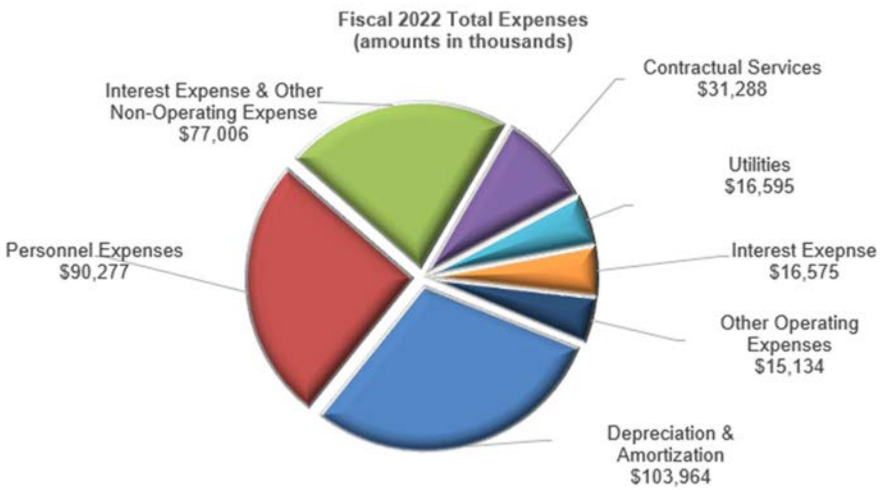
Wastewater service charges totaled $270.0 million and consisted of $260.8 million for MSD's Jefferson County service area, $7.1 million for MSD's Oldham County service area and $2.1 million for MSD's Bullitt

County service area. Wastewater service charges were 59.5% Residential, 31.8% Commercial and 8.7% Industrial[5].

Drainage service charges totaled $86.8 million and consisted of MSD's Jefferson County drainage service area. Drainage service charges were 37.6% Residential, 55.9% Commercial and 6.5% Industrial[6].

Other operating revenue totaled $8.4 million and consisted of $8.1 million for Jefferson County, $190 thousand for Oldham County and $134 thousand for Bullitt County.

Fiscal 2022 Total Operating Expenses:



Personnel expenses decreased $6.0 million, or 6.3%, to $90.2 million due to lower GASB 68 pension and GASB 75 OPEB expenses as a result of better investment performance in fiscal 2021[7].

Contractual services decreased $2.7 million, or 8.2% to $31.2 million primarily due to lower legal fees.

Utility expenses increased slightly by $330 thousand, or 2.0%, to $16.5 million due to increases in natural gas and water costs.

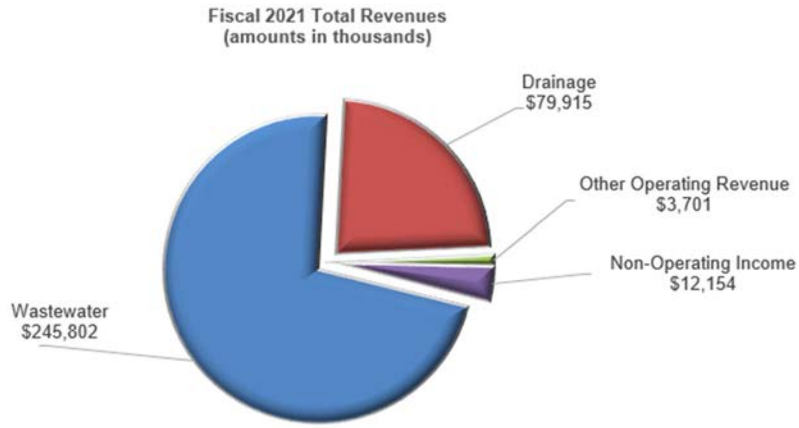
Interest expense and other non-operating expenses decreased by $3.7 million, or 1.4% to $77.0 million primarily due to the refunding of the Series 2011A revenue bonds[8].

Depreciation and amortization increased by $6.0 million, or 6.2%, to $103.9 million as $428 million in new assets were placed into service.

Total expenses in fiscal 2022 increased $2.0 million, or 0.6%, to $350.8 million before capitalization. Capitalized overhead totaled $42.1 million bringing net total expenses to $308.7 million.

[5] See Top 10 Customers in the Statistical Section
[6] See Top 10 Customers in the Statistical Section
[7] See Note 14 – Defined Benefit Pension and Other Postemployment Benefits Plan - Cost Sharing - CERS
[8] See Note 7 – Long Term Debt

Fiscal 2021 Total Revenues:



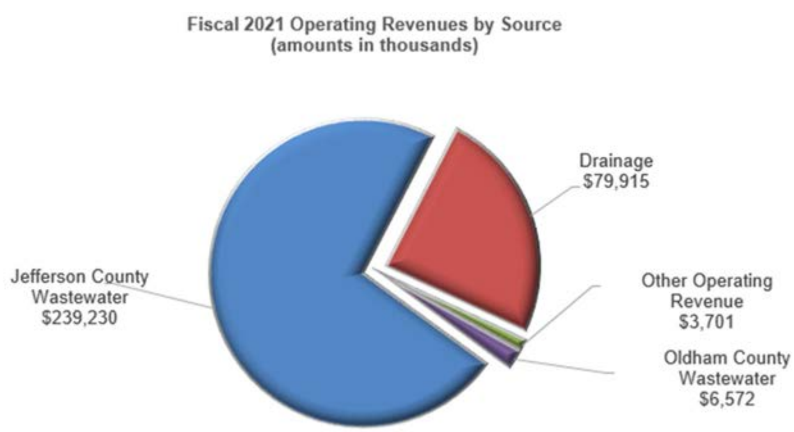
Wastewater service charges totaled $245.8 million which is an increase of $7.9 million, or 3.4%, from fiscal 2020. Wastewater service charge rates in Jefferson County increased 5.0% on August 1, 2020.

Drainage service charges totaled $79.9 million which represents an increase of $4.8 million, or 6.5%, from fiscal 2020. Drainage service charge rates in Jefferson County increased 5.0% on August 1, 2020.

Other operating income totaled $3.7 million, which is a decrease of $2.4 million, or 40.3%, from fiscal 2020. The decrease was driven primarily by lower capacity charges in fiscal 2021.

Non-operating revenues, which represent gain or loss on disposal of assets, interest income earned on investments and the federal interest subsidy on MSD's Build America Bonds totaled $12.1 million, which is an increase of $11.5 million, or 96.6%, from fiscal 2020. Non-operating revenues totaled $592 thousand in fiscal 2020 due to a $15 million loss on disposal of assets.

Fiscal 2021 Operating Revenues by Source:

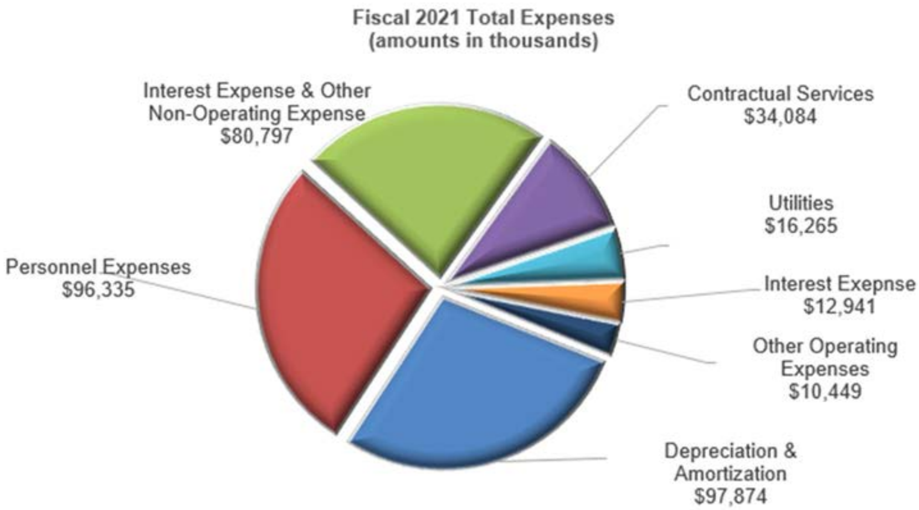


Wastewater service charges totaled $245.8 million and consisted of $239.2 million for MSD's Jefferson County service area and $6.6 million for MSD's Oldham County service area. Wastewater service charges were 60.3% Residential, 30.3% Commercial and 9.4% Industrial[9].

Drainage service charges totaled $79.9 million and consisted of MSD's Jefferson County drainage service area. Drainage service charges were 36.8% Residential, 56.6% Commercial and 6.6% Industrial[10].

Other operating revenue totaled $3.7 million and consisted of $3.6 million for Jefferson County and $102 thousand for Oldham County.

Fiscal 2021 Total Operating Expenses:



Personnel expenses increased $5.0 million, or 6.3%, to $96.3 million due primarily to increases in headcount, compensation and medical insurance premiums.

Contractual services decreased $3.2 million, or 8.7% to $34.0 million primarily due to lower expenditures for other contractual services.

Utility expenses decreased by $1.6 million, or 9.3%, to $16.2 million primarily due to lower electrical costs.

Interest expense and other non-operating expenses decreased by $8.4 million, or 9.5% to $80.7 million primarily due to changes in the fair value of MSD's swaps[11].

Depreciation and amortization decreased by $998 thousand, or 1.0%, to $97.8 million.

Total expenses in fiscal 2021 decreased $7.1 million, or 2.0%, to $348.7 million before capitalization. Capitalized overhead totaled $41.8 million which brought net operating expenses to $306.9 million.

[9] See Top 10 Customers in the Statistical Section
[10] See Top 10 Customers in the Statistical Section
[11] See Note 9 – Derivative Instruments

Capital Contributions: Capital contributions decreased $6.8 million, or 41.7%, to $9.5 million in fiscal 2022 (see Figure 3). This decrease is primarily attributable to a reduction in wastewater infrastructure contributions from developers.

Capital contributions increased $7.3 million, or 80.8%, to $16.4 million in fiscal 2021 (see Figure 3). This increase is primarily attributable to an increase in wastewater infrastructure contributions from developers.

FIGURE 3 - CAPITAL CONTRIBUTIONS

(amounts in thousands)	FY 2022	FY 2021	FY 2020	2022-2021 Increase (Decrease)	2022-2021 % Change	2021-2020 Increase (Decrease)	2021-2020 % Change
Cash flows from:							
Developer's capital - wastewater	$ 3,068	$ 9,810	$ 2,474	$ (6,742)	(68.7%)	$ 7,336	296.5%
Developer's capital - drainage	3,841	4,646	4,826	(805)	100.0%	(180)	0.0%
Federal grants	2,611	963	937	1,648	171.1%	26	2.8%
Capital recovery	52	1,003	436	(951)	100.0%	567	0.0%
Miscellaneous claims recovery	-	-	412	-	100.0%	(412)	0.0%
Total capital contributions	$ 9,572	$ 16,422	$ 9,085	$ (6,850)	(41.7%)	$ 7,337	80.8%

CAPITAL ASSETS

Total capital assets net of depreciation increased $124.3 million, or 3.9%, to $3.2 billion in fiscal 2022 (see Figure 4)[12]. Construction in progress was the driver for the growth in capital assets.

Total capital assets net of depreciation increased $154.5 million, or 5.1%, to $3.1 billion in fiscal 2021 (see Figure 4)[13]. Construction in progress was the driver for the growth in capital assets.

FIGURE 4 - CAPITAL ASSETS NET OF DEPRECIATION

(amounts in thousands)	FY 2022	FY 2021	FY 2020	Increase (Decrease) 2022-2021	% Change	Increase (Decrease) 2021-2020	% Change
Sewer lines	$ 1,638,136	$ 1,355,258	$ 1,363,408	$ 282,878	20.9%	$ (8,150)	-0.6%
Wastewater treatment facilities	242,875	208,553	215,163	34,322	16.5%	(6,610)	-3.1%
Drainage facilities	787,664	794,261	697,632	(6,597)	-0.8%	96,629	13.9%
Pumping and lift stations	160,774	147,917	157,849	12,857	8.7%	(9,932)	-6.3%
Administrative facilities	9,273	10,279	11,379	(1,006)	-9.8%	(1,100)	-9.7%
Maintenance facilities	6,851	6,941	5,419	(90)	-1.3%	1,522	28.1%
Machinery and equipment	23,625	18,490	23,722	5,135	27.8%	(5,232)	-22.1%
Miscellaneous	3,607	1,801	1,481	1,806	100.3%	320	21.6%
Construction in progress	420,200	625,113	538,013	(204,913)	-32.8%	87,100	16.2%
Total	$ 3,293,005	$ 3,168,613	$ 3,014,066	$ 124,392	3.9%	$ 154,547	5.1%

DEBT ADMINISTRATION

MSD ended fiscal 2022 with $2.6 billion in outstanding long-term debt compared to $2.5 billion in outstanding long-term debt at the end of fiscal 2021[14] (see Figure 5). This is primarily due to the issuance of additional commercial paper to finance construction in progress. Short term debt outstanding payable from restricted assets at the end of fiscal 2022 totaled $55.4 million compared to $49.3 million at the end of fiscal 2021.

[12] See Note 5 – Capital Assets – Plant, Lines and Other Facilities

[13] See Note 5 – Capital Assets – Plant, Lines and Other Facilities

[14] See Note 7 – Long-Term Debt.

MSD ended fiscal 2021 with $2.5 billion in outstanding long-term debt compared to $2.4 billion in outstanding long-term debt at the end of fiscal 2020 (see Figure 5)[15]. This is primarily due to the issuance of additional commercial paper to finance construction in progress. Short term debt outstanding payable from restricted assets at the end of fiscal 2021 totaled $49.3 million compared to $45.6 million at the end of fiscal 2020.

FIGURE 5 - SCHEDULE OF BONDS AND OTHER FINANCING

(amounts in thousands)	FY 2022	FY 2021	FY 2020	Increase (Decrease) 2022-2021	Increase (Decrease) 2021-2020
Senior Revenue Bonds					
Series 2009C	180,000	180,000	180,000	-	-
Series 2010A	330,000	330,000	330,000	-	-
Series 2011A	-	243,910	246,225	(243,910)	(2,315)
Series 2013A	115,790	115,790	115,790	-	-
Series 2013B	109,280	110,970	112,575	(1,690)	(1,605)
Series 2013C	125	250	99,250	(125)	(99,000)
Series 2014A	79,650	79,700	79,750	(50)	(50)
Series 2015A	171,395	172,175	173,160	(780)	(985)
Series 2015B	65,975	68,815	71,515	(2,840)	(2,700)
Series 2016A	147,500	148,415	149,290	(915)	(875)
Series 2016B	19,910	21,960	23,915	(2,050)	(1,955)
Series 2016C	12,995	32,305	50,515	(19,310)	(18,210)
Series 2017A	149,390	155,790	161,895	(6,400)	(6,105)
Series 2017B	31,210	32,055	32,885	(845)	(830)
Series 2018A	60,380	60,380	60,380	-	-
Series 2019A	8,845	17,065	24,770	(8,220)	(7,705)
Series 2020A	224,000	224,750	-	(750)	224,750
Series 2020C	109,605	110,790	-	(1,185)	110,790
Series 2021A	240,485	-	-	240,485	-
Series 2022A	224,750	-	-	224,750	-
Bond Anticipation Notes					
Series 2019A	-	-	226,340	-	(226,340)
Series 2020A	-	226,340	-	(226,340)	226,340
Series 2021A	226,340	-	-	226,340	-
Other Subordinate Debt					
General Obligation Bonds	10,774	11,629	12,453	(855)	(824)
Commercial Paper Notes	50,000	150,000	255,000	(100,000)	(105,000)
SRF Loans	39,998	32,462	15,818	7,536	16,644
KACO Lease	1,870	2,030	2,180	(160)	(150)
Notes Payable - LOC	-	-	100	-	(100)
	$ 2,610,267	$ 2,527,581	$ 2,423,806	$ 82,686	$ 103,775

Excludes bond premiums/discounts

On March 25, 2020, MSD entered into a Forward Delivery Bond Purchase agreement to refund $243,910,000 of the Series 2011A bonds. The Series 2021A bonds were dated and delivered on August

[15] See Note 7 – Long-Term Debt.

17, 2021 to complete the refunding which reduces debt service payments by $56.5 million beginning in fiscal year 2022 through fiscal year 2034[16].

On February 1, 2022, MSD issued $225,000,000 of climate bond certified revenue bonds, Series 2022A. The proceeds of the Series 2022A bonds were used to refund commercial paper notes at maturity and to finance the ongoing costs of MSD's capital improvement program. The final maturity of Series 2022A bonds is May 15, 2052[17].

Debt Service Ratio: Although net operating income is the most significant component of determining MSD's debt service coverage ratio, other sources, including investment income and current period payments of property owner assessments, are also included in available revenues and net revenues for purposes of demonstrating MSD's compliance with the debt service ratio tests in the General Bond Resolution.

The General Bond Resolution and its supplements require MSD to provide available revenues for each fiscal year sufficient to pay the sum of 110% of each year's aggregate net debt service on revenue bonds, the amount, if any, required to be paid into the reserve account, all operating expenses as estimated in the annual budget, debt service on senior subordinated debt and any other subordinate debt and amounts necessary to pay and discharge all charges or liens payable out of available revenues. Available revenues, as used for purposes of the General Bond Resolution, means all revenues and other amounts received by MSD and pledged as security for payment of bonds issued pursuant to the resolution, but excludes interest income which is capitalized in accordance with generally accepted accounting principles.

Net operating expenses include all reasonable, ordinary, usual or necessary current expenses of maintenance, repair, and operation determined in accordance with generally accepted accounting principles and the enterprise basis of accounting. Operating expenses do not include reserves for extraordinary maintenance and repair or administrative and engineering expenses of MSD which are necessary or incidental to capital improvements for which debt has been issued and which may be paid from proceeds of such debt.

Aggregate net debt service is debt service on all bonds issued pursuant to the resolution including principal payments, excluding (i) interest expense which, in accordance with generally accepted accounting principles, is capitalized and which may be paid from the proceeds of debt and (ii) other amounts, if any, available or expected to be available in the ordinary course of business for payment of debt service.

MSD's debt service coverage ratio[18], calculated on the foregoing basis, was 195% in 2022, 186% in 2021 and 188% in 2020 (see Figure 6).

FIGURE 6- DEBT SERVICE COVERAGE *(amounts in thousands)*	**FY 2022**	**FY 2021**	**FY 2020**	**Increase (Decrease) 2022-2021**	**Increase (Decrease) 2021-2020**
Total available revenues	$ 374,827	$ 342,392	$ 335,566	9.5%	2.0%
Total net operating expenses	118,978	109,741	110,302	8.4%	(0.5%)
Net revenue	255,849	232,651	225,264	10.0%	3.3%
Aggregate net debt service	$ 130,925	$ 124,819	$ 119,868	4.9%	4.1%
Debt service coverage ratio	195%	186%	188%	4.8%	(0.8%)

[16] See Note 7 – Long-Term Debt
[17] See Note 7 – Long-Term Debt
[18] Excludes depreciation, amortization, GASB 68 pension expense and GASB 75 OPEB expense.

Credit Ratings: See Figure 7 for MSD's existing credit ratings.

FIGURE 7- BOND AND COMMERCIAL PAPER RATINGS	Revenue Bonds	Subordinate Bond Anticipation Notes	Subordinate Commercial Paper Notes
Fitch Ratings	AA-		
Moody's Investors Service, Inc.	Aa3	MIG 1	P-1
S&P Global Ratings	AA	SP-1+	A-1+

FUTURE ECONOMIC FACTORS

On July 25, 2022, the MSD Board approved a 5.0% rate increase for wastewater and drainage service charges for the Jefferson County service area effective August 1, 2022. Our five-year financial plan projects annual wastewater and drainage rate increases in Jefferson County to provide funding for ongoing work associated with MSD's consent decree.

Pursuant to the terms of an Interlocal Cooperation Agreement, on July 25, 2022, the MSD Board approved a $2 reduction in the wastewater volume charge for MSD's Oldham County service area effective August 1, 2022. Starting August 1, 2023, rate increases for wastewater service in Oldham County will not exceed 3% annually until rates for MSD's Oldham County service area equal its Jefferson County service area.

Pursuant to the terms of an Interlocal Cooperation Agreement, on December 20, 2021, the MSD Board approved a 12% rate increase for wastewater service charges in its Bullitt County service area effective January 1, 2022. Through December 31, 2026, rate increases for wastewater service will not exceed the increases authorized by Bullitt County Ordinance No. 17-2 adopted by Bullitt County Fiscal Court on February 7, 2017. Starting January 1, 2027, rate increases for wastewater service in Bullitt County will not exceed 3% annually until rates for MSD's Bullitt County service area equal its Jefferson County service area.

CONSENT DECREE

In April 2009, MSD agreed to enter into an amended consent decree with the Commonwealth of Kentucky's Environmental and Public Protection Cabinet (KEPPC) and the U.S. Environmental Protection Agency (EPA) that superseded the original consent decree entered on August 12, 2005. The amended consent decree focuses on eliminating sewer overflows in MSD's service area through an Integrated Overflow Abatement Plan (IOAP). The IOAP was amended in 2014 to improve compliance and adjust capital project schedules. To date, MSD has spent approximately $1.1 billion developing and completing IOAP projects and compliance measures mandated by the consent decree.

After several months of negotiation, MSD, the Commonwealth of Kentucky and United States of America have reached an agreement on important modifications to the 2009 amended consent decree. The parties have agreed to enter into a second amended consent decree which will supersede and replace the 2009 amended consent decree and update the IOAP modification approved on June 19, 2014 with the 2021

IOAP modification. The United States District Court granted final approval of the second amended consent decree on September 14, 2022.[19]

REQUESTS FOR ADDITIONAL INFORMATION

This report is intended to provide readers with a general overview of MSD's finances and to provide information regarding the receipts and uses of funds. If you need clarification regarding a statement(s) made in the report or need additional information, please contact the Louisville and Jefferson County Metropolitan Sewer District, 700 West Liberty Street, Louisville Kentucky 40203. You can also submit a request for additional information via MSD's website, www.msdlouky.org.

[19] See Note 12 – Consent Decree

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
COMPARATIVE STATEMENT OF NET POSITION
AS OF JUNE 30
DOLLARS IN THOUSANDS

Assets and Deferred Outflows of Resources	2022	2021
Current Assets		
Unrestricted Current Assets		
Cash and cash equivalents	$ 48,875	$ 79,281
Investments	69,754	28,124
Accounts receivable, less allowance for doubtful accounts of $4,271 (2022), $4,946 (2021)	26,242	24,664
Inventories	5,262	5,086
Accrued interest receivable	341	231
Prepaid expenses and other current assets	2,949	6,155
Total unrestricted current assets	153,423	143,541
Restricted Current Assets		
Cash and cash equivalents	20,788	21,181
Investments	12,947	-
Total restricted current assets	33,735	21,181
Total Current Assets	187,158	164,722
Noncurrent Assets		
Unrestricted Noncurrent Assets		
Accounts receivable, non-current	7,138	10,478
Restricted Noncurrent Assets:		
Cash and cash equivalents	2,191	1,524
Investments	78,140	81,406
Total restricted noncurrent assets	80,331	82,930
Capital Assets		
Utility plant in service	4,269,739	3,849,048
Less accumulated depreciation	(1,396,934)	(1,305,547)
Net capital assets in service	2,872,805	2,543,501
Construction in progress	420,200	625,113
Net capital assets	3,293,005	3,168,614
Other Noncurrent Assets		
Prepaid regulatory assets	436,432	428,968
Less accumulated amortization	(149,411)	(138,676)
Net prepaid regulatory assets	287,021	290,292
Unamortized bond issuance costs	14,585	15,089
Unamortized reserve fund insurance	764	794
Total other noncurrent assets	302,370	306,175
Total Noncurrent Assets	3,682,844	3,568,197
Total Assets	3,870,002	3,732,919
Deferred Outflow of Resources		
Deferred outflow - pension	21,836	25,932
Deferred outflow - OPEB	23,447	21,962
Deferred outflow - derivative instruments	-	8,541
Deferred loss on refunding	26,827	24,549
Total deferred outflow of resources	72,110	80,984
Total Assets and Deferred Outflow of Resources	**$ 3,942,112**	**$ 3,813,903**

See the accompanying notes to the financial statements.

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
COMPARATIVE STATEMENT OF NET POSITION
AS OF JUNE 30
DOLLARS IN THOUSANDS

Liabilities, Deferred Inflow of Resources and Net Position	**2022**	**2021**
Current Liabilities		
Current Liabilities To Be Paid From Unrestricted Assets		
Accounts payable	$ 9,807	$ 18,345
Accrued salaries and related benefits	10,588	10,754
Total unrestricted current liabilities	20,395	29,099
Current Liabilities To Be Paid From Restricted Assets		
Accounts payable and accrued expenses (capital), includes contractor retainage of $4,697 (2022), $12,634 (2021)	30,464	46,237
Accrued interest payable	16,622	20,093
Refundable deposits	1,920	2,757
Revenue bonds payable	52,880	47,565
Other subordinate debt	2,038	1,817
Total restricted current liabilities	103,924	118,469
Total Current Liabilities	124,319	147,568
Noncurrent Liabilities		
Bonds payable, net of unamortized premiums and discounts	2,316,455	2,132,372
Bond anticipation note	226,340	226,340
Commercial paper notes	50,000	150,000
Other subordinate debt	50,604	44,304
Net pension liability	124,564	139,401
Net OPEB liability	37,395	43,904
Investment derivative asset liability	40,914	63,431
At-market derivative asset liability	-	8,541
Total Noncurrent Liabilities	2,846,272	2,808,293
Total Liabilities	2,970,591	2,955,861
Deferred Inflow of Resources		
Deferred inflow - pension	17,811	-
Deferred inflow - OPEB	17,068	7,420
Deferred inflow - derivative instruments	11,224	-
Other deferred inflows	2,386	2,857
Total deferred inflow of resources	48,489	10,277
Total Liabilities and Deferred Inflow of Resources	**$ 3,019,080**	**$ 2,966,138**
Net Position		
Net investment in capital assets	$ 850,316	$ 762,848
Restricted for debt service	84,607	84,429
Unrestricted	(11,891)	488
Total net position	923,032	847,765
Total Liabilities, Deferred Inflow of Resources and Net Position	**$ 3,942,112**	**$ 3,813,903**

See the accompanying notes to the financial statements.

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
COMPARATIVE STATEMENT OF REVENUES, EXPENSES AND CHANGES IN NET POSITION
AS OF JUNE 30
DOLLARS IN THOUSANDS

	2022	2021
Operating Revenues		
Service charges	$ 356,870	$ 325,717
Other operating income	8,497	3,701
Total operating revenues	365,367	329,418
Operating Expenses		
Service and administrative costs	118,978	109,741
GASB 68 pension/GASB 75 OPEB actuarial expense	8,725	18,547
Depreciation and amortization	103,964	97,874
Total operating expenses	231,667	226,162
Income from Operations	133,700	103,256
Non-operating Revenue (Expenses)		
Gain/Loss disposal of assets	124	(21)
Investment income	(1,467)	1,777
Build America bond refund	10,344	10,398
Interest expense - bonds	(86,792)	(93,067)
Interest expense - swaps	(9,502)	(9,793)
Interest expense - other	(12,873)	(13,104)
Amortization of debt discount / premium	17,172	17,429
Amortization of loss on refunding	(3,768)	(3,107)
Capitalized interest	7,464	12,049
Change in fair value - derivative instruments	11,293	8,796
Total non-operating revenue (expenses) - net	(68,005)	(68,643)
Income before capital contributions	65,695	34,613
Capital contributions	9,572	16,422
Increase in net position	75,267	51,035
Net position, beginning	847,765	796,730
Net position, ending	$ 923,032	$ 847,765

See the accompanying notes to the financial statements.

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
COMPARATIVE STATEMENT OF CASH FLOWS
AS OF JUNE 30
DOLLARS IN THOUSANDS

	2022	2021
Cash Flows from Operating Activities		
Cash received from customers	$ 362,992	$ 331,767
Cash paid to suppliers	(70,302)	(55,030)
Cash paid to employees	(54,351)	(52,092)
Net Cash Provided by Operating Activities	238,339	224,645
Cash Flows from Capital and Related Financing Activities		
Proceeds from issuance of revenue bonds	248,821	233,133
Proceeds from issuance of bond anticipation note	232,924	237,295
Proceeds from issuance of commercial paper	375,000	365,000
Proceeds from other subordinate debt	7,824	17,788
Payments for retirement of revenue bonds	(55,497)	(48,033)
Payments for retirement of bond anticipation note	(226,340)	(226,340)
Payments for retirement of commercial paper	(475,000)	(470,000)
Payments for retirement of notes	-	(100)
Payments for retirement of other subordinated debt	(1,926)	(2,119)
Payments for interest expense	(103,136)	(103,393)
Payments for interest on swaps	(9,502)	(9,793)
Build America bond interest subsidy	10,344	10,398
Proceeds from capital grants	2,662	1,914
Proceeds from sales of capital assets	124	(21)
Payments for capital assets	(224,712)	(219,888)
Proceeds from assessments	3,378	2,465
Net Cash Provided (Used) by Capital and Related Financing	(215,036)	(211,694)
Cash Flows from Investing Activities		
Purchase of investments	(127,427)	(212,292)
Maturity of investments	71,789	157,087
Investment income	2,203	1,423
Net Cash Provided (Used) by Investing Activities	(53,435)	(53,782)
Net Increase (Decrease) in Cash and Cash Equivalents	(30,132)	(40,831)
Cash and Cash Equivalents, Beginning of Year	101,986	142,817
Cash and Cash Equivalents, End of Year	$ 71,854	$ 101,986

See the accompanying notes to the financial statements.

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
COMPARATIVE STATEMENT OF CASH FLOWS
AS OF JUNE 30
DOLLARS IN THOUSANDS

	2022	2021
Reconciliation of Operating Income to Net Cash provided by Operating Activities		
Income from operations	$ 133,700	$ 103,256
Adjustments to reconcile operating income to net cash provided by operating activities		
Depreciation and amortization	103,964	97,874
Accounts receivable	(1,539)	2,546
Inventories	(176)	(109)
Prepaid expense	3,206	(2,194)
Accounts payable	(8,538)	3,656
Customer deposits	(837)	(198)
Accrued liabilities	(166)	1,267
Pension liability	7,071	15,807
OPEB liability	1,654	2,740
Net Cash Provided by Operating Activities	$ 238,339	$ 224,645
Non-Cash Capital Financing and Investing Activities		
Contribution of plant, lines and other facilities by developers and property owners	$ 6,909	$ 14,456
Construction costs in accounts payable	30,464	46,237
Unrealized (gain)/loss on investments	3,587	(499)
Decrease in interest rate swap deferred revenue	497	497
Change in fair value - derivative instruments	11,293	8,796
Bonds issued for refunding of debt - Series 2011A	246,555	-
Bonds issued for refunding of debt - Series 2020C	-	112,065

See the accompanying notes to the financial statements.

1. Significant Accounting Policies 22
Reporting Entity 22
Basis of Accounting 23
Cash and Cash Equivalents 23
Restricted and Unrestricted Funds 23
Investment Securities 23
Revenues, Expenses and Receivables 24
Inventory 24
Contributed Capital and Construction Grants 24
Capital Assets – Plant, Lines and Other Facilities 24
Capitalized Interest 25
Prepaid Regulatory Assets 25
Impairment of Capital Assets 25
Bonds Payable 25
Compensated Absences 25
Allocation of Overhead 26
Use of Estimates 26
Income Tax Status 26
Risks & Uncertainties 26
Adoption of New Accounting Pronouncements 26
Recent Accounting Pronouncements 26
Reclassifications 26

2. Cash Deposits and Investments 27
Risks 28
Fair Value Measurement 28

3. Restricted Cash, Cash Equivalents, and Investments 29

4. Schedule of Net Position 30

5. Capital Assets – Plant, Lines and Other Facilities 31

6. Capitalized Interest 32

7. Long-Term Debt 33
Revenue Bonds 34
Commercial Paper and Bank Notes 37
General Obligation Bonds 40
State Revolving Fund Loans 40
KACO Financing Lease 43
Line of Credit 43

8. Bond Anticipation Notes 44

9. Derivative Instruments 45
Valuation Techniques 46
Risks 47
Swap Terminations 48

10. Risk Management 48
Self-Insurance – Group Liability 49
Workers Compensation Insurance 49
Self-Insurance - Property 50

11. Deferred Compensation 50

12. Commitments and Contingencies 50
Sale of Sewer Assessments 50
Consent Decree 50
Claims and Litigation 51
Other Commitments 51

13. Subsequent Events 52
Rate Increase 52
Series 2022 BAN 52
Commercial Paper Program 52

14. Defined Benefit Pension and Other Postemployment Benefits Plan 52

NOTE 1 – SIGNIFICANT ACCOUNTING POLICIES

The financial statements of the Louisville and Jefferson County Metropolitan Sewer District (MSD), a discretely presented component unit of Louisville/Jefferson County Metro Government, are prepared in conformity with accounting principles generally accepted in the United States of America as applied to government units. The Governmental Accounting Standards Board (GASB) is the accepted standard-setting body for establishing governmental accounting and financial reporting principles. MSD follows GASB Pronouncements as codified under GASB 62, including electing to report as a regulated operation. MSD uses proprietary fund accounting (enterprise fund). Due to the election as a regulated operation under GASB 62, to meet industry accounting standards and follow transactional intent, MSD uses, as applicable, ASC 980, Regulated Accounting.

Reporting Entity: MSD is a public body corporate, and political subdivision of the Commonwealth of Kentucky. MSD was created in 1946 pursuant to Chapter 76 of the Kentucky Revised Statutes, in the interest of the public health and for the purpose of providing adequate sewer and drainage facilities in the urbanized area of the Louisville Metropolitan Area. Pursuant to Chapter 76, MSD is governed by a Board which consists of eight members who are appointed by the Mayor of Louisville Metro Government, subject to approval of Louisville Metro Council. Not more than five Board members may be of the same political party. However, there is not a continuing supervisory relationship exercised by Louisville Metro Government over MSD with respect to MSD's statutory public functions.

Chapter 76 authorizes MSD to provide sewer and drainage facilities and services. MSD is further authorized by the statute to establish and collect service charges and to budget accordingly for operations and maintenance, capital outlays and debt service on obligations it is authorized by the statute to incur. No special financing relationship exists between Louisville Metro Government and MSD, nor is Louisville Metro Government empowered by law or custom to approve MSD’s operating or capital budgets; nor are they responsible for financing deficits or disposing of surplus funds.

MSD has complete control, possession and supervision of the sewer and drainage system in large portions of Jefferson County, and has statutory authority to construct additions, betterments and extensions within its service area. Additionally, MSD has statutory responsibility for approval of the design and proper construction of sewer and drainage facilities within the County's boundaries. There are cities within Jefferson County that, by statute, have the option of using MSD sewer services on a contractual basis. Third and fourth class cities also have the option of obtaining drainage services from MSD.

In 2018 the Kentucky General Assembly amended KRS 76.080 to allow MSD to enter into agreements with other entities to acquire by purchase, any real or personal property, or any interest, right, easement, or privilege therein, outside of its Jefferson County boundaries in connection with the acquisition, construction, operation, repair or maintenance of any sewage, wastewater or drainage facility. Subsequent to this change, MSD has reached four agreements extending its service area outside of Jefferson County. On May 31, 2019, MSD acquired the Crestwood wastewater collection system pursuant to the terms and conditions of an Interlocal Cooperation Agreement (ILA). On April 27, 2020, MSD entered into an ILA with Shelby County to own, maintain, and operate sewer and wastewater facilities and collections systems in a prescribed service area in the easternmost corner of Shelby County. On June 30, 2020, MSD completed a merger with the Oldham County Environmental Authority (OCEA) pursuant to the terms and conditions of an ILA. On November 30, 2021, MSD acquired the Bullitt County Sanitation District (BCSD) pursuant to the terms and conditions of an ILA.

MSD classified the ILA with BCSD as a government acquisition since significant consideration was exchanged. GASB Statement No. 69, Government Combinations and Disposals of Government Operations, requires that for government acquisitions, the acquiring government should recognize the assets, deferred outflows of resources, liabilities, or deferred inflows of resources acquired or assumed at the acquisition date, or November 30, 2021. Assets, deferred outflows of resources, liabilities, or deferred inflows of resources were measured at acquisition value. No significant adjustments were made to bring amounts into conformity with MSD’s accounting policies or to adjust for impairment of capital assets resulting from the acquisition.

MSD's enterprise business activities are managed by its Board, which has statutory authority to elect officers, enact bylaws and enter into agreements and contracts for the management and regulation of MSD's affairs. MSD's revenue is derived from wastewater and drainage service charges which are collected from residential, commercial and industrial customers. MSD controls the collection of all revenue, disbursement of payables and title to all sewer and drainage assets. Wastewater service charges are distributed among customer classes on the basis of actual costs incurred to collect and treat wastewater. Drainage service charges are distributed among customer classes on the basis of actual costs of drainage services per equivalent unit of impervious surface.

Changes in MSD's service charges are implemented by MSD's Board. Kentucky statute provides that MSD's service charge revenues shall be sufficient to provide for the operation and maintenance of the system and for debt service. By ordinance, Louisville Metro Government has provided that MSD's Board may amend its service charge schedule to maintain a debt service ratio of 1.10 for MSD's sewer and drainage revenue bonds, and that such amendments will be effective within the metropolitan area when adopted by MSD's Board, so long as the amended rates do not generate additional revenue from service charges in excess of 7% during the twelve months succeeding the period in which the deficiency was identified. Amendments that would generate additional revenues in excess of 7% require Louisville Metro Council approval.

Chapter 76 permits MSD to finance sewer and drainage system construction, acquisition and other capital improvements through the issuance of its revenue bonds and with the proceeds of governmental grants, property owner contributions in aid of construction and bonds and loans for which pledge of repayment is subordinated to the pledge of all revenues given by MSD for the security of its revenue bond holders. MSD indebtedness does not constitute indebtedness of Louisville Metro Government or the Commonwealth, but Louisville Metro Government must authorize by ordinance the issuance by MSD of revenue bonds to finance projects within the service area.

Basis of Accounting: The sewer and drainage system owned and operated by MSD is accounted for using a flow of economic resources measurement focus. With this measurement focus, all assets and all liabilities associated with the operation of the system are included on the Statement of Net Position. Total net position is segregated into net investment in capital assets, restricted for payment of bond principal and interest and unrestricted. Operating statements present increases (e.g., revenues) and decreases (e.g., expenses) in net position. MSD utilizes the accrual basis of accounting wherein revenues are recorded when earned and expenses are recorded at the time the liability is incurred.

Cash and Cash Equivalents: For purposes of the Statements of Cash Flows, MSD includes repurchase agreements and other investments with an original maturity of three months or less in cash and cash equivalents. Both restricted and unrestricted amounts are included on the Statements of Cash Flows.

Restricted and Unrestricted Funds: Restricted funds are reserved for the purpose of bond debt service, funding of capital construction, cost of issuance, and debt service reserves. Unrestricted funds, generated from service fees and other operating income, are used to pay for operating expenses. When an expense or outlay is incurred for which both restricted and unrestricted net position is available, it is MSD's general practice is to use revenue from operations to finance construction, then to reimburse from restricted net position for construction as it is needed.

Investment Securities: Investments are stated at fair value. Investment income consists of interest income and the change in fair value of investments[1]. Investment income is reduced by applicable estimated federal arbitrage liability.[2]

Revenues, Expenses and Receivables: Operating revenues are those revenues that are generated directly from the primary activity of MSD. These revenues are wastewater and drainage service charges and other operating income. The Louisville Water Company and Oldham County Water are responsible for the billing

[1] See Note 2 – Deposits and Investments
[2] See Note 7 – Long-Term Debt

and collection of these charges on behalf of MSD on a monthly basis. Operating expenses are expenses incurred through the activities of operating and maintaining MSD facilities.

Non-operating revenues and expenses are comprised of investment and financing earnings and costs, changes in the fair value of derivatives, as well as contributions from outside sources.

Accounts receivable are stated at the amount management expects to collect from outstanding customer accounts. Accounts are considered past due 30 days from the invoice date. Management provides an allowance for doubtful account that is based on historical collection experience and a review of the current status of individual accounts. Accounts that remain outstanding after management has exerted reasonable collection efforts are written off through a charge to allowance for doubtful accounts and a credit to accounts receivable. The allowance for doubtful accounts was valued at June 30, 2022 and June 30, 2021 as $4,270,981 and $4,946,357, respectively.

Assessment receivables represent amounts billed to residents to have sewer lines installed in their neighborhood. Assessment receivables are considered past due once the balance is 90 days in arrears. Assessment receivables that remain outstanding after management has exerted reasonable collection efforts are written off through a charge to allowance for doubtful accounts and a credit to accounts receivable. The allowance for doubtful accounts was valued at June 30, 2022 and June 30, 2021 at $5,140,847 and $2,539,950, respectively. These receivables may be current or non-current assets.

Inventory: Inventory is stated at cost. Inventory consists of supplies and parts used in the operation of MSD's treatment plants and for the maintenance of sewers, fleet vehicles and other related equipment. Inventory totaled $5,262,281 at June 30, 2022 and $5,086,088 at June 30, 2021.

Contributed Capital and Construction Grants: MSD finances construction of sewer and drainage plant, lines and other facilities, in part, through government grants and contributions from property owners and developers. Governmental grants in aid of construction represent the estimated portion of construction costs incurred for which grants are expected to be paid to MSD by the governmental grantor. These amounts are recorded as a receivable and revenues from contributions at the time the related expenditures are incurred. Revenues from contributions are part of the change in net position. Government grants in aid of construction and other recoveries at June 30, 2022 and June 30, 2021 were $2,662,193 and $1,966,789, respectively. Contributed capital in the form of sewer and drainage infrastructure constructed by developers at June 30, 2022 and June 30, 2021 were $6,909,247 and $14,455,781, respectively.

Capital Assets - Plant, Lines and Other Facilities: Plant, lines and other facilities are recorded at historical cost or, if contributed, at acquisition value as determined by engineering estimates on the date the contribution is received. It is MSD's policy to depreciate the costs of these assets over their estimated useful lives on a straight line basis[3].

Estimated useful lives on depreciable assets are as follows:

Building and other structures	30-50 years
Land improvements	10-30 years
Miscellaneous machinery	10-20 years
Vehicles	6-12 years
Equipment, heavy	15-30 years
Equipment, light	5-15 years
Sewer lines and drainage channels	20-80 years

Costs incurred for capital construction and acquisition are carried in construction in progress until disposition or completion of the related projects. The major components of construction in progress are sewer lines,

[3] See Note 5 – Capital Assets – Plant, Lines, and Other Facilities

wastewater treatment and drainage facilities. Costs relating to projects not pursued are expensed, while costs relating to completed projects are capitalized as plant, lines and other facilities.

Capitalized Interest: In accordance with the provisions for regulated utility entities under GASB 62, MSD follows the practice of capitalizing the interest incurred as part of the cost of acquiring assets that are debt-financed for rate-making purposes. Total interest cost of $109,167,238 was incurred during the year, of which $7,463,578 was capitalized as a regulatory asset.

Prepaid Regulatory Assets: Capitalized interest is presented as a prepaid regulatory asset. MSD depreciates capitalized interest over forty years. Prepaid regulatory assets have a historical cost of $436,432,482. The carrying value, stated net of depreciation, was $287,022,342 as of June 30, 2022.

Impairment of Capital Assets: In accordance with GASB Statement No. 42, *Accounting and Financial Reporting for Impairment of Capital Assets and for Insurance Recoveries*, management evaluates prominent events or changes in circumstances affecting capital assets to determine whether impairment of a capital asset has occurred. Such events or changes in circumstances that may be indicative of impairment include evidence of physical damage, enactment or approval of laws or regulations, other changes in environmental factors, technology changes or evidence of obsolescence, changes in the manor of duration of use of a capital asset, and construction stoppage. A capital asset is generally considered impaired if both (a) the decline in service utility of the capital asset is large in magnitude and (b) the event or change in circumstance is outside the normal life cycle of the capital asset. No impairment losses were recognized in fiscal year 2022 or 2021.

Bonds Payable: Bonds payable are recorded at the principal amount outstanding, net of any applicable premium or discount[4].

Bonds outstanding, which have been refunded and economically defeased, are not included in long-term debt. The related assets are not included in investments. Any loss on refunding, which is the difference between the reacquisition price and the net carrying amount of the old debt, is deferred outflow of resources and amortized as a component of interest expense over the shorter of either 1) the original life of the refunded debt or 2) the life of the refunding debt.

MSD enters into interest rate swap agreements to modify interest rates on outstanding debt. MSD records the net interest expenditures resulting from these agreements and amortizes gains/losses resulting from the termination of these agreements until the original termination date of the agreement. The changes in fair value of derivative instruments that are classified as hedging derivative instruments are reported in the Statement of Net Position as deferred outflow of resources. Changes in fair value of investment derivative instruments are reported in non-operating revenue (expenses) on the Statement of Revenues, Expenses and Changes in Net Position[5].

Bond issue costs are capitalized and amortized over the life of the respective bond issue using the straight-line method, which approximates the effective interest method, pursuant to the election of regulatory operation under GASB 62, as they are deemed recoverable through future rates.

Original issue discounts and premiums on bonds are amortized as a component of interest expense using the straight-line method, which approximates the effective interest method, over the lives of the bonds to which they relate.

Compensated Absences: Vacation and personal pay benefits are accrued as accumulated and vested by MSD employees.

[4] See Note 7 – Long-Term Debt
[5] See Note 9 – Derivative Instruments.

Allocation of Overhead: MSD allocates overhead costs to its core business processes: operations and maintenance; design, construction and acquisition of plant lines and other facilities; and subsidiary business enterprises.

Use of Estimates: The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make assumptions and estimates that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

Income Tax Status: MSD is exempt from federal income tax under the Internal Revenue Code as a political subdivision of the Commonwealth of Kentucky.

Adoption of New Accounting Pronouncements: Effective July 1, 2021 MSD adopted the following GASB pronouncements and implementation guide:

- Statement No. 87*: Leases*
- Statement No. 89: *Accounting for Interest Cost Incurred before the End of a Construction Period.*
- Statement No. 92: *Omnibus 2020*
- Statement No. 93: *Replacement of Interbank Offered Rates*
- Statement No. 97: *Certain Component Unit Criteria, and Accounting and Financial Reporting for Internal Revenue Code Section 457 Deferred Compensation Plans—an amendment of GASB Statements No. 14 and No. 84, and a supersession of GASB Statement No. 32*
- Statement No. 98: *The Annual Comprehensive Financial Report*
- Implementation Guide No. 2019-3: *Leases*

GASB Statements No. 87, No. 89, No. 92, No. 93, No. 97, and No. 98 and Implementation Guide No. 2019-3 do not have a material impact on MSD's financial reporting.

Recent Accounting Pronouncements: GASB has issued additional guidance that is not yet effective. MSD is currently reviewing the provisions of the following GASB Statements and Implementation Guides to determine the impact of implementation in future periods.

- Statement No. 91: *Conduit Debt Obligations (fiscal 2023)*
- Statement No. 94: *Public-Private and Public-Public Partnerships and Availability Payment Arrangements (fiscal 2023)*
- Statement No. 96: *Subscription-based Information Technology Arrangements (fiscal 2023)*
- Statement No. 99: *Omnibus 2022*
- Statement No. 100: *Accounting Changes and Error Corrections—as an amendment of GASB Statement No. 62*
- Statement No. 101: *Compensated Absences*

Reclassifications: Prior period financial statement amounts have been reclassified to conform to current period presentation. These reclassifications had no effect on the changes in net position or total net position.

NOTE 2 – CASH DEPOSITS AND INVESTMENTS

A reconciliation of cash, cash equivalents and investments as shown on the Comparative Statement of Net Position for MSD follows:

(dollars in thousands)	June 30, 2022	June 30, 2021
Reported in Statements of Net Position:		
Cash and cash equivalents		
Unrestricted	$ 48,875	$ 79,281
Restricted - current	20,788	21,181
Restricted - noncurrent	2,191	1,524
Total cash and cash equivalents	71,854	101,986
Investments		
Unrestricted	69,754	28,124
Restricted - current	12,947	-
Restricted - noncurrent	78,140	81,406
Total investments	160,841	109,530
Total Cash, Cash Equivalents and Investments	$ 232,695	$ 211,516

The following comparative schedule presents the cash, cash equivalents and investments in MSD's portfolio at fair value with investment maturities and credit risk ratings from Moody's Investors Service.

June 30, 2022 *(dollars in thousands)*	Reported Value	Weighted Average Maturity in Years	Credit Rating
Commercial paper	$ 54,926	0.41	P-1
U.S. treasuries	67,533	0.43	Aaa
U.S. agency securities	16,594	1.41	Aaa
Municipal bonds	36,693	2.64	Aaa, Aa, A
Money market funds	23,252	0.07	Aaa
Repurchase agreement/cash	33,597	0.01	
Certificate of deposit	100	0.00	
Total cash, cash equivalents and investments	$ 232,695	4.27	
Accrued interest	$ 341		

June 30, 2021 *(dollars in thousands)*	Reported Value	Weighted Average Maturity in Years	Credit Rating
Commercial Paper	$ 24,996	0.21	P-1
U.S. treasuries	22,746	0.38	Aaa
U.S. agency securities	36,003	1.19	Aaa
Municipal bonds	40,685	2.38	Aaa, Aa, A
Money market funds	30,254	0.06	Aaa
Repurchase agreement/cash	56,732		
Certificate of deposit	100	0.00	
Total cash, cash equivalents and investments	$ 211,516	4.27	
Accrued interest	$ 231		

Section 66.480 of the Kentucky Revised Statutes and MSD's bond resolutions authorize MSD to invest money subject to its control in, among other securities, (i) obligations of the United States and of its agencies and instrumentalities, including obligations subject to repurchase agreements, (ii) certificates of deposit or other interest-bearing accounts of any bank or savings and loan institution which are insured by the Federal Deposit Insurance Corporation or, to the extent not so insured, collateralized by obligations described in clause (i) above, (iii) securities issued by a state or local government, or any instrumentality or agency thereof, in the United States, and rated in either of the two highest categories by a nationally recognized rating agency, and (iv) money market mutual funds investing in any of the securities described above.

Investments are made based upon prevailing market conditions at the time of the transaction with the intent to hold the instrument until maturity. With this strategy, investments would be expected to reach maturity with limited realized gains or losses. If the yield of the portfolio can be improved upon by the sale of an investment, prior to its maturity, with the reinvestment of the proceeds, then this provision is also allowed.

Risks: *Concentration of Credit Risk:* MSD's Investment Policy (the Policy) requires that investments be diversified to eliminate the risk of loss resulting from over-concentration of assets in a specific maturity, a specific issuer, or a specific class of securities. Section 4.4.1 of the Policy limits the amount of money invested at any time in one or more categories of the investments authorized by KRS 66.480 1e, 1f, 1g, and 1i shall not exceed 20% of the total amount invested. MSD was in compliance with its investment policy at June 30, 2022 and 2021.

Interest Rate Risk: MSD minimizes interest rate risk by structuring the investment portfolio so that securities mature to meet cash requirements for ongoing operations, thereby avoiding the need to sell securities on the open market prior to maturity. The weighted average maturity in years represents the interest rate risk for MSD.

Custodial Credit Risk: This is the risk that, in the event of the failure of the counterparty, MSD would not be able to recover the value of its investments or collateral securities that are in the possession of an outside party. The collateral provided by financial institutions is considered adequate to cover all balances in excess of limits set forth by the Federal Deposit Insurance Corporation. All of MSD's investments are held by MSD or in the name of MSD by a Trustee.

Foreign Currency Risk: This risk relates to any potential adverse effects on the fair value of an investment from changes in exchange rates. MSD did not hold any foreign currency as of June 30, 2022 and 2021.

Fair Value Measurement: GASB 72 requires MSD to disclose how we measure the fair value of investments and the underlying valuation techniques. Debt and equity securities classified in Level 1 of the fair value hierarchy are valued using prices quoted in active markets for these securities or repurchase agreements. Debt securities classified in Level 2 of the fair value hierarchy are valued using a matrix pricing approach. Matrix pricing is used to value securities based on the securities' relationship to the benchmark quoted prices. A comparative statement of investments subject to fair value measurements and valuation techniques follows:

June 30, 2022 *(dollars in thousands)*	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total
Investments by fair value level:				
Commercial paper	$ -	$ 54,926	$ -	$ 54,926
U.S. treasuries	-	67,533	-	67,533
U.S. agencies	-	16,594	-	16,594
State and municipal obligations	-	36,693	-	36,693
Total investments by fair value level	$ -	$ 175,746	$ -	$ 175,746

June 30, 2021 *(dollars in thousands)*	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total
Investments by fair value level:				
Commercial paper	$ -	$ 24,996	$ -	$ 24,996
U.S. treasuries	-	22,746	-	22,746
U.S. agencies	-	36,003	-	36,003
State and municipal obligations	-	40,685	-	40,685
Total investments by fair value level	$ -	$ 124,430	$ -	$ 124,430

NOTE 3 - RESTRICTED CASH, CASH EQUIVALENTS, AND INVESTMENTS

MSD's General Bond Resolution sets a debt service reserve requirement equal to at least 10% of the face amount of all bonds issued under the resolution, 100% of the maximum aggregate net debt service in the current or any future fiscal year or 125% of the average aggregate net debt service in the current or any future fiscal year (the three-prong test). The General Bond Resolution allows, in lieu of cash and investments in that amount, a letter of credit or policy of bond insurance payable in the required amount. On June 26, 2019 MSD purchased a debt service reserve surety policy (the Reserve Policy) from Build America Mutual Assurance Company with a maximum policy limit of $75,000,000. The Reserve Policy terminates on May 15, 2048. Draws under the Reserve Policy may only be used to make payments of principal and interest on the bonds. Cash and investments in the debt service reserve funds shall be transferred to the debt service funds for payment of debt service on the bonds before any draw may be made on the Reserve Policy.

As of June 30, 2022, total assets restricted for debt service were $100,907,023, which included the debt service reserve of $80,320,673 and other debt service trust accounts of $20,586,350. Total assets restricted for construction were $13,158,729 which were comprised of unspent 2022A bond proceeds. Total assets restricted for the debt service reserve, together with the Reserve Policy, totaled $155,330,673. The lesser of the three-prong test as of June 30, 2022 was 125% of MSD's average annual aggregate net debt service, or $155,086,014.

As of June 30, 2021, total assets restricted for debt service were $104,110,840, which included the debt service reserve of $82,929,526 and other debt service trust accounts of $21,181,314. Total assets restricted for the debt service reserve, together with the Reserve Policy, totaled $157,929,526. The lesser of the three-prong test as of June 30, 2021 was 100% of the maximum aggregate net debt service in the current or any future fiscal year, or $151,252,519.

NOTE 4 - SCHEDULE OF NET POSITION

A comparative Schedule of Net Position follows:

(dollars in thousands)	June 30, 2022	June 30, 2021
Net investment in capital assets:		
Plant, lines and other facilities net of depreciation including capitalized interest	$ 3,580,027	$ 3,458,906
Outstanding debt that applies to plant, lines and other facilities	(2,739,232)	(2,674,370)
Unspent bond proceeds - construction	13,158	-
Accounts payable and accrued expenses (capital)	(30,464)	(46,237)
Deferred outflows and inflows of resources	26,827	24,549
Total	850,316	762,848
Restricted for:		
Assets restricted for debt service	100,907	104,111
Liabilities associated with restricted debt service	(16,300)	(19,682)
	84,607	84,429
Unrestricted net position	(11,891)	488
Total net position	$ 923,032	$ 847,765

NOTE 5 - CAPITAL ASSETS - PLANT, LINES AND OTHER FACILITIES

A comparative schedule of plant, lines and other facilities follows:

June 30, 2022 *(dollars in thousands)*	Beginning Balance	Transfers In/ Additions	Retirements / Reclassifications	Ending Balance
Capital assets:				
Sewer lines	$ 1,761,425	$ 308,916	$ -	$ 2,070,341
Wastewater treatment facilities	641,414	55,486	-	696,900
Drainage facilities	997,461	14,218	-	1,011,679
Pumping and lift stations	260,231	26,743	-	286,974
Administrative facilities	52,348	123	-	52,471
Maintenance facilities	14,301	276	-	14,577
Machinery and equipment	88,493	13,072	(703)	100,862
Miscellaneous	33,375	2,560	-	35,935
Total capital assets	3,849,048	421,394	(703)	4,269,739
Less accumulated depreciation and amortization:				
Sewer lines	(406,166)	(26,039)	-	(432,205)
Wastewater treatment facilities	(432,861)	(21,164)	-	(454,025)
Drainage facilities	(203,200)	(20,815)	-	(224,015)
Pumping and lift stations	(112,314)	(13,886)	-	(126,200)
Administrative facilities	(42,069)	(1,129)	-	(43,198)
Maintenance facilities	(7,360)	(366)	-	(7,726)
Machinery and equipment	(70,003)	(7,927)	693	(77,237)
Miscellaneous	(31,574)	(754)	-	(32,328)
Total accumulated depreciation/amortization	(1,305,547)	(92,080)	693	(1,396,934)
Construction in progress	625,113	136,301	(341,214)	420,200
Net capital assets	$ 3,168,614	$ 465,615	$ (341,224)	$ 3,293,005

Capital assets include non-depreciable assets for land related to all facilities and pumping and lift stations. The carrying value was $41,641,692 and $38,161,779 at June 30, 2022 and 2021 respectively.

June 30, 2021 *(dollars in thousands)*	Beginning Balance	Transfers In/ Additions	Retirements / Reclassifications	Ending Balance
Capital assets:				
Sewer lines	$ 1,746,706	$ 14,719	$ -	$ 1,761,425
Wastewater treatment facilities	627,902	13,512	-	641,414
Drainage facilities	880,863	116,598	-	997,461
Pumping and lift stations	256,229	4,207	(205)	260,231
Administrative facilities	52,297	51	-	52,348
Maintenance facilities	12,459	1,842	-	14,301
Machinery and equipment	89,137	1,652	(2,296)	88,493
Miscellaneous	32,129	1,246	-	33,375
Total capital assets	3,697,722	153,827	(2,501)	3,849,048
Less accumulated depreciation and amortization:				
Sewer lines	(383,297)	(22,869)	-	(406,166)
Wastewater treatment facilities	(412,741)	(20,120)	-	(432,861)
Drainage facilities	(183,231)	(19,969)	-	(203,200)
Pumping and lift stations	(98,378)	(13,936)	-	(112,314)
Administrative facilities	(40,918)	(1,151)	-	(42,069)
Maintenance facilities	(7,040)	(320)	-	(7,360)
Machinery and equipment	(65,414)	(6,884)	2,295	(70,003)
Miscellaneous	(30,649)	(925)	-	(31,574)
Total accumulated depreciation/amortization	(1,221,668)	(86,174)	2,295	(1,305,547)
Construction in progress	538,013	221,005	(133,905)	625,113
Net capital assets	$ 3,014,067	$ 288,658	$ (134,111)	$ 3,168,614

NOTE 6 - CAPITALIZED INTEREST

A comparative schedule of capitalized interest and net interest expense reported in non-operating expenses during the year:

(dollars in thousands)	June 30, 2022	June 30, 2021
Interest incurred	$ 95,764	$ 101,642
Less interest capitalization	(7,464)	(12,049)
Interest expense, net	$ 88,300	$ 89,593

A roll forward of net prepaid regulatory assets follows:

(dollars in thousands)	June 30, 2022	2021	2020
Net prepaid regulatory assets - beginning of year	$ 290,292	$288,690	$285,744
Additions	7,464	12,049	13,043
Amortization	(10,735)	(10,447)	(10,097)
Net prepaid regulatory assets - end of year	$ 287,021	$290,292	$288,690

NOTE 7 - LONG-TERM DEBT

A schedule of long-term debt outstanding at June 30, 2022 and 2021 follows.

June 30, 2022
(dollars in thousands)

Issue Description	Outstanding at Beginning of Year	Issued	Retired	Outstanding at End of Year	Payable Within One Year
Revenue bonds	$2,105,120	$ 471,555	$ 295,390	$2,281,285	$ 52,880
Unamortized premium/discount	74,817	30,454	17,221	88,050	-
Commercial paper notes	150,000	375,000	475,000	50,000	-
Bank notes	-	-	-	-	-
Other subordinate debt:					
General obligation bonds	11,629	-	855	10,774	880
SRF loans	32,462	8,448	912	39,998	988
Financing lease	2,030	-	160	1,870	170
Total	$2,376,058	$ 885,457	$ 789,538	$2,471,977	$ 54,918

June 30, 2021
(dollars in thousands)

Issue Description	Outstanding at Beginning of Year	Issued	Retired	Outstanding at End of Year	Payable Within One Year
Revenue bonds	$1,911,915	$ 337,065	$ 143,860	$2,105,120	$ 47,565
Unamortized premium/discount	74,458	18,072	17,713	74,817	-
Commercial paper notes	255,000	365,000	470,000	150,000	-
Bank notes	100	-	100	-	-
Other subordinate debt:					
General obligation bonds	12,453	-	824	11,629	855
SRF loans	15,818	17,860	1,216	32,462	802
Financing lease	2,180	-	150	2,030	160
Total	$2,271,924	$ 737,997	$ 633,863	$2,376,058	$ 49,382

Revenue Bonds: MSD's long-term revenue bonds are publicly issued under its General Bond Resolution adopted December 7, 1992, to pay at maturity program notes issued and outstanding as senior subordinated debt under the Program Note Resolution adopted June 25, 2018. Prior to 2018, MSD publicly issued revenue bonds to finance sewer and drainage projects. MSD has pledged all revenues to the payment of principal and interest on its outstanding revenue bonds. Pursuant to the General Bond Resolution, upon the occurrence of any event of default, holder or holders of twenty percent in principal amount or more of the bonds then outstanding may apply to a Judge in the Circuit Court of Jefferson County to appoint a trustee to represent all Bondholders and the trustee may declare all bonds due and payable. MSD has remedies available under the Resolution to cure the event of default even after all bonds are declared due and payable.

Federal tax regulations generally require the periodic payment to the U.S. Treasury of investment earnings on the proceeds of an issue of tax-exempt municipal bonds to the extent those earnings exceed the yield on the bonds. Such payments, known as arbitrage rebate, are normally payable every fifth year following the issuance of a Series of bonds and upon the retirement of the bond issue. MSD has arbitrage calculations performed as needed by an independent third party to comply with these regulations. As of June 30, 2022 and 2021, MSD's accrued liability for arbitrage rebate was $21,378 and $773,553, respectively. During fiscal year 2022, MSD paid $770,367 for arbitrage rebate related to the 2011A bond issue. There is currently no arbitrage rebate accruing in relation to the 2011A bonds.

A debt service coverage ratio covenant has been established under the 1992 General Bond Resolution. MSD was in compliance with the ratio covenant as of June 30, 2022 and 2021.

Fiscal Year 2022 Significant Debt Transactions: On March 25, 2020, MSD entered into a Forward Delivery Bond Purchase agreement to refund $243,910,000 of the Series 2011A bonds. Under the terms of the agreement, MSD authorized the issuance, on a direct placement, forward delivery basis, of its sewer and drainage system revenue refunding bonds, Series 2021A in the amount of $246,555,000. The bonds were dated and delivered on August 17, 2021. Under the terms of a continuing covenant agreement for the 2021A bonds, if an event of default occurs the purchaser may declare the outstanding amount of principal and interest on the bonds to be immediately due and payable. The refunding reduces debt service payments by $56,554,774 beginning in 2022 through 2034 which results in a net present value savings of $45,575,104.The net loss on refunding was $2,421,948. The final maturity of Series 2021A bonds is May 15, 2034.

On February 1, 2022, MSD issued $225,000,000 of Climate Bond Certified revenue bonds, Series 2022A. The proceeds of the Series 2022A bonds were used: (i) together with other available funds of the District, to pay at maturity, redeem, and refund program notes issued and outstanding as senior subordinated debt under the resolution and MSD's program note resolution, the proceeds of which were used for the purpose of financing the cost of capital improvements and additions to MSD's sewer and drainage system and refinancing other program notes previously used under the program note resolution and (ii) to pay the costs of issuance of the Series 2022A bonds. The net premium received on the Series 2022A bonds was $23,821,123. The final maturity of Series 2022A bonds is May 15, 2052.

Fiscal Year 2021 Significant Debt Transactions: On July 30, 2020, MSD issued $225,000,000 of revenue bonds, Series 2020A. The proceeds of the Series 2020A bonds were used (i) to pay at maturity, redeem, and refund program notes issued and outstanding as senior subordinated debt under the resolution and MSD's program note resolution, the proceeds of which were used for the purpose of financing the cost of capital improvements and additions to MSD's sewer and drainage stem and refinancing other program notes previously used under the program note resolution and (ii) to pay the costs of issuance of the Series 2020A bonds. The final maturity of Series 2020A bonds is May 15, 2050.

On September 22, 2020 MSD sold $112,065,000 of its taxable sewer and drainage system revenue refunding bonds Series 2020C. The proceeds of the Series 2020C bonds were used: (i) together with other available funds of the District, to advance refund and redeem on May 15, 2023, MSD's sewer and drainage system revenue refunding bonds, Series 2013C maturing on and after May 15, 2024 and (ii) to pay the costs of issuance of the Series 2020C bonds. The proceeds of the prior bonds were used to pay the costs of capital improvements and additions to MSD's sewer and drainage system. The sale of the Series 2020C bonds closed on October 15, 2020. The refunding reduces debt service payments over the next twenty four years by $26,590,053 which is a net present value savings of $18,675,198. The final maturity of Series 2020C bonds is May 15, 2044.

Proceeds of the Series 2020C bonds were deposited in an escrow account at the Bank of New York Mellon and will be used to redeem the Series 2013C bonds at maturity. As of June 30, 2022, the amount outstanding on the refunded portion of the Series 2013C bond is $98,875,000 maturing on May 13, 2023. The refunded portion of the Series 2013C bonds is considered legally defeased. As such, the escrow accounts' assets and liabilities for the defeased bonds are not included in MSD's financial statements.

On March 15, 2021 MSD issued under the General Bond Resolution, to the United States Environmental Protection Agency (EPA), its sewer and drainage system revenue bonds, Series 2020B, in the principal amount of $96,126,000. The Series 2020B bonds evidence a loan from the EPA to MSD under the federal Water Infrastructure Finance and Innovation Act (WIFIA) for the purpose of financing the costs of constructing the Morris Forman Water Quality Treatment Center Biosolids Processing project. MSD's loan agreement with the EPA prohibits MSD from incurring additional debt without the permission of the EPA if a payment default has occurred and is continuing under the WIFIA loan agreement. As of June 30, 2022, no draws on this loan have been made.

A comparative schedule of revenue bonds payable at June 30, 2022 and 2021 follows:

(dollars in thousands)

Revenue Bonds	Original Issue Amount	Interest Rates	Final Payment In	Outstanding as of June 30: 2022	2021
2009C Series Revenue Bonds	180,000	5.98%	2040	180,000	180,000
2010A Series Revenue Bonds	330,000	6.25%	2043	330,000	330,000
2011A Series Revenue Bonds	263,360	3.00% - 5.00%	2034	-	243,910
2013A Series Revenue Bonds	115,790	4.00%	2036	115,790	115,790
2013B Series Revenue Bonds	119,515	4.00% - 5.00%	2038	109,280	110,970
2013C Series Revenue Bonds	100,000	3.00% - 5.00%	2023	125	250
2014A Series Revenue Bonds	80,000	4.00% - 5.00%	2045	79,650	79,700
2015A Series Revenue Bonds	175,000	3.125% - 5.00%	2046	171,395	172,175
2015B Series Revenue Bonds	81,750	2.63% - 5.00%	2038	65,975	68,815
2016A Series Revenue Bonds	150,000	3.00% - 5.00%	2047	147,500	148,415
2016B Series Revenue Bonds	28,315	2.00% - 5.00%	2036	19,910	21,960
2016C Series Revenue Bonds	67,685	5.00%	2023	12,995	32,305
2017A Series Revenue Bonds	175,000	3.00% - 5.00%	2048	149,390	155,790
2017B Series Revenue Bonds	35,725	5.00%	2025	31,210	32,055
2018A Series Revenue Bonds	60,380	4.00%	2038	60,380	60,380
2019A Series Revenue Bonds	30,910	5.00%	2023	8,845	17,065
2020A Series Revenue Bonds	225,000	2.00% - 5.00%	2050	224,000	224,750
2020C Series Revenue Bonds	112,065	0.29% - 2.65%	2044	109,605	110,790
2021A Series Revenue Bonds	246,555	2.22%	2034	240,485	-
2022A Series Revenue Bonds	225,000	2.63% - 5.00%	2052	224,750	-
Total revenue bonds				2,281,285	2,105,120
Add: unamortized premium/discount				88,050	74,817
Total bonds payable				2,369,335	2,179,937
Less: current maturities				(52,880)	(47,565)
Total bonds payable, long term portion				$ 2,316,455	$ 2,132,372

A schedule of future revenue bond debt service requirements after June 30, 2022 follows:

(dollars in thousands)		Revenue Bonds	
	Principal	Interest	Total
Year Ending June 30,			
2023	52,880	91,740	144,620
2024	52,375	89,506	141,881
2025	55,670	87,391	143,061
2026	56,180	85,106	141,286
2027	74,465	82,901	157,366
2028-2032	278,240	382,689	660,929
2033-2037	454,560	339,689	794,249
2038-2042	611,780	231,098	842,878
2043-2047	565,440	80,150	645,590
2048-2052	79,695	15,471	95,166
	$ 2,281,285	$ 1,485,741	$ 3,767,026

A comparative summary of current and long-term revenue bond activity follows:

(dollars in thousands)	June 30,	
	2022	2021
Revenue bonds - beginning of year	$ 2,105,120	$ 1,911,915
Bonds issued	471,555	337,065
Principal paid on bonds	(51,480)	(44,985)
Bond refunding	(243,910)	(98,875)
Revenue bonds - end of year	$ 2,281,285	$ 2,105,120

Commercial Paper and Bank Notes: On June 25, 2018, the MSD Board adopted a Program Note Resolution authorizing the issuance of one or more Series of sewer and drainage system subordinated program notes in an aggregate principal amount not to exceed $500,000,000 for the purpose of financing eligible sewer and drainage projects and to refund program notes or subordinate lien bond anticipation notes. Program notes issued under the Program Note Resolution are subordinate and junior in all respects to revenue bonds issued under the General Bond Resolution. Program notes are issued as senior subordinated debt secured on a parity with the bond anticipation notes[6].

MSD has issued two subseries of commercial paper notes under the Program Note Resolution: Series 2018A-1 with a maximum outstanding of $250,000,000 and Series 2018A-2 with a maximum outstanding of $250,000,000. Commercial paper notes may be issued and sold, at public or private sale, as taxable or tax-exempt notes, maturing in 270 days or less (but in any event not later than June 30, 2023) as determined by MSD, and bearing interest at a rate not in excess of 12% per annum for taxable notes or 10% per annum for tax-exempt notes. Commercial paper notes are payable only from (i) proceeds of the sale of other commercial paper notes issued under the Program Note Resolution and used to refund outstanding commercial paper

[6] See Note 8 – Bond Anticipation Notes.

notes, (ii) the proceeds of direct purchase notes or other loans used to refund outstanding commercial paper notes, and (iii) the proceeds of revenue bonds issued to pay outstanding commercial paper notes.

Liquidity support for the Commercial Paper Series 2018A-1 is provided by Bank of America, N.A (BANA) pursuant to a Revolving Credit Agreement dated July 1, 2018 and amended December 22, 2020. BANA has provided a commitment of $250,000,000 for the payment of the principal of and interest on the Series 2018A-1 notes. MSD and BANA entered into a Note Purchase Agreement dated July 1, 2018 and amended December 22, 2020 providing for the purchase of direct purchase notes by BANA up to the aggregate principal amount of $250,000,000. The BANA Revolving Credit Agreement and the BANA Note Purchase Agreement limit the aggregate principal amount of commercial paper notes Series 2018A-1 and the BANA direct purchase notes to $250,000,000. Merrill Lynch, Pierce, Fenner & Smith Inc. is acting as the dealer for Series 2018A-1 notes.

Liquidity support for the Commercial Paper Series 2018A-2 is provided by JPMorgan Chase Bank (JPMCB) pursuant to a revolving credit agreement dated July 1, 2018 and amended December 22, 2020. JPMCB has provided a commitment of $250,000,000 for the payment of the principal of and interest on the Series 2018A-2 notes. MSD and JPMCB entered into a Note Purchase Agreement dated July 1, 2018 and amended December 22, 2020 providing for the purchase of direct purchase notes by JPMCB up to the aggregate principal amount of $250,000,000. The JPMCB Revolving Credit Agreement and the JPMCB Note Purchase Agreement limit the aggregate principal amount of commercial paper notes Series 2018A-2 and the JPMCB direct purchase notes to $250,000,000. J.P. Morgan Securities is acting as the dealer for Series 2018A-2 notes.

Upon the occurrence of any special event of default under the Revolving Credit Agreements and Note Purchase Agreements, the commitment shall immediately terminate with respect to all commercial paper notes and the banks shall have no obligation to make any loan or to fund any outstanding commercial paper note. Upon the occurrence of an event of default that is not a special event of default, the banks may, by notice to MSD, terminate the commitment, if any (except as provided below), deliver a notice of no-issuance to MSD and to the Issuing and Paying Agent directing the Issuing and Paying Agent to cease issuing all commercial paper notes. The available commitment shall immediately be reduced to the then outstanding principal amount of commercial paper notes plus the amount of interest to accrue on such notes and the available commitment shall be further reduced in a similar manner when commercial paper notes mature provided the commitment does not terminate, and the right of the bank to accelerate the maturity of the note and the loans shall not affect the obligation of the bank to make loans in aggregate principal amount equal to the commitment to the extent necessary for MSD to make required payments of principal on the commercial paper notes issued and sold prior to the date upon which the notice of no-issuance is received by the Issuing and Paying Agent; provided further that if any loans are made that would not have been made but for the application of the preceding provision, such loans shall be immediately due and payable on the date such loans are made.

Moody’s Investors Service and Standard and Poor’s Ratings Services assigned ratings of P-1 and A-1+, respectively, to the commercial paper notes on June 29, 2018.

Commercial paper notes of $50,000,000 were outstanding as of June 30, 2022 in accordance with the respective Revolving Credit Agreements. Interest rates on the notes outstanding ranged from 0.77% to 1.59% and maturities ranged from 14 to 95 days.

The following tables summarize the outstanding and available balance of the commercial paper program for the years ended June 30, 2022 and 2021:

June 30, 2022
(dollars in thousands)

Issue Description	Authorized Amount	Amount Outstanding	Unissued Portion
Series 2018A-1	$ 250,000	$ 20,000	$ 230,000
Series 2018A-2	250,000	30,000	220,000
Total	$ 500,000	$ 50,000	$ 450,000

June 30, 2021
(dollars in thousands)

Issue Description	Authorized Amount	Amount Outstanding	Unissued Portion
Series 2018A-1	$ 250,000	$ 75,000	$ 175,000
Series 2018A-2	250,000	75,000	175,000
Total	$ 500,000	$ 150,000	$ 350,000

MSD has classified all outstanding commercial paper notes as long-term debt in accordance with GASB 62 as it intends to redeem the notes with the proceeds of long-term revenue bonds.

The following tables summarize transactions of the commercial paper program for the years ended June 30, 2022 and 2021:

June 30, 2022
(dollars in thousands)

Issue Description	Outstanding Notes at Beginning of Year	Notes Issued	Notes Retired	Outstanding Notes at End of Year	Payable Within One Year
Series 2018A-1	$ 75,000	$ 195,000	$ 250,000	$ 20,000	$ -
Series 2018A-2	75,000	180,000	225,000	30,000	-
Total	$ 150,000	$ 375,000	$ 475,000	$ 50,000	$ -

June 30, 2021
(dollars in thousands)

Issue Description	Outstanding Notes at Beginning of Year	Notes Issued	Notes Retired	Outstanding Notes at End of Year	Payable Within One Year
Series 2018A-1	$ 155,000	$ 205,000	$ 285,000	$ 75,000	$ -
Series 2018A-2	100,000	160,000	185,000	75,000	-
Total	$ 255,000	$ 365,000	$ 470,000	$ 150,000	$ -

General Obligation Bonds: MSD merged with the OCEA on June 30, 2020. Oldham County previously issued its County of Oldham general obligation bonds Series 2009, Series 2014, and general obligation Series 2017 refunding bonds, the proceeds of which financed the costs of various improvements to the sanitary sewer system owned by OCEA. The balance of the bonds outstanding as of June 30, 2022 and June 30, 20221 was $10,774,113 and $11,628,805, respectively. MSD agreed to support Oldham County's payment of debt service for the supported bonds subject to the terms of an Assistance Agreement dated June 30, 2020. Upon the occurrence of an uncured event of default under the Assistance Agreement, Oldham County is entitled to exercise any and all remedies available at law or in equity.

A comparative summary of current and long-term general obligation bond activity follows:

(dollars in thousands)

General Obligation Bonds	Original Issue Amount	Interest Rates	Final Payment In	Outstanding as of June 30: 2022	2021
2009 Series general obligation bonds	7,335	2.00% - 4.00%	2023	400	785
2017 Series general obligation bonds	3,750	2.08%	2030	3,364	3,399
2014 Series general obligation bonds	9,790	3.00% - 3.20%	2035	7,010	7,445
Total general obligation bonds				10,774	11,629
Less: current maturities				(880)	(855)
Total bonds payable, long term portion				$ 9,894	$ 10,774

State Revolving Fund Loans: MSD utilizes funding provided through the Kentucky Infrastructure Authority's (KIA) State Revolving Fund (SRF). The SRF financing program provides low interest loans for infrastructure projects that are considered a priority based on the water pollution control criteria outlined in the Clean Water Act. MSD's SRF loans are considered direct placement debt and carry interest rates ranging between 1.75% and 3.8%. Under the assistance agreements entered into with the KIA, upon the occurrence and continuance of any event of default, the Authority may declare all payments due at a default rate of 8%. Additionally, when an event of default occurs and is continuing, the Authority can declares all payments due, exercise all rights and remedies, take legal action to enforce its rights under the agreement, and submit a formal referral to the appropriate federal agency.

Fiscal Year 2022 Significant SRF Transactions: On July 1, 2021, the KIA approved an increase to loan A17-028 in the amount of $1,100,000 to fund additional work eliminating a pump station and increasing pipe diameter to facilitate future regionalization opportunities in Oldham County. The new total loan amount is

$7,400,000. Interest is payable semiannually at a fixed rate of 1.75% per annum commencing after funds are first drawn on the loan. The loan shall be repaid over a period not to exceed 20 years from the date of initiation of operation for the project. No draws were made in fiscal year 2022 or 2021.

On July 1, 2021, the KIA approved loan A20-040 for the lift station rehabilitation, renovation and replacement project. This project will rehabilitate or replace three lift stations at Club Drive, Cliffwood Drive and Cardinal Harbor in Oldham County. The total amount of the loan shall not exceed $2,944,345. Interest is payable semiannually at a fixed rate of 1.0% per annum commencing after funds are first drawn on the loan. The loan shall be repaid over a period not to exceed 20 years from the date of initiation of operation for the project. No draws have been made as of June 30, 2022.

MSD entered into an assistance agreement with the KIA on November 30, 2021, as part of its acquisition of BCSD, to assume three existing SRF loans, B10-01 in the amount of $500,000, B10-04 in the amount of $500,000, and B15-006 in the amount of $87,000, extended to the BCSD with total outstanding principal in the amount of $623,136. These loans financed various sewer system infrastructure projects in the BCSD service area. These loans are for completed projects and principal repayment has begun. Interest will be paid semiannually at fixed rates ranging from 1.75% to 3.00% per annum. The loans will be repaid according to the original amortization schedule with final maturity of the last loan being December 1, 2037.

MSD entered into an assistance agreement with the KIA on June 27, 2022 for SRF loan A21-022 in an amount not to exceed $8,270,000 to finance the rehabilitation or replacement of several sewer pump stations. Interest will be payable semiannually at a fixed rate of 2.5% per annum commencing after funds are first drawn on the loan. The loan will be repaid over a period not to exceed 20 years from the date the project is placed in operation. No draws have been made as of June 30, 2022.

As of June 30, 2022, MSD has expended $24,200,000 in eligible project costs for loan number A19-028. $22,917,697 has been drawn and the remainder will be drawn in fiscal year 2023.

As of June 30, 2022, MSD has expended $2,695,235 in eligible project costs for loan number A19-015. The project is complete.

Fiscal Year 2021 Significant SRF Transactions: On March 5, 2021, KIA approved loan number A21-022 for $8,270,000 to rehabilitate or replace several sewer pump stations

As of June 30, 2021, MSD had expended $24,200,000 in eligible project costs for loan number A19-028. $17,788,487 has been drawn.

As of June 30, 2021, MSD had expended $1,690,760 in eligible project costs for loan number A19-015.

At June 30, 2022 and 2021 MSD had the following SRF direct placement debt outstanding:

June 30, 2022 *(dollars in thousands)* Loan Number	Loan Amount	Drawn Amount	Interest Rate	Final Payment In	Outstanding at end of Year
A09-41	2,395	2,395	3.00%	2033	1,434
A10-04	2,843	2,843	2.00%	2033	1,702
A10-05	1,000	1,000	3.00%	2033	622
A10-06	121	121	2.00%	2033	70
A10-07	2,538	2,538	2.00%	2034	1,581
A11-15	671	671	2.00%	2033	402
A12-29	6,500	6,500	1.75%	2037	4,932
A17-028	7,400	2,013	1.75%	*	2,084
A18-010	1,116	1,116	1.75%	2040	1,045
A19-015	3,870	2,695	2.00%	2042	2,640
A19-028	24,200	22,918	2.00%	**	22,918
B10-01	500	500	3.00%	2030	236
B10-04	500	500	3.00%	2031	262
B15-006	87	87	1.75%	2038	70
Total loans payable					39,998
Less: current maturities					(988)
Total long-term loans payable, long term portion					$ 39,010

* Loan is partially drawn. Final payment will be 20 years following project completion currently scheduled for FY23.
**Loan is partially drawn. Final payment will be 20 years following project completion currently scheduled for FY23.

June 30, 2021
(dollars in thousands)

Loan Number	Loan Amount	Drawn Amount	Interest Rate	Final Payment In	Outstanding at end of Year
A98-04	6,498	6,498	3.80%	2021	-
A09-41	2,395	2,395	3.00%	2033	1,548
A10-04	2,843	2,843	2.00%	2033	1,839
A10-05	1,000	1,000	3.00%	2033	670
A10-06	121	121	2.00%	2033	76
A10-07	2,538	2,538	2.00%	2034	1,703
A11-15	671	671	2.00%	2033	434
A12-29	6,500	6,500	1.75%	2037	5,228
A17-028	6,300	2,013	1.75%	*	2,084
A18-010	1,116	1,116	1.75%	2040	1,092
A19-028	24,200	17,788	2.00%	**	17,788
Total loans payable					32,462
Less: current maturities					(802)
Total long-term loans payable, long term portion					$ 31,660

* Loan is partially drawn. Final payment will be 20 years following project completion currently scheduled for FY23.
**Loan is partially drawn. Final payment will be 20 years following project completion currently scheduled for FY22.

KACO Financing Lease: Oldham County Fiscal Court, on behalf of OCEA, previously entered into a lease financing obligation with the Kentucky Association of Counties Leasing Trust in the amount of $4,000,000 at an interest rate of 4.94% to finance various treatment facilities. MSD entered into a sublease agreement with the County of Oldham Kentucky, as part of its merger with OCEA, on June 30, 2020 to make the remaining lease rental payments when due. In the event of default, the sublessor may by written notice, take possession of the project, sell or lease the project, or exercise any remedy available to it under applicable law. At June 30, 2022 and 2021, the remaining principal balance is $1,870,000 and 2,030,000, respectively. Final maturity is in 2031.

Line of Credit: MSD secured an uncommitted $25,000,000 line of credit in October 2015. As of June 30, 2022 and 2021 MSD does not owe anything on its line of credit. There was no activity on the line of credit in fiscal year 2022 or 2021.

NOTE 8 – BOND ANTICIPATION NOTES

MSD issues bond anticipation notes (BAN) under its Subordinated Bond Resolution adopted April 26, 2010. Bonds issued under the Subordinated Resolution are subordinate to bonds issued under the General Bond Resolution, at parity with revenue debt issued under the Program Note Resolution, and superior to all other revenue debt of the district. Pursuant to the Subordinated Resolution, upon the occurrence and continuance of any event of default, the paying agent may or the holders of more than fifty percent in principal amount of outstanding notes may, by notice delivered to MSD, declare the principal and interest of all notes immediately due and payable. MSD has remedies under the resolution to cure the event of default and annul the declaration of acceleration.

MSD first publicly offered and issued a $226,340,000 BAN to partially refund its then outstanding sewer and drainage system revenue bonds, Series 1999A and a portion of its Series 1997A and 1998A revenue bonds on August 19, 2009. The BAN has been reissued annually. Under GASB 62, the BAN is considered a non-current liability because MSD intends to replace the Series 2021 BAN with a new BAN in October 2022 which will extend the debt to October 2023. Total BAN outstanding at June 30, 2022 and June 30, 2021 was $226,340,000 and $226,340,000, respectively. MSD's plan is to continue to reissue the BAN annually and amortize the BAN principal over the same period as Series 1999A bonds.

Fiscal Year 2022 Significant Debt Transactions: On September 30, 2021, MSD sold $226,340,000 of sewer and drainage system subordinated BAN, Series 2021 with a coupon rate of 3.00% and an effective interest rate of 0.104%. The proceeds of the notes were used to (i) refund the 2020 notes at maturity on October 20, 2021 and (ii) to pay the costs of issuance of the Series 2021 notes. The 2021 notes closed on October 12, 2021 and mature on October 14, 2022.

Fiscal Year 2021 Significant Debt Transactions: On September 22, 2020, MSD sold $226,340,000 of sewer and drainage system subordinated BAN, Series 2020 with a coupon rate of 5.00% and an effective interest rate of 0.228%. The proceeds of the notes were used to (i) refund the 2019 notes at maturity on October 23, 2020 and (ii) to pay the costs of issuance of the Series 2020 notes. The 2020 notes closed on October 14, 2020 and mature on October 20, 2021.

A summary of changes in the BAN in fiscal years 2022 and 2021 follows:

June 30, 2022
(dollars in thousands)

Issue Description	Outstanding at Beginning of Year	Issued	Retired	Outstanding at End of Year	Payable Within One Year
2020 Bond anticipation note	$ 226,340	$ -	$ 226,340	$ -	$ -
2021 Bond anticipation note	-	226,340	-	226,340	226,340
Total	$ 226,340	$ 226,340	$ 226,340	$ 226,340	$ 226,340

June 30, 2021
(dollars in thousands)

Issue Description	Outstanding at Beginning of Year	Issued	Retired	Outstanding at End of Year	Payable Within One Year
2019 Bond anticipation note	$ 226,340	$ -	$ 226,340	$ -	$ -
2020 Bond anticipation note	-	226,340	-	226,340	226,340
Total	$ 226,340	$ 226,340	$ 226,340	$ 226,340	$ 226,340

NOTE 9 – DERIVATIVE INSTRUMENTS

At June 30, 2022, MSD had the following two interest rate derivative instruments outstanding:

(dollars in thousands)

Derivative Instrument	Type	Objective	Counterparty	Original Notional	Notional Amount 6/30/2022	Effective Date	Termination Date	Terms
A	Pay-fixed interest rate swap	Hedge interest rate risk on Series 2020 BAN	Wells Fargo, N.A.	$ 180,716	$ 180,716	6/15/2013	5/15/2033	Pay 4.4125% Receive 67% USD-LIBOR -BBA
B	Pay-fixed interest rate swap	Hedge interest rate risk on Series 2020 BAN	Bank of America, N.A.	56,433	45,179	11/16/2009	5/15/2033	Pay 4.4125% Receive 67% USD-LIBOR -BBA
				237,149	225,895			

MSD originally entered into interest rate swaps as a hedging derivative instrument in anticipation of refinancing the 1999 Series bonds at their call date. Two swaps remain in the portfolio to lower interest rate risk associated with the BAN[7]. The hedgeable item is interest rate risk associated with the expected future issuance of fixed-rate BAN. The BAN are expected to be reissued every year. The swaps are structured so that the notional amounts of the swaps decrease over time corresponding with the planned amortization of the BAN principal.

Interest rate swaps are classified as hedging derivative instruments if they meet the criteria outlined in GASB 53 or as investment derivative instruments if they do not. MSD has designated its interest rate swaps as hedging derivatives under GASB 53 as of July 1, 2019. At June 30, 2022, MSD's interest rate derivatives are effective cash flow hedges and were classified as hedging derivatives in its financial statement. The fair value of the at-market portion, the hedging derivative, is reported as other assets and deferred inflows if positive and other liabilities and deferred outflows if negative on the Statement of Net Position. The difference between the fair value of the at-market hedging derivatives and the fair value of the interest rate swaps is reported as investment derivatives on the Statement of Net Position. All changes in fair value of the derivatives are recorded as a separate component of non-operating revenue (expense).

[7] See Note 8 – Bond Anticipation Notes

Both swaps have termination dates of May 15, 2033. Payments are due on the fifteenth of each month. MSD receipt terms are 67% of the 30-day London Inter-Bank Offered Rate (LIBOR). A comparative summary of the change in fair value of the swaps for the years ended June 30, 2022 and 2021 follows:

(dollars in thousands)	June 30, 2022	2021
Fair value - beginning of year	$ (72,384)	$ (93,455)
Change in fair value	31,151	21,071
Fair value - end of year	$ (41,233)	$ (72,384)

Fair values at June 30, 2022 for the non-credit adjusted, at-market portion of the derivatives follows:

(dollars in thousands)	June 30, 2022	
Derivatives (at-market)	Clean	Accrued
1999-1 - $180.7M 67% LIBOR fixed payer	$ (8,980)	$ (18)
1999-2 - $56.4M 67% LIBOR fixed payer	(2,244)	(5)
Total	$ (11,224)	$ (23)

Classification at June 30, 2022 of the at-market portion and investment portion of the derivatives follows:

(dollars in thousands)	Changes in Fair Value		Fair Value as of June 30, 2022		
Governmental Activties	Classification	Amount	Classification	Amount	Notional
Cash flow hedges:					
Pay-fixed interest rate swaps	Deferred outflows	$ -	Other liabilities	$ (40,914)	$ 225,895
			Accrued interest	(319)	
				$ (41,233)	
Investment derivatives:					
Pay-fixed interest rate swaps	Non-operating expenses	(40,914)			
		$ (40,914)			

Valuation Techniques: The fair values of the interest rate swaps were estimated using the zero-coupon method. This method calculates the future net settlement payments required by the swap, assuming that the current forward rates implied by the yield curve correctly anticipate future spot interest rates. These payments are then discounted using the spot rates implied by the current yield curve for hypothetical zero-coupon bonds due on the date of each future net settlement on the swaps.

Non-performance risk was measured using credit spreads implied by the credit rating for debt issues by entities with similar credit characteristics. This is the best method available under current market conditions since MSD has no credit default swaps that actively trade in the marketplace. For a derivative asset, the adjustment for non-performance risk of counterparties is determined by analyzing counterparty-specific credit default swaps, if available. If not available, credit default swaps in the market for entities of similar type and rating are used with information found in various public and private information services. This analysis is used to construct a credit curve that is applied to the discount curve on the net settlement payments of the derivative. A level two

(2) category hierarchy was employed for fair valuation measurement. The positive and negative fair values of the swap agreements were provided by a third-party financial advisor.

Risks: *Credit Risk* - MSD has implemented steps to safeguard it against the risks associated with the aforementioned swap transactions. If the swap counterparties do not maintain A1/A+ ratings from Moody's Investors Service and Standard and Poor's Rating Service, the swaps contain provisions that require them to be marked to market weekly with monthly statements sent to MSD and the value will be collateralized with U.S. Treasury and Agency securities with the securities held by a tri-party custodian approved by MSD. All costs of collateralization will be borne by the downgraded party who must post the collateral. In addition, the swaps were awarded to multiple firms to further mitigate the credit risk associated with the transactions.

The credit ratings as of June 30th, 2022 for the swap counterparties are as follows:

	Credit Ratings	
	Moody's	Standard & Poor's
Bank of America, N.A.	P-1	A-1
Wells Fargo Bank, N.A.	P-1	A-1+

The agreements also provide for automatic termination if MSD's unenhanced bond rating is downgraded below BBB/Baa. MSD's obligations under all of its outstanding swap agreements are unsecured and subordinate to all bonds issued and outstanding.

The credit adjusted at-market portion, the accrued interest portion and off-market fair value of derivative instruments A and B are in liability positions of $11,224,465, $319,756 and $29,689,130, respectively, at June 30, 2022. The aggregate fair value is negative $41,233,351 (gross of implied note outstanding balance as of June 30, 2022). This represents the maximum loss that would be recognized at the reporting date if one or both swap counterparties failed to perform as contracted. There is no posted collateral to net against the aforementioned fair value.

The contracts for derivative instruments A and B are held by Wells Fargo, N.A. and Bank of America, N.A., respectively, and comprise 100% of the net exposure to credit risk.

Termination Risk - Termination risk is generally referred to as the risk that a derivative instrument could be terminated causing MSD to owe a termination payment as a result of any of several events, which may include: a ratings downgrade of the swap counterparty; covenant violations by either party; bankruptcy of either party; a swap payment default of either party; and other default events as defined by the derivative instrument. Any such termination may require MSD to make significant termination payments in the future. The approximate amount of termination payment that MSD would have to pay if each of the derivative instruments were terminated on June 30, 2022 is approximately $41,233,351. It should be noted that this is the non-credit adjusted (non GASB 72) mark-to-market valuation as of last business day of the fiscal year. The provisions of the agreements related to each derivative instrument allow for the offset of certain reimbursable costs related to the termination process.

To further mitigate the effect of termination risk relative to derivative instruments A and B, the agreements contain certain safeguards which include (i) collateral posting requirements as discussed in the preceding Credit Risk section and (ii) except for certain types of termination events there is no automatic early termination.

Derivative instruments A and B may be terminated, if the underlying rating of MSD's obligations that are subject to annual appropriation falls below "BBB" from Standard and Poor's Ratings Service or below "Baa2" from Moody's Investors Service.

While there is no optional termination language in the confirmations of derivative instruments A and B, Wells Fargo, N.A. and Bank of America, N.A., respectively, may accommodate MSD to terminate the derivative instruments early, subject to credit approval.

If, at the time of termination, a swap has a negative fair value, MSD could be liable to the counterparty for a payment equal to the derivative instrument's fair value. If any of the derivative instruments are terminated, either the associated variable rate bonds would no longer be hedged with a synthetic fixed interest rate or the nature of the basis risk associated with the derivative instrument may change. As of June 30, 2022, MSD is not aware of any pending event that would lead to a termination event with respect to any of its existing derivative instruments, which are in force and effect as of such date.

Basis Risk – Each of the derivative instruments is associated with certain debt obligations. The debt associated with each of the derivative instruments pays interest at variable interest rates. MSD receives variable payments under the derivative instrument. To the extent these variable payments are not equal to the variable interest payments on the associated debt there may be either a net loss or net benefit to MSD. The net swap payments made by MSD in fiscal year 2022 and fiscal year 2021 were $9,501,841 and $9,792,937, respectively.

Rollover Risk – Rollover risk occurs when the term of the derivative instrument is not coincident with the repayment term of the underlying debt obligation. Derivative instruments A and B have terms equal to the critical terms of the hedged interest rate exposure.

Interest Rate Risk – MSD is exposed to interest rate risk on its interest rate derivative instruments. On it pay-fixed, receive-variable interest rate swaps, there may be either a net loss or net benefit to MSD depending upon decrease or increases in the USD-LIBOR-BBA yield curve.

Swap Terminations: MSD entered into swaps and other derivative contracts to lock in long term rates in advance of issuing long term debt to create and manage variable rate exposure in its debt portfolio and to take advantage of market opportunities to hedge embedded interest rate risk and tax regulation risk that exists on its Statement of Net Position.

Upon a termination of a swap, any termination receipt or payment is amortized into income or expense until the original expiration date of that swap. Any unamortized portion of the receipt or payment is recorded as a deferred debit or credit in long-term liabilities. MSD has swap agreement terminations with deferred inflow of resources balances accreting to non-operating revenue as follows:

- In April 2006, MSD entered into a swap agreement with Deutsche Bank AG for an initial notional amount of $171,405,000 which provided that beginning May 15, 2006, a net payment will be made based on MSD paying 78.78% of the 3-month LIBOR index on the notional amount and receiving 73.45% of the 5-year LIBOR Index on the notional amount. On January 23, 2008, MSD terminated this swap agreement and received a termination payment of $4,170,000 that will be amortized until 2023, the original termination date of the agreement.

- On January 25, 2008, MSD terminated a twenty-seven year floating to floating (basis) interest rate swap agreement with a notional amount of $282,165,000. MSD entered into this agreement with Morgan Stanley in April 2006 and paid 67% of the 1-month LIBOR index and received 62.2% of the 5-year LIBOR index. The termination of this swap agreement resulted in the receipt of a payment in the amount of $5,756,000. This payment will be amortized annually into income until 2033, the original termination date of the agreement.

NOTE 10 - RISK MANAGEMENT

MSD is exposed to various risks of loss related to torts; theft of, damage to and destruction of assets; errors and omissions; natural disasters; and injuries to MSD's employees. These risks are provided through the insurance programs described below.

Self-Insurance – Group Liability: MSD participates in the Louisville Area Governmental Self-Insurance Trust (LAGIT). LAGIT, which is certified by the Kentucky Department of Insurance to practice as a group liability self-insurance trust, was created on January 1, 1987. LAGIT members currently include Louisville Metro Government, six smaller cities, and six government agencies. LAGIT was formed to provide better risk protection and lower cost liability insurance by sharing the risk with all of its members. MSD's payments to LAGIT are reflected on the financial statements as an expense. LAGIT provides, after a $300,000 deductible, various liability coverages up to $5,000,000 per occurrence. The amount of coverage available to MSD could be limited by the total assets of LAGIT and/or claims of other Members under the excess insurance policy.

No claims were paid in fiscal year 2022 that exceeded the $300,000 deductible with LAGIT.

For fiscal year 2021, MSD exceeded its $300,000 deductible on two LAGIT claims. In *Michael Drew v. MSD, et al*, MSD settled the plaintiff's case for $100,000 at mediation in June 2020. MSD's fees and expenses to defense counsel totaled $282,396. In total LAGIT paid $82,396 towards MSD's defense fees and costs which were paid in fiscal year 21. MSD also resolved the matter of *Brenda Stotts-Young as Administrator of the Estate of Deidre Mengedoht, et al., v. Roger Burdette and MSD* in fiscal year 21. Specifically, MSD paid the Estate of Det. Mengedoht, $10,000,000; Jason Mengedoht, as father, guardian and next of kin of P.M., a minor, $3,650,000; and the "Brady" plaintiffs, the four occupants of the vehicle driven by Quentin Brady, a global $250,000. Of this total settlement, LAGIT contributed the first $7,000,000. MSD's excess liability policies that were in effect at the time of the accident contributed the remainder of the settlement with Nationwide making payment of $5,000,000 and Gemini Berkley making payment of approximately $1,900,000.

For fiscal year 2020, LAGIT provided, after a $300,000 deductible, various liability coverages up to $5,000,000 per occurrence. Excess insurance may provide an additional $2,000,000 of coverage, above the LAGIT $5,000,000, to MSD. The amount of coverage available to MSD could be limited by the total assets of LAGIT and/or claims of other Members under the excess insurance policy. For fiscal year 2021, LAGIT did not make any claim payments on behalf of MSD.

MSD maintained additional excess liability coverage for fiscal year 2022. Allied World National Assurance Company (A) provided $5,000,000 of excess liability coverage beyond the $5,000,000 provided through LAGIT. The Princeton Excess & Surplus Lines Insurance Company (A+) provided another $5,000,000 of excess liability coverage beyond $10,000,000. In total, MSD maintained liability coverage of $15,000,000. No claims were made on either policy in fiscal year 2022.

MSD maintained additional excess liability coverage for fiscal year 2021. Allied World National Assurance Company (A) provided $10,000,000 of excess liability coverage beyond the $7,000,000 provided through LAGIT. Gemini Insurance Company (A+) provided another $10,000,000 of excess liability coverage beyond $17,000,000. In total, MSD maintained liability coverage of $27,000,000. No claims were made on either policy in fiscal year 2021.

MSD maintained additional excess liability coverage for fiscal year 2020. Scottsdale Insurance Company (A+) provided $5,000,000 of excess liability coverage beyond the $7,000,000 provided through LAGIT. Gemini Insurance Company (A+) provided another $15,000,000 of excess liability coverage beyond $12,000,000. In total, MSD maintained liability coverage of $27,000,000.

Workers Compensation Insurance: MSD has chosen to self-insure the basic worker's compensation insurance. Claims administration is handled by a third-party administrator and includes claims monitoring check issuance, settlement negotiations and loss control services. Liabilities are reported when it is probable that a loss has occurred and the amount of the loss can be reasonably estimated. A separate insurance policy provides maximum coverage of $1,000,000 per occurrence and aggregate. A roll forward of worker's compensation claims follows:

(dollars in thousands)	June 30,					
	2022		2021		2020	
Liability - beginning of year	$	2,626	$	2,280	$	2,326
Claims and changes in estimates		353		1,143		775
Payments		(1,182)		(797)		(821)
Liability - end of year	$	1,797	$	2,626	$	2,280

Self-Insurance – Property: MSD joined the Louisville Area Governmental General Insurance Trust (LAGGIT) in September 2002. LAGGIT was created to provide lower cost to participants and broader coverage for property risks. MSD is responsible for covered property damage up to $100,000 except for flood and vehicle collision coverage, which have separate deductibles. LAGGIT provides coverage for the next $1,000,000 per occurrence, except for Flood Zone A locations. An excess insurance policy with a third-party carrier covers claims in excess of $1,100,000.

No claims were made under the LAGGIT policy in fiscal year 2022, 2021, or 2020.

MSD's facilities were affected by Ohio River flooding in February of 2018 and MSD made a claim on the LAGGIT policy. Payments on this claim totaled $3,757,562. The final payment of $637,408 on this claim was received in fiscal year 2020.

NOTE 11 - DEFERRED COMPENSATION

MSD offers its employees deferred compensation plans created in accordance with Internal Revenue Service Code Sections 401(k) and 457. These plans, available to all MSD employees, permit them to defer the payment of a portion of their salary until future years. Participation in these plans is voluntary and MSD makes no contributions to these plans on behalf of the employee and maintains no custodial role for investments or investment transactions. The deferred compensation is not available to employees until termination, retirement, death, or unforeseen emergency. All amounts of compensation deferred, including the investments and earnings thereon, vest with the employee and are not subject to the claims of MSD's general creditors.

NOTE 12 - COMMITMENTS AND CONTINGENCIES

Sale of Sewer Assessments: MSD has entered into agreements to sell sanitary sewer assessments to a local bank. These assessments reflect the portion of the cost that residents pay to have sewer lines installed in their neighborhood. Residents are given the opportunity to pay the assessment in full or to finance it over a twenty-year period at 7% interest per annum. The original agreement called for the bank to accept up to $25,000,000 of outstanding assessments and for MSD to receive 104% of the face value of the assessments.

The subsequent agreement allows an additional $5,000,000 of assessments to be sold to the bank at face value. These agreements give the bank the option to place the assessments back with MSD if the property owner's payments are 90 days in arrears or the property owner does not respond to the bank's demand for payment within a 90-day period after the issuance of the assessment. Sales to the bank are net of any subsequent repurchases of warrants by MSD. The unpaid principal balance of loans held by the bank at June 30, 2022 and 2021 was $221,885 and $353,974, respectively.

Consent Decree: On August 12, 2005, MSD agreed to enter into a consent decree with the Commonwealth of Kentucky's Environmental and Public Protection Cabinet (KEPPC) and the U.S. Environmental Protection Agency (EPA). The consent decree called for MSD to submit a final Long-Term Control Plan (LTCP) to the KEPPC and EPA for review and joint approval. The final Sanitary Sewer Discharge Plan (SSDP) and the LTCP were certified on December 19, 2008 under the title of the Integrated Overflow Abatement Plan (IOAP). The SSDP included schedules and deadlines for capital projects to be completed by the end of 2024. The LTCP included schedules, and deadlines for combined sewer overflow projects to be completed by December 31, 2020. MSD agreed to pay a civil penalty to the Commonwealth of Kentucky in the amount of $1,000,000 to resolve the violations alleged in the KEPPC's and EPA's complaints up through the date of entry of the consent decree. The agreement called for MSD to perform supplemental environmental projects at an amount of not less than $2,250,000. MSD neither admitted nor denied the alleged violations but acknowledged that discharges occurred and accepted the obligations imposed in the consent decree.

On April 10, 2009, MSD agreed to enter into an amended consent decree with the KEPPC and the EPA. The amended consent decree resolved all pending claims of violations of the Federal Water Pollution Control Act and the Water Quality Act of 1987. The amended consent decree superseded and replaced the original consent decree entered on August 12, 2005. The amended consent decree contains stipulated penalties for MSD's failure to comply with the provisions contained therein. The IOAP was amended in 2012 and 2014 to improve compliance and adjust capital project schedules. To date, MSD has complied with all submittal and report requirements contained in the amended consent decree.

In 2019, MSD proactively approached Federal and state regulators to renegotiate the timing for completing remaining LTCP and SSDP projects required by the amended consent decree in order to reprioritize capital dollars for rehabilitation of MSD's aging biosolids systems, failing sewer interceptors and flood protection system rehabilitation. MSD, along with KEPPC and EPA, have negotiated the second amended consent decree which grants a time extension for completing the remaining LTCP and SSDP projects to 2035. In exchange, MSD agreed to invest a minimum of $25 million annually for asset management projects through 2035. Additionally, MSD agreed to incorporate $70 million for critical sewer rehabilitation in its 5-year capital improvement plan. These financial commitments are achievable within the MSD Board's rate increase authority of 6.9% per year. The United States District Court granted final approval of the second amended consent decree on September 14, 2022.

Since the start of the consent decree, MSD has seen a significant reduction in sewer overflows. For a 2-year cloudburst storm, 134 sanitary sewer overflow locations have been eliminated, from 197 modeled locations in 2007, to 65 in 2021, and 63 in 2022. Combined sewer overflow volumes have been reduced by 5.85 billion gallons per typical year, from 6.5 billion gallons in 2001, to 1.1 billion gallons in 2021, and 648 million gallons in 2022. Through June 30, 2022, capital expenditures related to the consent decree totaled approximately $1.1 billion. MSD estimates that capital expenditures associated with the requirements of the consent decree, including the pending requirements of the second amended consent decree, could range from $1.9 billion to $2.0 billion. As with any estimate, the actual costs incurred could differ materially.

Claims and Litigation: MSD is a defendant in various active lawsuits. Although the outcome of these lawsuits is not presently determinable, it is the opinion of the MSD's management that resolution of these matters will not have a material adverse effect on the financial statements of MSD. All material claims and litigation settlements that are both probable and reasonably measureable are recorded in accounts payable.

Other Commitments: MSD is committed under various contracts for completion of construction or acquisition of utility plant and equipment. Outstanding contractual commitments related to the capital improvement program as of June 30, 2022 and 2021 were $172,476,352 and $120,066,183, respectively. These commitments will be financed primarily with unspent bond proceeds, commercial paper, grants and future pay-as-you-go revenues.

On January 1, 2022, MSD entered into an agreement with Louisville Water Company to provide billing services through December 31, 2027. The projected cost of the contract through 2027 is $40,783,649.

NOTE 13 - SUBSEQUENT EVENTS

Rate Increase: On August 1, 2022, MSD's rates for wastewater and drainage service charges increased by 5.0% for Jefferson County customers. Wastewater volume rates decreased by 34.4% for Oldham County customers.

Series 2022 BAN: On September 14, 2022, MSD sold $226,340,000 of sewer and drainage system subordinated BAN, Series 2022 with an average coupon rate of 4% and a true interest cost of 2.57%. The proceeds of the notes were used to (i) refund the 2021 notes at maturity on October 14, 2022 and (ii) to pay the costs of issuance of the Series 2022 notes. The Series 2022 notes closed on October 5, 2022 and mature on October 6, 2023.

Commercial Paper Program: Commercial paper notes of $90,000,000 are outstanding as of October 24, 2022 in accordance with the respective Revolving Credit Agreements. Interest rates on the notes outstanding range from 1.87% to 3.05% and maturities range from 10 to 86 days. MSD intends to reissue maturing commercial paper in accordance with the refinancing terms of the Revolving Credit Agreements and periodically refund such maturities with proceeds from the issuance of long-term revenue bonds.

NOTE 14 - DEFINED BENEFIT PENSION AND OTHER POSTEMPLOYMENT BENEFITS PLAN – COST SHARING – CERS

General Information about the Pension and OPEB Plan: All full-time and eligible part-time employees of MSD participate in County Employee Retirement System (CERS), a cost-sharing, multiple-employer defined benefit pension plan administered by the Kentucky Public Pension Authority (KPPA, the system), an agency of the Commonwealth. Under the provisions of Kentucky Revised Statute Section 78.782 and 61.645, the Board of Trustees (the Board) of KPPA administers CERS, Kentucky Employee Retirement System, and State Police Retirement System. Although the assets of the systems are invested as a whole, each system's assets are accounted for separately; invested according to plan-specific asset allocation goals; and, are used only for the payment of benefits to the members of that plan and a pro rata share of administrative costs, in accordance with the provisions of Kentucky Revised Statue Sections 78.632, 613571, and 16.555.

The plan provides for retirement, disability and death benefits to plan members. Retirement benefits may also be extended to beneficiaries of plan members under certain circumstances. Under the provisions of Kentucky Revised Statute Section 61.701, the Board of KPPA also administers the Kentucky Retirement System's Insurance Fund. The statutes provide for a single insurance fund to provide group hospital and medical benefits to retirees drawing a benefit from the three pension funds administered by KPPA. The assets of the insurance fund are invested as a whole. KPPA and the Commonwealth have statutory authority to determine Plan benefits and employer contributions.

KPPA issues a publicly available financial report that includes financial statements and required supplementary information for CERS. The report may be obtained by writing to Kentucky Public Pension Authority, 1260 Louisville Road, Frankfort, Kentucky 40601, or it may be found at the KPPA website at www.kyret.ky.gov.

Basis of Accounting: For purposes of measuring the net pension and other post-employment benefits plan (OPEB) liabilities, deferred outflow of resources and deferred inflow of resources related to pensions and OPEB, pension and OPEB expense, information about the fiduciary net position of CERS and additions to/deductions from CERS's fiduciary net position have been determined on the same basis as they are reported by CERS. For this purpose, benefit payments (including refunds of employee contributions) are recognized when due and payable in accordance with the benefit terms. Investments are reported at fair value.

Pension Benefits Provided:

The information below summarizes the major retirement benefit provisions of CERS-Nonhazardous. It is not intended to be, nor should it be interpreted as, a complete statement of all benefit provisions.

Members whose participation began before 8/1/2004:

Age and Service Requirement: Age 65 with at least one month of Nonhazardous duty service credit, or at any age with 27 or more years of service credit.

Benefit: If a member has at least 48 months of service, the monthly benefit is 2.20% times final average compensation times years of service depending on participation and retirement dates. Final compensation is calculated by taking the average of the highest five (5) fiscal years of salary. If the number of months of service credit during the five (5) year period is less than forty-eight (48), one (1) or more additional fiscal years shall be used. If a member has less than 48 months of service, the monthly benefit is the actuarial equivalent of two times the member's contributions with interest.

Members whose participation began on or after 8/1/2004, but before 9/1/2008:

Age and Service Requirement: Age 65 with at least one month of Nonhazardous duty service credit, or at any age with 27 or more years of service credit.

Benefit: If a member has at least 48 months of service, the monthly benefit is 2.00% multiplied by final average compensation, multiplied by years of service. Final compensation is calculated by taking the average of the highest five (5) fiscal years of salary. If the number of months of service credit during the five (5) year period is less than forty-eight (48), one (1) or more additional fiscal years shall be used. If a member has less than 48 months of service, the monthly benefit is the actuarial equivalent of two times the member's contributions with interest.

Members whose participation began on or after 9/1/2008, but before 1/1/2014:

Age and Service Requirement: Age 65 with 60 months of Nonhazardous duty service credit, or age 57 if age plus service equals at least 87.

Benefit: The monthly benefit is the following benefit factor based on service credit at retirement plus 2.00% for each year of service greater than 30 years, multiplied by final average compensation, multiplied by years of service.

Service Credit	Benefit Factor
10 years or less	1.10%
10+ - 20 years	1.30%
20+ - 26 years	1.50%
26+ - 30 years	1.75%

Final compensation is calculated by taking the average of the last (not highest) five (5) complete fiscal years of salary. Each fiscal year used to determine final compensation must contain twelve (12) months of service credit.

Members whose participation began on or after 1/1/2014:

Age and Service Requirement: Age 65 with 60 months of Nonhazardous duty service credit, or age 57 if age plus service equals at least 87.

Benefit: Each year that a member is an active contributing member to the System, the member contributes 5% of creditable compensation, and the member's employer contributes 4.00% of creditable compensation, which is a portion of the total employer contribution, into a hypothetical account. The hypothetical account will earn interest annually on both the member's and employer's contribution at a minimum rate of 4%. If the System's geometric average net investment return for the previous five years exceeds 4%, then the hypothetical account will be credited with an additional amount of interest equal to 75% of the amount of the return which exceeds 4%. All interest credits will be applied to the hypothetical account balance on June 30 based on the account balance as of June 30 of the prior year. Upon retirement the hypothetical account which includes member contributions, employer contributions and interest credits can be withdrawn from the System as a lump sum or annuitized into a single life annuity option.

OPEB Benefits Provided:

The information below summarizes the major retirement benefit provisions of CERS-Nonhazardous. It is not intended to be, nor should it be interpreted as, a complete statement of all benefit provisions.

Insurance Tier 1: Participation began before 7/1/2003

Benefit Eligibility**:** Recipient of a retirement allowance

Benefit: The percentage of member premiums paid by the retirement system are dependent on the number of years of service. Benefits also include duty disability retirements, duty death in service, non-duty death in service and surviving spouse of a retiree.

Insurance Tier 2: Participation began on or after 7/1/2003, but before 9/1/2008

Benefit Eligibility: Recipient of a retirement allowance with at least 120 months of service at retirement

Benefit: The system provides a monthly contribution subsidy of $10 for each year of earned service. The monthly contribution is increased by 1.5% each July 1. Benefits also include duty disability retirements, duty death in service and non-duty death in service.

Insurance Tier 3: Participation began on or after 9/1/2008

Benefit Eligibility: Recipient of a retirement allowance with at least 180 months of service at retirement

Benefit: The system provides a monthly contribution subsidy of $10 for each year of earned service. The monthly contribution is increased by 1.5% each July 1. Benefits also include duty disability retirements, duty death in service and non-duty death in service.

Contributions*:* MSD is required to contribute at an actuarially determined rate determined by Statute. Per Kentucky Revised Statute Section 78.545(33) normal contribution and past service contribution rates shall be determined by the KPPA Board on the basis of an annual valuation last preceding July 1 of a new biennium. The KPPA Board may amend contribution rates as of the first day of July of the second year of a biennium, if it is determined on the basis of a subsequent actuarial valuation that amended contribution rates are necessary to satisfy requirements determined in accordance with actuarial bases adopted by the KPPA Board.

For the fiscal years ended June 30, 2022 and 2021, participating employers contributed 26.95% (21.17% allocated to pension and 5.78% allocated to OPEB) and 24.06% (19.3% allocated to pension and 4.76% allocated to OPEB), respectively, of each Nonhazardous employee's creditable compensation. These percentages are inclusive of both pension and insurance payments for employers. Administrative costs of KPPA are financed through employer contributions and investments earnings.

MSD has met 100% of the contribution funding requirement for the fiscal years ended June 30, 2022 and 2021. Total current year contributions recognized by the Plan were $14,015,093 ($11,009,259 related to pension and $3,005,834 related to OPEB) and $12,279,191 ($9,849,892 related to pension and $2,429,300 related to OPEB) for the years ended June 30, 2022 and 2021, respectively. The OPEB contribution amounts do not include the implicit subsidies reported in the amount of $1,230,443 and $1,077,498 for the years ended June 30, 2022 and 2021 respectively.

Members whose participation began before 9/1/2008:

Nonhazardous member contributions equal 5% of all creditable compensation. Interest paid on the members' accounts is currently 2.5%; and per statute shall not be less than 2.0%. Members are entitled to a full refund of contributions with interest.

Members whose participation began on or after 9/1/2008, but before 1/1/2014:

Nonhazardous member contributions equal to 6% of all creditable compensation, with 5% being credited to the member's account and 1% deposited to the KPPA 401(h) Account. Interest paid on the members' accounts will be set at 2.5%. Members are entitled to a full refund of contributions and interest in their individual account, however, the 1% contributed to the insurance fund is non-refundable.

Members whose participation began on or after 1/1/2014

Nonhazardous member contributions equal to 6% of all creditable compensation, with 5% being credited to the member's account and 1% deposited to the KPPA 401(h) Account. Members are entitled to a full refund of contributions and interest on the member's portion of the hypothetical account, however, the 1% contributed to the insurance fund is non-refundable.

<u>Pension Plan Information for June 30, 2022 Financial Statements:</u>

Total Pension Liability: The total pension liability (TPL) was determined by an actuarial valuation as of June 30, 2021. An expected TPL was determined at June 30, 2021 using standard roll-forward techniques. The following actuarial assumptions were applied to all periods included in the measurement:

Price Inflation	2.30%
Salary increases	3.30 to 10.30%, varies by service
Investment rate of return	6.25%, net of pension plan investment expense, including inflation

The mortality table used for active members was a Pub-2010 General Mortality table, for the Non-Hazardous System, and the Pub-2010 Public Safety Mortality table for the Hazardous System, projected with the ultimate rates from the MP-2014 mortality improvement scale using a base year of 2010. The mortality table used for healthy retired members is a system-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019. The mortality table used for the disabled members was PUB-2010 Disabled Mortality table, with a 4-year set-forward for both male and female rates, projected with the ultimate rates from the MP-2014 mortality improvement scale using a base year of 2010.

Discount rate assumptions:

(a) Discount Rate: The discount rate used to measure the total pension liability was 6.25% which did not change from the prior year.

(b) Projected Cash Flows: The projection of cash flows used to determine the discount rate assumes that the funds receive the required employer contributions each future year, as determined by the current funding policy established by Statute as amended by House Bill 362 (passed in 2018) over the remaining 30 years (closed) amortization period of the unfunded actuarial accrued liability.

(c) Long-Term Rate of Return: The long-term expected return on plan assets is reviewed as part of the regular experience studies prepared every five years for the System. The most recent analysis, performed for the period covering fiscal years 2008 through 2013 is outlined in a report dated April 30, 2014. However, the Board of KPPA has the authority to review the assumptions on a more frequent basis and adopt new assumptions prior to the next scheduled experience study. The long-term expected rate of return was determined by using a building-block method in which best-estimate ranges of expected future real rate of returns are developed for each asset class. The ranges are combined by weighting the expected future real rate of return by the target asset allocation percentage.

(d) Municipal Bond Rate: The discount rate determination does not use a municipal bond rate.

(e) Periods of Projected Benefit Payments: The long-term assumed rate of return was applied to all periods of projected benefit payments to determine the TPL.

(f) Assumed Asset Allocation: The target asset allocation and best estimates of arithmetic real rates of return for each major asset class are summarized in the following table:

Asset Class	Target Allocation	Long Term Expected Real Rate of Return
U.S. equity	21.75%	5.70%
Non-US equity	21.75%	6.35%
Private equity	10.00%	9.70%
Specialty credit/high yield	15.00%	2.80%
Core bonds	10.00%	0.00%
Cash	1.50%	(0.60%)
Real estate	10.00%	5.40%
Opportunistic	0.00%	0.00%
Real return	10.00%	4.55%
Total	**100.00%**	

The long-term expected rate of return on pension plan assets was established by the KPPA Board of Trustees at 6.25% based on a blending of the factors described above.

(g) Sensitivity Analysis: This paragraph requires disclosure of the sensitivity of the net pension liability (NPL) to changes in the discount rate. The following presents MSD's allocated portion of the NPL of the System, calculated using the current discount rate of 6.25%, as well as what MSD's allocated portion of the NPL would be if it were calculated using a discount rate that is one percentage-point lower (5.25%) or 1 percentage-point higher (7.25%) than the current rate:

(dollars in thousands)	1% Decrease (5.25%)	Current Discount Rate (6.25%)	1% Increase (7.25%)
MSD's net pension liability	$ 159,760	$ 124,564	$ 95,441

Employer's Portion of the Collective NPL: MSD's proportionate share of the NPL, as indicated in the prior table, is $124,564,401, or approximately 1.95%. This is an increase of 0.14% from fiscal year 2021. The NPL was distributed based on 2021 actual employer contributions to the plan.

Measurement Date: The total pension liability, NPL and sensitivity information shown in this report are based on an actuarial valuation date of June 30, 2020. The total pension liability was rolled forward from the valuation date to the plan's fiscal year ending June 30, 2021 using generally accepted actuarial principles.

Changes in Assumptions and Benefit Terms: Since the prior measurement date, there were no changes in assumptions and benefit terms.

Changes Since Measurement Date: There were no changes between the measurement date of the collective NPL and the employer's reporting date.

Pension Expense: MSD was allocated pension expense of $7,070,825 related to the CERS for the year ending June 30, 2022.

Deferred Outflows and Deferred Inflows: Since certain expense items are amortized over closed periods each year, the deferred portions of these items must be tracked annually. If the amounts serve to reduce pension expense, they are labeled as deferred inflows. If they will increase pension expense, they are labeled deferred outflows. The amortization of these amounts is accomplished on a level dollar basis, with no interest included in the deferred amounts. Experience gains/losses and the impact of changes in actuarial assumptions, if any, are amortized over the average remaining service life of the active and inactive System members at the beginning of the fiscal year. Investment gains and losses are amortized over a fixed five-year period. Deferred inflows and outflows as of the measurement date include:

(dollars in thousands)	Deferred Outflow of Resources	Deferred Inflow of Resources
Difference between expected and actual experience	$ 1,431	$ 1,209
Change of assumptions	1,672	-
Changes in proportion and differences between employer contributions and proportionate shares of contributions	-	16,602
Differences between expected and actual investment earning on plan investments	7,724	-
	10,827	17,811
Contributions subsequent to the measurement date	11,009	-
Total	$ 21,836	$ 17,811

Deferred outflows of resources resulting from employer contributions subsequent to the measurement date of $11,009,259 will be recognized as a reduction of NPL in the year ending June 30, 2023. The remainder of the deferred outflows and deferred inflows of resources are amortized over three to five years with remaining amortization as follows:

(dollars in thousands)

Year Ending June 30:		
2022	$	2,405
2023		(683)
2024		(3,508)
2025		(5,199)
	$	(6,985)

Pension Plan Fiduciary Net Position: Detailed information about the pension plans' fiduciary net position is available in the separately issued pension plan financial reports.

<u>OPEB Information for June 30, 2022 Financial Statements:</u>

Total OPEB Liability: The total other post-employment benefits plan (OPEB) was determined by an actuarial valuation as of June 30, 2021. An expected total OPEB liability was determined at June 30, 2021 using standard roll-forward techniques. The following actuarial assumptions were applied to all periods included in the measurement:

Price inflation	2.30%
Payroll growth rate	2.00%
Salary increases	3.30% to 10.30%, varies by service
Investment rate of return	6.25%

Healthcare trend rates:

Pre-65	Initial trend starting at 6.30 % at January 1, 2023 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years.
Post-65	Initial trend starting at 6.30% at January 1, 2023 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years.

Mortality:

Pre-retirement	PUB-2010 General Mortality table, for the Non-Hazardous Systems, and the PUB-2010 Public Safety Mortality table for the Hazardous Systems, projected with the ultimate rates from the MP-2014 mortality improvement scale using a base year of 2010
Post-retirement (non-disabled)	System-specific mortality table based on mortality experience from 2013-2018 projected with the ultimate rates form MP-2104 mortality improvement scale using a base year of 2019
Post-retirement (disabled)	PUB-2010 Disabled Mortality table with a 4-year set-forward for both male and female rates, projected with the ultimate rates from the MP-2014 mortality improvement scale using a base year of 2010

Discount rate assumptions:

(a) Discount Rate: The discount rate used to measure the total OPEB liability was 5.20%, which decreased from the prior year rate of 5.34%.

(b) Projected Cash Flows: The projection of cash flows used to determine the discount rate assumed the local employers and plan members would contribute the actuarially determined contribution rate of projected compensation over the remaining 24-year amortization period of the unfunded actuarial accrued liability.

(c) Long-Term Rate of Return: The long-term expected return on plan assets is reviewed as part of the regular experience studies prepared every five years for the System. The most recent analysis, performed for the period covering fiscal years 2013 through 2018 is outlined in a report dated April 12, 2019. However, the Board of KPPA has the authority to review the assumptions on a more frequent basis and adopt new assumptions prior to the next scheduled experience study. The long-term expected rate of return was determined by using a building-block method in which best-estimate ranges of expected future real rate of returns are developed for each asset class. The ranges are combined by weighting the expected future real rate of return by the target asset allocation percentage.

(d) Municipal Bond Rate: The discount rate determination used a municipal bond rate of 1.92% as reported in Fidelity Index's "20 – Year Municipal GO AA Index" as of June 30, 2021.

(e) Period of Projected Benefit Payments: Current assets, future contributions, and investment earnings are projected to be sufficient to pay the projected benefit payments from the retirement system. However, the cost associated with the implicit employer subsidy is not currently being included in the calculation of the system's actuarial determined contributions, and it is the actuary's understanding that any cost associated with the implicit subsidy will not be paid out of the system's trust. Therefore, the municipal bond rate was applied to future expected benefit payments associated with the implicit subsidy.

(f) Assumed Asset Allocations: The target asset allocation and best estimates of arithmetic real rates of return for each major asset class are summarized in the following table:

Asset Class	Target Allocation	Long Term Expected Real Rate of Return
U.S. equity	21.75%	5.70%
Non-US equity	21.75%	6.35%
Private equity	10.00%	9.70%
Specialty credit/high yield	15.00%	2.80%
Core bonds	10.00%	0.00%
Cash	1.50%	(0.60%)
Real estate	10.00%	5.40%
Opportunistic	0.00%	0.00%
Real return	10.00%	4.55%
Total	**100.00%**	

The long-term expected rate of return on pension plan assets was established by the KPPA Board of Trustees at 6.25% based on a blending of the factors described above.

(g) Sensitivity Analysis: This paragraph requires disclosure of the sensitivity of the net OPEB liability to changes in the current discount rate and changes in the current healthcare cost trend rate. The following presents MSD's allocated portion of the net OPEB liability of the System, calculated using the discount rate of 5.20%, as well as what the MSD's allocated portion of the System's net OPEB liability would be if it were calculated using a discount rate that is 1-percentage-point lower (4.20%) or 1-percentage-point higher (6.20%) than the current rate for Nonhazardous:

(dollars in thousands)	1% Decrease (4.20%)	Current Discount Rate (5.20%)	1% Increase (6.20%)
MSD's net OPEB liability	$ 51,343	$ 37,395	$ 25,948

The following presents MSD's allocated portion of the net OPEB liability of the System, calculated using the current healthcare cost trend rate, as well as what MSD's allocated portion of the System's net OPEB liability would be if it were calculated using a healthcare cost trend rate that is 1-percentage-point lower or 1-percentage-point higher than the current rate for Nonhazardous:

(dollars in thousands)	1% Decrease	Current Healthcare Cost Trend Rate	1% Increase
MSD's net OPEB liability	$ 26,920	$ 37,935	$ 50,038

Employer's Portion of the Collective OPEB Liability: MSD's proportionate share of the net OPEB liability, as indicated in the prior table, is $37,394,836, or approximately 1.95%. This is an increase of 0.14% from fiscal year 2021. The net OPEB liability was distributed based on 2021 actual employer contributions to the plan.

Measurement Date: The total OPEB liability, net OPEB liability, and sensitivity information shown in this report are based on an actuarial valuation date of June 30, 2020. The total OPEB liability was rolled-forward from the valuation date to the plan's fiscal year ending June 30, 2021 using generally accepted actuarial principles.

Changes in Assumptions and Benefit Terms: Since the prior measurement date, the demographic and economic assumptions that affect the measurement of the total OPEB liability have been updated as follows:

- The discount rate used to calculate the total OPEB liability decreased from 5.34% to 5.20%.
- The assumed increase in future health care costs, or trend assumption, is reviewed on an annual basis and was updated (i.e. increased) to better reflect more current expectations relating to anticipated future increase in the medical costs.

Changes Since Measurement Date: There were no changes between the measurement date of the collective net OPEB liability and the employer's reporting date.

OPEB Expense: MSD was allocated OPEB expense of $1,635,851 related to the CERS for the year ending June 30, 2022.

Deferred Outflows and Deferred Inflows: Since certain expense items are amortized over closed periods each year, the deferred portions of these items must be tracked annually. If the amounts serve to reduce OPEB expense they are labeled as deferred inflows. If they will increase OPEB expense they are labeled deferred outflows. The amortization of these amounts is accomplished on a level dollar basis, with no interest included in the deferred amounts. Experience gains/losses and the impact of changes in actuarial assumptions, if any, are amortized over the average remaining service life of the active and inactive System members at the beginning of the fiscal year. Investment gains and losses are amortized over a fixed five-year period. Deferred inflows and outflows as of the measurement date include:

(dollars in thousands)	Deferred Outflow of Resources	Deferred Inflow of Resources
Difference between expected and actual experience	$ 5,880	$ 11,165
Change of assumptions	9,914	35
Changes in proportion and differences between employer contributions and proportionate shares of contributions	-	5,850
Differences between expected and actual investment earning on plan investments	3,417	18
	19,211	17,068
Contributions subsequent to the measurement date	4,236	-
Total	$ 23,447	$ 17,068

Deferred outflows of resources resulting from employer contributions subsequent to the measurement date of $4,236,277, which include the implicit subsidy reported of $1,230,443, will be recognized as a reduction of net OPEB liability in the year ending June 30, 2023. The remainder of the deferred outflows and deferred inflows of resources are amortized over three to five years with remaining amortization as follows:

(dollars in thousands)	
Year Ending June 30:	
2022	$ 1,970
2023	1,080
2024	774
2025	(1,681)
	$ 2,143

OPEB Plan Fiduciary Net Position: Detailed information about the OPEB plans' fiduciary net position is available in the separately issued OPEB plan financial reports.

<u>Pension Plan Information for June 30, 2021 Financial Statements:</u>

Total Pension Liability: The total pension liability (TPL) was determined by an actuarial valuation as of June 30, 2020. An expected TPL was determined at June 30, 2020 using standard roll-forward techniques. The following actuarial assumptions were applied to all period included in the measurement:

Price Inflation	2.30%
Salary increases	3.30 to 10.30% varies by service
Investment rate of return	6.25%, net of pension plan investment expense, including inflation

The mortality table used for active members was a Pub-2010 General Mortality table, for the Non-Hazardous System, and the Pub-2010 Public Safety Mortality table for the Hazardous System, projected with the ultimate rates from the MP-2014 mortality improvement scale using a base year of 2010. The mortality table used for healthy retired members is a system-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2020. The mortality table used for the disabled members was PUB-2010 Disabled Mortality table, with a 4-year set-forward for both male and female rates, projected with the ultimate rates from the MP-2014 mortality improvement scale using a base year of 2010.

Discount rate assumptions:

(a) Discount Rate: The discount rate used to measure the total pension liability was 6.25% which did not change from the prior year.

(b) Projected Cash Flows: The projection of cash flows used to determine the discount rate assumed the local employers and plan members would contribute the statutorily determined contribution rate of projected compensation over the remaining 24-year amortization period of the unfunded actuarial accrued liability. The actuarial determined contribution rate is adjusted to reflect the phase-in of anticipated gains on the actuarial value of assets over the first four years of the projection period.

(c) Long-Term Rate of Return: The long-term expected return on plan assets is reviewed as part of the regular experience studies prepared every five years for the System. The most recent analysis, performed for the period covering fiscal years 2008 through 2013 is outlined in a report dated April 30, 2014. However, the Board of KPPA has the authority to review the assumptions on a more frequent basis and adopt new assumptions prior to the next scheduled experience study. The long-term expected rate of return was determined by using a building-block method in which best-estimate ranges of expected future real rate of returns are developed for each asset class. The ranges are combined by weighting the expected future real rate of return by the target asset allocation percentage.

(d) Municipal Bond Rate: The discount rate determination does not use a municipal bond rate.

(e) Periods of Projected Benefit Payments: The long-term assumed rate of return was applied to all periods of projected benefit payments to determine the total pension liability.

(f) Assumed Asset Allocation: The target asset allocation and best estimates of arithmetic real rates of return for each major asset class are summarized in the following table:

Asset Class	Target Allocation	Long Term Expected Real Rate of Return
U.S. equity	18.75%	4.50%
Non-US equity	18.75%	5.25%
Private equity	10.00%	6.65%
Specialty credit/high yield	15.00%	3.90%
Core bonds	13.50%	-0.25%
Cash	1.00%	-0.75%
Real estate	5.00%	5.30%
Opportunistic	3.00%	2.25%
Real return	15.00%	3.95%
Total	**100.00%**	

The long-term expected rate of return on pension plan assets was established by the KPPA Board of Trustees at 6.25% based on a blending of the factors described above.

(g) Sensitivity Analysis: This paragraph requires disclosure of the sensitivity of the NPL to changes in the current discount rate. The following presents MSD's allocated portion of the NPL of the System, calculated using the discount rate of 6.25%, as well as what MSD's allocated portion of the NPL would be if it were calculated using a discount rate that is one percentage-point lower (5.25%) or 1 percentage-point higher (7.25%) than the current rate:

(dollars in thousands)	1% Decrease (5.25%)	Current Discount Rate (6.25%)	1% Increase (7.25%)
MSD's net pension liability	$ 171,912	$ 139,401	$ 112,481

Employer's Portion of the Collective NPL: MSD's proportionate share of the NPL, as indicated in the prior table, is $139,400,975, or approximately 1.82%. This is an increase of 0.02% from fiscal year 2020. The NPL was distributed based on 2020 actual employer contributions to the plan.

Measurement Date: The total pension liability, NPL and sensitivity information shown in this report are based on an actuarial valuation date of June 30, 2019. The total pension liability was rolled forward from the valuation date to the plan's fiscal year ending June 30, 2020 using generally accepted actuarial principles.
Changes in Assumptions and Benefit Terms: Since the prior measurement date, there were no changes in assumptions, however benefit terms were updated as follows, which did not have a material impact on the total pension liability:

- The monthly payment to a surviving spouse of a member whose death was due to a duly-related injury upon remarriage of the spouse was reduced.

- Benefits were increased for a small number of beneficiaries.

Changes Since Measurement Date: There were no changes between the measurement date of the collective NPL and the employer's reporting date.

Pension Expense: MSD was allocated pension expense of $21,408,455 related to the CERS for the year ending June 30, 2021.

Deferred Outflows and Deferred Inflows: Since certain expense items are amortized over closed periods each year, the deferred portions of these items must be tracked annually. If the amounts serve to reduce pension expense, they are labeled as deferred inflows. If they will increase pension expense, they are labeled deferred outflows. The amortization of these amounts is accomplished on a level dollar basis, with no interest included in the deferred amounts. Experience gains/losses and the impact of changes in actuarial assumptions, if any, are amortized over the average remaining service life of the active and inactive System members at the beginning of the fiscal year. Investment gains and losses are amortized over a fixed five-year period. Deferred inflows and outflows as of the measurement date include:

(dollars in thousands)	Deferred Outflow of Resources	Deferred Inflow of Resources
Difference between expected and actual experience	$ 3,477	$ -
Change of assumptions	5,443	-
Changes in proportion and differences between employer contributions and proportionate shares of contributions	3,488	-
Differences between expected and actual investment earning on plan investments	3,674	-
	16,082	-
Contributions subsequent to the measurement date	9,850	-
Total	$ 25,932	$ -

Deferred outflows of resources resulting from employer contributions subsequent to the measurement date of $9,849,892 will be recognized as a reduction of NPL in the year ending June 30, 2022. The remainder of the deferred outflows and deferred inflows of resources are amortized over three to five years with remaining amortization as follows:

(dollars in thousands)		
Year Ending June 30:		
2021	$	8,261
2022		4,678
2023		1,741
2024		1,401
	$	16,081

Pension Plan Fiduciary Net Position: Detailed information about the pension plans' fiduciary net position is available in the separately issued pension plan financial reports.

OPEB Information for June 30, 2021 Financial Statements:

Total OPEB Liability: The total other post-employment benefits plan (OPEB) was determined by an actuarial valuation as of June 30, 2020. An expected total OPEB liability was determined at June 30, 2020 using standard roll-forward techniques. The following actuarial assumptions were applied to all periods included in the measurement:

Price inflation	2.30%
Payroll growth rate	2.00%
Salary increases	3.30% to 10.30%, varies by service
Investment rate of return	6.25%
Healthcare trend rates:	
Pre-65	Initial trend starting at 7.00 % at January 1, 2020 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 12 years.
Post-65	Initial trend starting at 5.00% at January 1, 2020 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 10 years.
Mortality:	
Pre-retirement	PUB-2010 General Mortality table, for the Non-Hazardous Systems, and the PUB-2010 Public Safety Mortality table for the Hazardous Systems, projected with the ultimate rates from the MP-2014 mortality improvement scale using a base year of 2010
Post-retirement (non-disabled)	System-specific mortality table based on mortality experience from 2013-2018 projected with the ultimate rates form MP-2104 mortality improvement scale using a base year of 2019
Post-retirement (disabled)	PUB-2010 Disabled Mortality table with a 4-year set-forward for both male and female rates, projected with the ultimate rates from the MP-2014 mortality improvement scale using a base year of 2010

Discount rate assumptions:

(a) Discount Rate: The discount rate used to measure the total OPEB liability was 5.34%, which decreased from the prior year rate of 5.68%.

(b) Projected Cash Flows: The projection of cash flows used to determine the discount rate assumed the local employers and plan members would contribute the actuarially determined contribution rate of projected compensation over the remaining 23-year amortization period of the unfunded actuarial accrued liability.

(c) Long-Term Rate of Return: The long-term expected return on plan assets is reviewed as part of the regular experience studies prepared every five years for the System. The most recent analysis, performed for the period covering fiscal years 2013 through 2018 is outlined in a report dated April 12, 2019. However, the Board of KPPA has the authority to review the assumptions on a more frequent basis and adopt new assumptions prior to the next scheduled experience study. The long-term expected rate of return was determined by using a building-block method in which best-estimate ranges of expected future real rate of returns are developed for each asset class. The ranges are combined by weighting the expected future real rate of return by the target asset allocation percentage.

(d) Municipal Bond Rate: The discount rate determination used a municipal bond rate of 2.45% as reported in Fidelity Index's "20 – Year Municipal GO AA Index" as of June 30, 2020.

(e) Period of Projected Benefit Payments: Current assets, future contributions, and investment earnings are projected to be sufficient to pay the projected benefit payments from the retirement system. However, the cost associated with the implicit employer subsidy is not currently being included in the calculation of the system's actuarial determined contributions, and it is the actuary's understanding that any cost associated with the implicit subsidy will not be paid out of the system's trust. Therefore, the municipal bond rate was applied to future expected benefit payments associated with the implicit subsidy.

(f) Assumed Asset Allocations: The target asset allocation and best estimates of arithmetic real rates of return for each major asset class are summarized in the following table:

Asset Class	Target Allocation	Long Term Expected Real Rate of Return
U.S. equity	18.75%	4.50%
Non-US equity	18.75%	5.25%
Private equity	10.00%	6.65%
Specialty credit/high yield	15.00%	3.90%
Core bonds	13.50%	-0.25%
Cash	1.00%	-0.75%
Real estate	5.00%	5.30%
Opportunistic	3.00%	2.25%
Real return	15.00%	3.95%
Total	**100.00%**	

The long-term expected rate of return on pension plan assets was established by the KPPA Board of Trustees at 6.25% based on a blending of the factors described above.

(g) Sensitivity Analysis: This paragraph requires disclosure of the sensitivity of the net OPEB liability to changes in the current discount rate and changes in the current healthcare cost trend rate. The following presents MSD's allocated portion of the net OPEB liability of the System, calculated using the current discount rate of 5.34%, as well as what the MSD's allocated portion of the System's net OPEB liability would be if it were calculated using a discount rate that is 1-percentage-point lower (4.34%) or 1-percentage-point higher (6.34%) than the current rate for Nonhazardous:

(dollars in thousands)	1% Decrease (4.34%)	Current Discount Rate (5.34%)	1% Increase (6.34%)
MSD's net OPEB liability	$ 56,404	$ 43,904	$ 33,638

The following presents the MSD's allocated portion of the net OPEB liability of the System, calculated using the current healthcare cost trend rate, as well as what the MSD's allocated portion of the System's net OPEB liability would be if it were calculated using a healthcare cost trend rate that is 1-percentage-point lower or 1-percentage-point higher than the current rate for Nonhazardous:

(dollars in thousands)	1% Decrease	Current Healthcare Cost Trend Rate	1% Increase
MSD's net OPEB liability	$ 33,993	$ 43,904	$ 55,932

Employer's Portion of the Collective OPEB Liability: MSD's proportionate share of the net OPEB liability, as indicated in the prior table, is $43,904,049 or approximately 1.82%, or an increase of 0.02% from fiscal year 2020. The net OPEB liability was distributed based on 2020 actual employer contributions to the plan.

Measurement Date: The total OPEB liability, net OPEB liability, and sensitivity information shown in this report are based on an actuarial valuation date of June 30, 2019. The total OPEB liability was rolled-forward from the valuation date to the plan's fiscal year ending June 30, 2020 using generally accepted actuarial principles.

Changes in Assumptions and Benefit Terms: Since the prior measurement date, the demographic and economic assumptions that affect the measurement of the total OPEB liability have been updated as follows:

- The discount rate used to calculate the total OPEB liability decreased from 5.68% to 5.34%.
- The assumed increase in future health care costs, or trend assumption, is reviewed on an annual basis and was updated (i.e. increased) to better reflect more current expectations relating to anticipated future increase in the medical costs.
- Actuarial information has been updated to reflect anticipated savings from the repeal of the "Cadillac Tax" and "Health Insurer Fee", which occurred in December 2019.

Changes Since Measurement Date: There were no changes between the measurement date of the collective net OPEB liability and the employer's reporting date.

OPEB Expense: MSD was allocated OPEB expense of $5,946,362 related to the CERS for the year ending June 30, 2021.

Deferred Outflows and Deferred Inflows: Since certain expense items are amortized over closed periods each year, the deferred portions of these items must be tracked annually. If the amounts serve to reduce OPEB expense they are labeled as deferred inflows. If they will increase OPEB expense they are labeled deferred outflows. The amortization of these amounts is accomplished on a level dollar basis, with no interest included in the deferred amounts. Experience gains/losses and the impact of changes in actuarial assumptions, if any, are amortized over the average remaining service life of the active and inactive System members at the beginning of the fiscal year. Investment gains and losses are amortized over a fixed five-year period. Deferred inflows and outflows as of the measurement date include:

(dollars in thousands)	Deferred Outflow of Resources	Deferred Inflow of Resources
Difference between expected and actual experience	$ 7,335	$ 7,342
Change of assumptions	7,637	46
Changes in proportion and differences between employer contributions and proportionate shares of contributions	1,459	-
Differences between expected and actual investment earning on plan investments	2,024	32
	18,455	7,420
Contributions subsequent to the measurement date	3,507	-
Total	$ 21,962	$ 7,420

Deferred outflows of resources resulting from employer contributions subsequent to the measurement date of $3,506,798 which include the implicit subsidy reported of $1,077,498, will be recognized as a reduction of net OPEB liability in the year ending June 30, 2022. The remainder of the deferred outflows and deferred inflows of resources are amortized over three to five years with remaining amortization as follows:

(dollars in thousands)	
Year Ending June 30:	
2021	$ 2,935
2022	3,367
2023	2,539
2024	2,240
2025	(45)
	$ 11,036

OPEB Plan Fiduciary Net Position: Detailed information about the OPEB plans' fiduciary net position is available in the separately issued OPEB plan financial reports.

Louisville and Jefferson County Metropolitan Sewer District
Schedule of Proportionate Share of the Net Pension Liability
For the Years Ended June 30,
(dollars in thousands)

	2022	2021	2020	2019	2018	2017	2016	2015
MSD's proportion of the net pension liability	1.95%	1.82%	1.80%	1.72%	1.60%	1.51%	1.60%	1.60%
MSD's proportionate share of the net pension liability	$124,564	$139,401	$126,866	$104,511	$93,517	$74,132	$68,653	$51,988
MSD's covered payroll	52,828	49,808	48,391	45,859	43,084	39,596	37,900	37,100
MSD's proportion of the net pension liability as a percentage of its covered payroll	235.8%	279.9%	262.2%	227.9%	217.1%	187.2%	181.1%	140.1%
Plan fiduciary net postion as a percentage of the total pension liability	57.33%	47.81%	50.45%	53.54%	53.32%	55.50%	59.97%	66.80%

Notes:

1) The amounts presented for each fiscal year were determined as of the prior year end.
2) This schedule is presented to illustrate the requirement to show information for 10 years. However, until a full 10-year trend is compiled, governments should present information for those years that information is available.

Changes in Assumptions and Benefit Terms:

2015: Since the prior measurement date, the demographic and economic assumptions that affect the measurement of the total pension liability have been updated as described in Schedule D of the CERS actuary report. The changes are noted below:

- The assumed investment rate of return was decreased from 7.75% to 7.50%.
- The assumed rate of inflation was reduced from 3.50% to 3.25%.
- The assumed rate of wage inflation was reduced from 1.00% to 0.75%.
- Payroll growth assumption was reduced from 4.50% to 4.00%.
- The mortality table used for active members is RP-2000 Combined Mortality Table projected with Scale BB to 2013 (multiplied by 50% for males and 30% for females).
- For healthy retired members and beneficiaries, the mortality table used is the RP-2000 Combined Mortality Table projected with Scale BB to 2013 (set back 1 year for females). For disabled members, the RP-2000 Combined Disabled Mortality Table projected with Scale BB to 2013 (set back 4 years for males) is used for the period after disability retirement.
- The assumed rates of retirement, withdrawal and disability were updated to more accurately reflect experience.

2016: There were no changes in assumptions and benefit terms since the prior measurement date.

2017: Since the prior measurement date, the demographic and economic assumptions that affect the measurement of the total pension liability have been updated as follows:

- The assumed investment rate of return was decreased from 7.50% to 6.25%.
- The assumed rate of inflation was reduced from 3.25% to 2.30%.
- Payroll growth assumption was reduced form 4.00% to 3.05%.

2018: Since the prior measurement date, there have been no changes in actuarial assumptions. However, during the 2018 legislative session, House Bill 185 was enacted, which updated the benefit provisions for active members who die in the line of duty. Benefits paid to the spouses of deceased members have been increased from 25% of the member’s final rate of pay to 75% of the member’s average pay. If the member does not have a surviving spouse, benefits paid to surviving dependent children have been increased from 10% of the member’s final pay rate to 50% of average pay for one child, 65% of average pay for two

children, or 75% of average pay for three children. The total pension liability as of June 30, 2018 was determined using these updated benefit provisions.
2019: Since the prior measurement date, the demographic and economic assumptions that affect the measurement of the total pension liability have been updates as follows:

- Salary increases were increased from 3.05% to a range of 3.30% - 10.30%.
- The Mortality Table was changed from RP-2000 to PUB-2010.

2020: Since the prior measurement date, there were no changes in assumptions, however benefit terms were updated as follows, which did not have a material impact on the total pension liability:

- The monthly payment to a surviving spouse of a member whose death was due to a duty-related injury upon remarriage of the spouse was reduced.
- Benefits were increased for a small number of beneficiaries.

2021: There were no changes in assumptions and benefit terms since the prior measurement date.

Louisville and Jefferson County Metropolitan Sewer District
Schedule of Employer Contributions - Pension
For the Years Ended June 30,
(dollars in thousands)

	2022	2021	2020	2019	2018	2017	2016	2015
Statutorily required contribution for pension	$ 11,009	$ 9,850	$ 9,133	$ 7,534	$ 6,196	$ 5,279	$ 4,767	$ 4,576
Contribution in relation to the statutorily required contribution	(11,009)	(9,850)	(9,133)	(7,534)	(6,196)	(5,279)	(4,767)	(4,576)
Annual contribution deficiency (excess)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
MSD contributions as a percentage of statutorily required contribution for pension	100%	100%	100%	100%	100%	100%	100%	100%
MSD covered payroll	$ 54,678	$ 52,828	$ 49,808	$ 48,391	$45,859	$43,084	$39,596	$37,900
Contributions as a percentage of MSD's covered payroll	20.13%	18.65%	18.34%	15.57%	13.51%	12.25%	12.04%	12.07%

Notes:

1) This schedule is presented to illustrate the requirement to show information for 10 years. However, until a full 10-year trend is compiled, governments should present information for those years that information is available.

Louisville and Jefferson County Metropolitan Sewer District
Schedule of Proportionate Share of the Net OPEB Liability
For the Years Ended June 30,
(dollars in thousands)

	2022	2021	2020	2019	2018
MSD's proportion of the net OPEB liability	1.95%	1.82%	1.80%	1.72%	1.60%
MSD's proportionate share of the net OPEB liability	$37,395	$43,904	$30,343	$30,470	$32,119
MSD's covered payroll	52,828	49,808	48,391	45,859	43,084
MSD's proportion of the net OPEB liability as a percentage of its covered payroll	70.79%	88.15%	62.70%	66.44%	74.55%
Plan fiduciary net position as a percentage of the total OPEB liability	62.91%	51.67%	60.44%	57.62%	52.39%

Notes:

1) This schedule is presented to illustrate the requirement to show information for 10 years. However, until a full 10-year trend is compiled, governments should present information for those years that information is available.

Changes in Assumptions and Benefit Terms:

2017: Since the prior measurement date, the demographic and economic assumptions that affect the measurement of the total OPEB liability have been updated as follows:

- The assumed rate of return was decreased form 7.50% to 6.25%.
- The assumed rate of inflation was reduced from 3.25% to 2.30%.
- Payroll growth assumption was reduced from 4.0% to 3.05%.

2018: Since the prior measurement date, there have been no changes in actuarial assumptions. However, during the 2018 legislative session, House Bill 185 was enacted, which updated the benefit provisions for active members who die in the line of duty. The system shall now pay 100% of the insurance premium for spouses and children of all active members who die in the line of duty. The total OPEB liability as of June 30, 2018 was determined using these updated benefit provisions.

2019: Since the prior measurement date, the demographic and economic assumptions that affect the measurement of the total pension liability have been updates as follows:

- Salary increases were increased from 3.05% to a range of 3.30% - 10.30%.
- The Mortality Table was changed from RP-2000 to PUB-2010.

2020: Since the prior measurement date, the demographic and economic assumptions that affect the measurement of the total OPEB liability have been updated as follows:

- The discount rate used to calculate the total OPEB liability decreased from 5.68% to 5.34%.
- The assumed increase in future health care costs, or trend assumption, is reviewed on an annual basis and was updated (i.e. increased) to better reflect more current expectations relating to anticipated future increases in the medical costs.
- Actuarial information has been updated to reflect anticipated savings from the repeal of the "Cadillac Tax" and "Health Insurer Fee" which occurred in December 2019.

2021: Since the prior measurement date, the demographic and economic assumptions that affect the measurement of the total OPEB liability have been updated as follows:

- The discount rate used to calculate the total OPEB liability decreased from 5.34% to 5.20%.
- The assumed increase in future health care costs, or trend assumption, is reviewed on an annual basis and was updated (i.e. increased) to better reflect more current expectations relating to anticipated future increases in the medical costs.

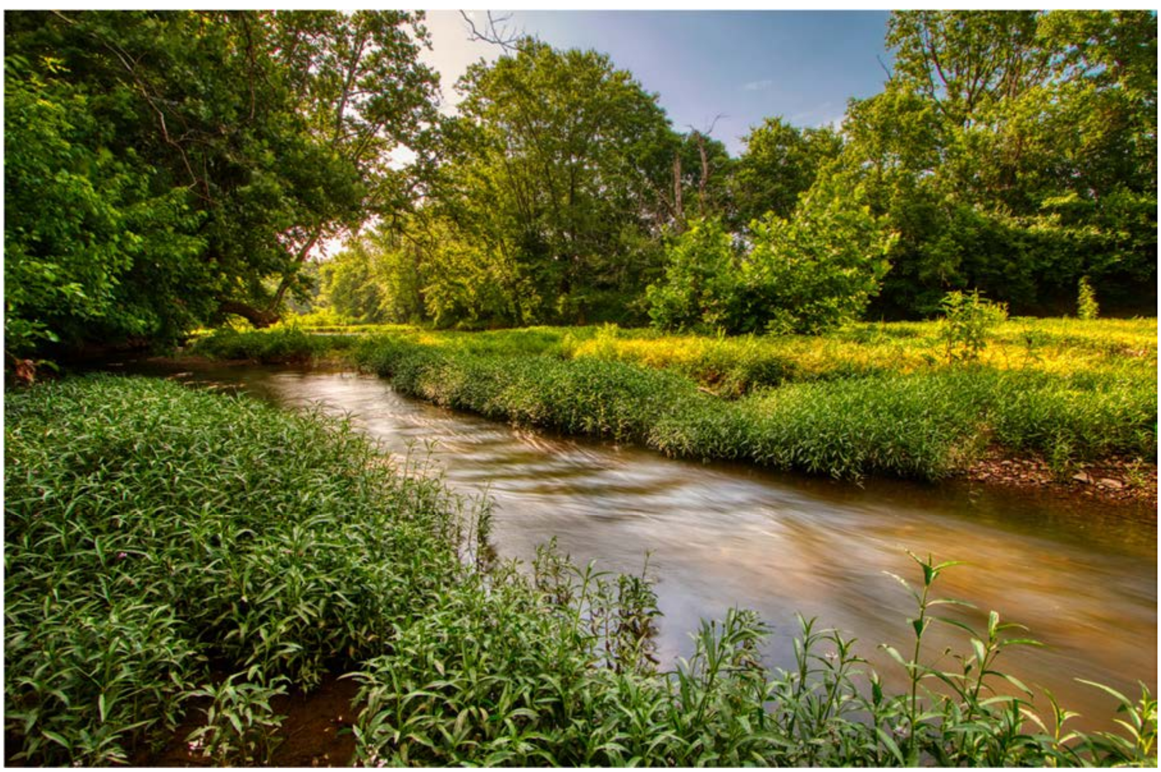
Louisville and Jefferson County Metropolitan Sewer District
Schedule of Employer Contributions - OPEB
For the Years Ended June 30,
(dollars in thousands)

	2022	2021	2020	2019	2018
Statutorily required contribution	$ 3,006	$ 2,429	$ 2,252	$ 2,443	$ 2,011
Contributions in relation to the statutorily required contribution	(3,006)	(2,429)	(2,252)	(2,443)	(2,011)
Annual contribution deficiency (excess)	$ -	$ -	$ -	$ -	$ -
MSD contributions as a percentage of statutorily required contribution for OPEB	100%	100%	100%	100%	100%
MSD covered payroll	$54,678	$52,828	$49,808	$48,391	$45,859
Contributions as a percentage of MSD's covered payroll	5.50%	4.60%	4.52%	5.05%	4.39%

Notes:

1) This schedule is presented to illustrate the requirement to show information for 10 years. However, until a full 10-year trend is compiled, governments should present information for those years that information is available.

STATISTICAL SECTION
(Unaudited)



Floyds Fork, which runs through The Parklands of Floyds Fork in eastern Jefferson County, is the receiving stream for MSD's award-winning Floyds Fork Water Quality Treatment Center.

STATISTICAL SECTION

This section of the Louisville & Jefferson County Metropolitan Sewer District's (MSD) Annual Comprehensive Financial Report presents detailed information as a supplement to the information presented in the financial statements and note disclosures to assist readers in assessing MSD's overall financial health.

Financial Trends..73

These schedules contain trend information to help readers understand how MSD's financial performance and position have changed over time. The information presented includes changes in net assets, changes in net liabilities, an analysis of revenues and expenses and a comparative statement of cash flows.

Revenue Capacity 77

These schedules contain trend information to help readers understand how MSD's revenues have changed over time. The information presented includes changes in operating revenues, changes in rates and top 10 customers.

Debt Capacity..80

These schedules present information showing trends in MSD's debt service coverage and changes in levels of outstanding debt.

Operating Information...82

These schedules contain information to help readers understand MSD's operations. The information presented includes a schedule of assets, service and administrative costs, 2022 budget to actual results, miscellaneous operating indicators and MSD's current wastewater treatment plant capacity.

Demographic and Economic Information 87

These schedules contain Louisville area employers of 1,000 or more and local demographic information.

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
COMPARATIVE STATEMENT OF NET POSITION
ASSETS AND DEFERRED OUTFLOW OF RESOURCES
YEARS ENDED JUNE 30
DOLLARS IN THOUSANDS

	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Current assets:										
Unrestricted cash and cash equivalents	$ 48,875	$ 79,281	$ 99,973	$ 43,728	$ 50,276	$ 42,449	$ 69,481	$ 63,013	$ 84,780	$ 66,376
Unrestricted investments	69,754	28,124	100	36,744	25,080	10,095	100	100	100	100
Restricted cash and cash equivalents	20,788	21,181	17,776	22,348	29,987	19,454	5,379	16,342	39,507	62,249
Restricted investments	12,947	-	-	30,172	-	22,675	14,999	-	-	-
Accounts receivable	26,242	24,664	27,227	27,915	26,332	23,480	26,696	23,787	21,809	18,465
Inventories	5,262	5,086	4,977	4,623	4,407	4,184	4,210	3,981	3,808	3,579
Prepaid expenses and other current assets	3,290	6,386	4,147	3,918	3,845	2,877	3,184	2,880	2,636	2,110
Total current assets	**187,158**	**164,722**	**154,200**	**169,448**	**139,927**	**125,214**	**124,049**	**110,103**	**152,640**	**152,879**
Noncurrent assets:										
Unrestricted noncurrent assets	7,138	10,478	12,776	13,730	1,399	37,642	29,235	18,615	-	-
Restricted noncurrent assets	80,331	82,930	79,555	76,678	151,039	86,550	120,212	120,165	121,216	90,574
Plant, lines and other facilities:										
Utility plant in service	4,269,739	3,849,047	3,697,720	3,580,741	3,047,458	2,943,414	2,812,333	2,455,476	2,451,961	2,419,751
Less: accumulated depreciation	(1,396,934)	(1,305,547)	(1,221,668)	(1,208,329)	(1,109,966)	(1,046,707)	(979,405)	(925,901)	(871,412)	(816,291)
Net capital assets in service	2,872,805	2,543,500	2,476,052	2,372,412	1,937,492	1,896,707	2,085,588	1,769,285	1,580,549	1,603,460
Construction in progress	420,200	625,113	538,013	460,501	711,655	581,222	487,674	623,181	463,167	371,816
Net capital assets	3,293,005	3,168,613	3,014,065	2,832,913	2,649,147	2,477,929	2,573,262	2,392,466	2,043,716	1,975,276
Other noncurrent assets	302,370	306,176	305,715	303,660	309,056	296,876	281,975	270,517	260,287	251,051
Total noncurrent assets	**3,682,844**	**3,568,197**	**3,412,111**	**3,226,981**	**3,110,641**	**2,898,997**	**3,004,684**	**2,801,763**	**2,425,219**	**2,316,901**
Total assets	**3,870,002**	**3,732,919**	**3,566,311**	**3,396,429**	**3,250,568**	**3,024,211**	**3,128,733**	**2,911,866**	**2,577,859**	**2,469,780**
Deferred outflow of resources	72,110	80,984	79,767	52,018	54,267	35,911	23,708	20,407	22,862	13,511
Total assets and deferred outflows	**$ 3,942,112**	**$ 3,813,903**	**$ 3,646,078**	**$ 3,448,447**	**$ 3,304,835**	**$ 3,060,122**	**$ 2,899,781**	**$ 2,692,563**	**$ 2,600,721**	**$ 2,483,291**

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
COMPARATIVE STATEMENT OF NET POSITION
LIABILITIES AND DEFERRED INFLOW OF RESOURCES AND NET POSITION
YEARS ENDED JUNE 30
DOLLARS IN THOUSANDS

	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Liabilities:										
Current liabilities (payable from current assets):										
Accounts payable and accrued expenses	$ 20,395	$ 29,099	$ 24,176	$ 18,168	$ 16,342	$ 16,550	$ 17,420	$ 14,936	$ 13,653	$ 12,693
Total current liabilities (payable from current assets)	20,395	29,099	24,176	18,168	16,342	16,550	17,420	14,936	13,653	12,693
Current liabilities (payable from restricted assets):										
Accounts payable and accrued expenses	30,464	46,237	39,860	31,945	47,472	30,764	33,271	30,607	14,712	16,168
Accrued interest	16,622	20,093	17,315	17,819	18,455	15,935	17,533	13,036	12,834	12,458
Revenue bonds payable	52,880	47,565	43,460	42,200	40,190	33,655	31,825	29,415	28,525	27,035
Bank notes	-	-	100	100	-	-	-	-	-	-
Other subordinate debt	2,038	1,817	2,167	545	105	-	-	-	-	-
Refundable deposits	1,920	2,757	2,954	2,928	2,861	2,300	2,557	1,639	1,568	1,137
Total current liabilities (payable from restricted assets)	103,924	118,469	105,856	95,537	109,083	82,654	85,186	74,697	57,639	56,798
Noncurrent liabilities:										
Bonds payable	2,228,405	2,057,555	1,868,455	1,914,340	1,956,540	1,831,605	1,722,745	1,583,390	1,549,700	1,478,225
Bond anticiaption note	226,340	226,340	226,340	226,340	226,340	226,340	226,340	226,340	226,340	226,340
Commercial paper notes	50,000	150,000	255,000	120,000	-	-	-	-	-	-
Other subordinated debt	50,604	44,304	28,284	2,113	1,766	1,973	2,072	2,168	2,261	2,351
Unamortized debt premium/discount	88,050	74,817	74,458	80,421	90,628	74,328	67,462	60,797	60,263	56,764
Investment derivative asset liability	40,914	63,431	72,228	73,040	59,443	-	-	-	-	-
At-market derivative asset liability	-	8,541	20,822	-	-	-	-	-	-	-
Net Pension liability and Net OPEB liability	161,959	183,305	157,209	134,981	125,636	74,132	68,653	51,988	58,825	-
Other long-term liabilities	-	-	-	-	-	-	690	944	761	973
Total long-term debt	2,846,272	2,808,293	2,702,796	2,551,235	2,460,353	2,208,378	2,087,962	1,925,627	1,898,150	1,764,653
Total liabilities	2,970,591	2,955,861	2,832,828	2,664,940	2,585,778	2,307,582	2,190,568	2,015,260	1,969,442	1,834,144
Deferred inflow of resources	48,489	10,277	16,520	12,955	10,383	84,052	108,633	92,233	82,293	82,233
Net position:										
Net investment in capital assets	850,316	762,848	684,412	672,304	528,377	562,784	501,675	506,187	418,784	365,225
Restricted	84,607	84,429	80,421	81,207	156,425	150,386	84,639	80,424	148,451	136,939
Unrestricted	(11,891)	488	31,897	17,041	23,872	(44,682)	14,266	(1,541)	(18,249)	64,750
Total net position	923,032	847,765	796,730	770,552	708,674	668,488	600,580	585,070	548,986	566,914
Total liabilities, deferred inflows and net position	**$ 3,942,112**	**$ 3,813,903**	**$ 3,646,078**	**$ 3,448,447**	**$ 3,304,835**	**$ 3,060,122**	**$ 2,899,781**	**$ 2,692,563**	**$ 2,600,721**	**$ 2,483,291**

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
COMPARATIVE STATEMENTS OF REVENUES, EXPENSES AND CHANGES IN NET POSITION
YEARS ENDED JUNE 30
DOLLARS IN THOUSANDS

	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Operating revenue:										
Wastewater service charges	$ 270,066	$ 245,802	$ 237,807	$ 219,467	$ 210,636	$ 194,965	$ 183,592	$ 173,895	$ 165,599	$ 159,791
Drainage service charges	86,804	79,915	75,052	69,706	63,868	58,978	54,888	51,567	48,457	45,431
Other operating income	8,497	3,701	6,198	5,195	4,645	5,691	4,810	4,407	2,576	4,823
Total operating revenue	365,367	329,418	319,057	294,368	279,149	259,634	243,290	229,869	216,632	210,045
Operating expenses:										
Service and administrative costs	169,869	170,073	167,771	154,325	142,711	122,098	121,674	106,174	108,814	108,041
Capitalization/recovery of cost	(42,166)	(41,785)	(39,643)	(38,383)	(38,147)	(31,949)	(30,516)	(30,056)	(33,568)	(32,200)
Capitalized overhead (over) under applied	-	-	-	-	88	-	-	-	-	(910)
Depreciation and amortization	103,964	97,874	98,872	87,882	77,954	77,156	62,820	63,321	63,516	60,335
Total operating expenses	231,667	226,162	227,000	203,824	182,606	167,305	153,978	139,439	138,762	135,266
Income (loss) from operations	133,700	103,256	92,057	90,544	96,543	92,329	89,312	90,430	77,870	74,779
Non-operating revenue (expense):										
Gain/loss disposal of assets	124	(21)	(15,008)	15	-	-	-	-	-	-
Investment income	(1,467)	1,777	5,275	8,338	6,280	4,047	7,559	7,527	10,234	3,695
Build America bond refund	10,344	10,398	10,325	10,339	10,249	10,226	10,332	10,096	10,096	10,986
Interest expense - bonds	(86,792)	(93,067)	(92,274)	(94,831)	(95,041)	(90,117)	(86,818)	(83,404)	(80,613)	(92,616)
Interest expense - swaps	(9,502)	(9,793)	(8,027)	(6,468)	(7,724)	(8,926)	(9,514)	(9,737)	(9,733)	(10,200)
Interest expense - other	(12,873)	(13,104)	(13,129)	(13,497)	(9,873)	(9,317)	(8,601)	(4,611)	(4,629)	(4,829)
Amortization of debt discount/premium	17,172	17,429	12,688	14,344	15,198	13,701	12,052	7,887	7,296	6,735
Amoritzation of loss on refunding	(3,768)	(3,107)	(2,404)	(2,817)	(3,147)	(3,070)	(1,949)	(1,980)	(2,552)	-
Capitalized interest	7,464	12,049	13,043	18,582	21,859	20,074	21,051	20,511	19,103	26,358
Change in fair values - swaps	11,293	8,796	812	(13,597)	16,317	26,072	(22,951)	(5,240)	(1,222)	36,286
Total non-operating revenue (expenses), net	(68,005)	(68,643)	(88,699)	(79,592)	(45,882)	(37,310)	(78,839)	(58,951)	(52,020)	(23,585)
Net income / (loss) before contributions	65,695	34,613	3,358	10,952	50,661	55,019	10,473	31,479	25,850	51,194
Contributions										
Property owner assessments	-	-	-	-	-	2,376	-	-	-	-
All other	9,572	16,422	9,085	50,926	12,726	10,513	5,037	4,605	8,103	7,134
Increase (decrease) in net position	75,267	51,035	12,443	61,878	63,387	67,908	15,510	36,084	33,953	58,328
Net position, beginning of year	847,765	796,730	770,552	708,674	668,488	600,580	585,070	548,986	566,914	508,586
Net position, OCEA merger	-	-	13,735	-	-	-	-	-	-	-
Restatement for GASB 68 implementation	-	-	-	-	-	-	-	-	(51,881)	-
Restatement for GASB 75 implementation	-	-	-	-	(23,201)	-	-	-	-	-
Net Position, beginning of year, as restated	847,765	796,730	784,287	708,674	645,287	600,580	585,070	548,986	515,033	508,586
Net position, end of year	$ 923,032	$ 847,765	$ 796,730	$ 770,552	$ 708,674	$ 668,488	$ 600,580	$ 585,070	$ 548,986	$ 566,914

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
COMPARATIVE STATEMENTS OF CASH FLOWS
YEARS ENDED JUNE 30
DOLLARS IN THOUSANDS

	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Cash flows from operating activities:										
Cash received from customers	$ 362,992	$ 331,767	$ 319,701	$ 292,791	$ 276,711	$ 262,055	$ 240,202	$ 227,976	$ 213,215	$ 207,905
Cash paid to suppliers and employees	(124,653)	(107,122)	(105,649)	(103,173)	(95,150)	(88,300)	(85,202)	(75,258)	(73,175)	(79,926)
Net cash provided by operating activities	238,339	224,645	214,052	189,618	181,561	173,755	155,000	152,718	140,040	127,979
Cash flows from capital and related financing activities:										
Proceeds from issuance of revenue bonds	248,821	233,133	-	-	175,000	150,000	175,000	80,000	100,000	115,790
Proceeds from issuance of bond anticipation note	232,924	237,295	230,079	230,334	226,340	226,340	226,340	226,340	226,340	228,735
Proceeds from issuance of commercial paper	375,000	365,000	770,000	319,112	-	-	-	-	-	-
Proceeds from issuance of notes	-	-	90,200	100	-	-	-	-	-	-
Proceeds from issuance of other subordinate debt	7,824	17,788	-	-	-	-	-	-	-	-
Premium from sale of bonds	-	-	-	-	21,894	15,715	16,887	-	-	-
Payments for retirement of revenue bonds	(55,497)	(48,033)	(43,120)	(40,190)	-	-	-	-	-	-
Payments for retirement of bond anticipation note	(226,340)	(226,340)	(226,340)	(226,340)	-	-	-	-	-	-
Payments for retirement of commercial paper	(475,000)	(470,000)	(635,000)	(200,000)	-	-	-	-	-	-
Payments for retirement of notes	-	(100)	(90,200)	-	-	-	-	-	-	-
Payments for retirement of other subordinate debt	(1,926)	(2,119)	(2,120)	(317)	-	-	-	-	-	-
Principal paid on debt	-	-	-	-	(263,395)	(271,064)	(255,291)	(271,853)	(253,465)	(399,424)
Payments for interest expense	(103,136)	(103,393)	(106,312)	(108,511)	(102,394)	(103,919)	(92,246)	-	-	-
Payments for interest on swaps	(9,502)	(9,793)	(7,622)	(6,468)	(7,724)	(8,926)	(9,514)	(9,737)	(9,733)	(10,200)
Build America bond refund	10,344	10,398	10,325	10,339	10,248	10,226	10,332	10,096	10,096	10,986
Proceeds from capital grants	2,610	1,914	1,786	9,373	7,183	6,386	91	-	-	-
Proceeds from sale of capital assets	124	-	-	15	3	10	614	-	-	-
Payments for capital assets	(224,660)	(219,909)	(224,418)	(233,360)	(216,503)	(220,892)	(213,996)	-	-	-
Proceeds from assessments	3,378	2,465	1,169	780	1,621	1,254	2,329	-	-	-
Assessments extended	-	-	-	-	-	(2,376)	-	-	-	-
Capital contributed by governments, property owners & developers	-	-	-	-	-	-	-	4,605	8,103	7,134
Assessments receivable	-	-	-	-	-	-	-	2,050	1,695	1,833
Interest income - assessments	-	-	-	-	-	-	-	340	687	731
Interest paid on revenue bonds	-	-	-	-	-	-	-	(87,813)	(91,719)	(98,944)
Acquisition and construction of capital assets	-	-	-	-	-	-	-	(147,842)	(121,237)	(113,144)
Acquisition of non-operating property	-	-	-	-	-	-	-	(247)	(211)	(223)
Net cash provided (used) by capital and related financing activities	(215,036)	(211,694)	(231,573)	(245,133)	(147,727)	(197,246)	(139,454)	(194,061)	(129,444)	(256,726)
Cash flows from investing activities:										
Change in investments	(55,638)	(55,205)	86,661	34,428	(56,798)	15,990	(15,047)	1,052	(30,642)	4,064
Investment income	2,203	1,423	6,864	6,238	5,081	2,951	5,626	13,974	15,708	13,941
Net cash provided (used) by investing activities	(53,435)	(53,782)	93,525	40,666	(51,717)	18,941	(9,421)	15,026	(14,934)	18,005
Net increase (decrease) in cash and cash equivalents	(30,132)	(40,831)	76,004	(14,849)	(17,883)	(4,550)	6,125	(26,317)	(4,338)	(110,742)
Cash and cash equivalents, beginning of year	101,986	142,817	66,813	81,662	99,545	104,095	97,970	124,287	128,625	239,367
Cash and cash equivalents, end of year	$ 71,854	$ 101,986	$ 142,817	$ 66,813	$ 81,662	$ 99,545	$ 104,095	$ 97,970	$ 124,287	$ 128,625

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
COMPARATIVE STATEMENTS OF OPERATING REVENUE
YEARS ENDED JUNE 30
DOLLARS IN THOUSANDS

	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Service charges:										
Wastewater service charges:										
Residential	$ 156,764	$ 148,091	$ 140,125	$ 122,830	$ 116,458	$ 108,809	$ 101,405	$ 96,563	$ 89,691	$ 86,409
Commercial	86,009	74,459	74,134	71,054	66,651	61,860	58,343	62,257	58,812	57,192
Industrial	23,558	23,080	21,758	23,171	24,439	21,218	19,878	17,605	19,738	19,536
Other - net	7,840	2,588	5,997	6,803	7,517	6,853	8,186	2,806	2,611	2,267
Free wastewater to Metro Government	(4,105)	(2,416)	(4,207)	(4,391)	(4,429)	(3,775)	(4,220)	(5,336)	(5,253)	(5,613)
Total wastewater service charges	270,066	245,802	237,807	219,467	210,636	194,965	183,592	173,895	165,599	159,791
Drainage service charges:										
Residential	31,497	29,413	27,684	25,716	23,811	22,111	20,439	20,090	18,522	17,372
Commercial	48,525	45,220	41,960	38,775	35,778	35,372	32,971	28,936	27,910	26,123
Industrial	5,671	5,239	4,815	4,373	3,864	3,445	3,219	3,030	3,112	2,956
Other - net	3,802	2,576	2,999	2,834	2,533	-	-	-	-	-
Free drainage to Metro Government	(2,691)	(2,533)	(2,406)	(1,992)	(2,118)	(1,950)	(1,741)	(489)	(1,087)	(1,020)
Total stormwater service charges	86,804	79,915	75,052	69,706	63,868	58,978	54,888	51,567	48,457	45,431
Total service charges	356,870	325,717	312,859	289,173	274,504	253,943	238,480	225,462	214,056	205,222
Other operating income:										
Capacity charges	5,072	2,309	4,151	3,552	3,132	3,318	2,087	2,667	1,620	1,624
Connection fees	151	135	363	14	76	(723)	1,118	379	133	93
Inflow & infiltration fees	1,610	628	1,155	1,162						
Regional facilities fees	-	-	-	-	-	-	16	34	-	-
Reserve capacity charges	-	-	-	-	-	-	-	-	-	64
Wastewater miscellaneous	1,664	629	529	467	1,437	3,096	1,589	1,327	823	2,984
Drainage miscellaneous	-	-	-	-	-	-	-	-	-	58
Total other operating income	8,497	3,701	6,198	5,195	4,645	5,691	4,810	4,407	2,576	4,823
Total operating revenue	$ 365,367	$ 329,418	$ 319,057	$ 294,368	$ 279,149	$ 259,634	$ 243,290	$ 229,869	$ 216,632	$ 210,045

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
AVERAGE RESIDENTIAL WATER AND DRAINAGE CHARGES
YEARS ENDED JUNE 30

	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Jefferson County:										
Wastewater service charges:										
Service charge	$ 18.90	$ 17.68	$ 16.83	$ 15.75	$ 14.73	$ 13.78	$ 12.89	$ 12.22	$ 11.59	$ 10.95
Volume charge[1]	20.64	19.32	18.40	17.20	16.08	15.04	14.08	13.36	12.68	12.00
Consent decree charge	15.45	14.45	13.76	12.87	12.04	11.26	10.53	9.98	9.46	8.94
Total wastewater service charges	54.99	51.45	48.99	45.82	42.85	40.08	37.50	35.56	33.73	31.89
Drainage service charges:										
Residential	11.88	11.11	10.58	9.90	9.26	8.66	8.10	7.68	7.28	6.88
Total drainage service charges	11.88	11.11	10.58	9.90	9.26	8.66	8.10	7.68	7.28	6.88
Total MSD bill	$ 66.87	$ 62.56	$ 59.57	$ 55.72	$ 52.11	$ 48.74	$ 45.60	$ 43.24	$ 41.01	$ 38.77
Oldham County:										
Wastewater service charges:										
Service charge	$ 47.92	$ 47.92	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Volume charge[1]	31.20	31.20	-	-	-	-	-	-	-	-
Total MSD bill	$ 79.12	$ 79.12	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Bullitt County (former BCSD):										
Wastewater service charges:										
Service charge	$ 35.58	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Volume charge[1]	20.70	-	-	-	-	-	-	-	-	-
Total MSD bill	$ 56.28	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Bullitt County (former Hunter's Hollow & Big Valley):										
Wastewater service charges:										
Service charge	$ 26.83	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Volume charge[1]	8.00	-	-	-	-	-	-	-	-	-
Total MSD bill	$ 34.83	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

[1]Average resdiential volume charge is based on 4,000 gallons/month of water use

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
TOP 10 WASTEWATER AND DRAINAGE CUSTOMERS

Rank	Customer Name	FY 22 Wastewater Billed	Percent Total Wastewater Revenue
1	Heaven Hill Distilleries	$ 4,219,789	1.56%
2	Lubrizol Advanced Material	2,751,255	1.02%
3	The Chemours Company FC LLC	1,723,158	0.64%
4	Swift Pork Co.	1,461,306	0.54%
5	Clariant Corporation	1,437,880	0.53%
6	Early Times Distillery	1,420,078	0.53%
7	Ford Motor Co.	1,193,083	0.44%
8	Haier US Appliance Solutions	955,585	0.35%
9	Rohm & Haas	783,570	0.29%
10	Ford Motor Co.	744,470	0.28%
	Total	16,690,174	6.18%
	Total FY 22 Wastewater Revenue:	$ 270,066,040	

Rank	Customer Name	FY 21 Wastewater Billed	Percent Total Wastewater Revenue
1	Heaven Hill Distilleries	$ 3,715,684	1.51%
2	Lubrizol Advanced Material	2,071,550	0.84%
3	Swift Pork Co.	2,053,342	0.84%
4	The Chemours Company FC LLC	1,388,385	0.56%
5	Early Times Distillery	1,373,275	0.56%
6	Ford Motor Co.	1,124,209	0.46%
7	Haier US Appliance Solutions	778,537	0.32%
8	Rohm & Haas	739,411	0.30%
9	Ford Motor Co.	717,704	0.29%
10	Clariant Corporation	590,926	0.24%
	Total	14,553,023	5.92%
	Total FY 21 Wastewater Revenue:	$ 245,801,703	

Rank	Customer Name	FY 22 Drainage Billed	Percent Total Drainage Revenue
1	Regional Airport Authority	$ 1,645,863	1.90%
2	United Parcel Service	1,456,321	1.68%
3	Jeff Co Bd Of Ed	865,812	1.00%
4	Ford Motor Co.	456,942	0.53%
5	LIT Industrial Limited Partner	346,273	0.40%
6	Kentucky State Fair	321,966	0.37%
7	Regional Airport Authority	320,679	0.37%
8	The University of Louisville Campus	308,517	0.36%
9	Churchill Downs Inc	298,224	0.34%
10	Seaboard System RR-00822	273,149	0.31%
	Total	6,293,746	7.25%
	Total FY 22 Drainage Revenue:	$ 86,804,258	

Rank	Customer Name	FY 21 Drainage Billed	Percent Total Drainage Revenue
1	Regional Airport Authority	$ 1,546,213	1.93%
2	United Parcel Service	1,358,550	1.70%
3	Jeff Co Bd of Ed	855,119	1.07%
4	Ford Motor Co.	428,087	0.54%
5	LIT Industrial Limited Partner	320,852	0.40%
6	Regional Airport Authority	305,126	0.38%
7	Kentucky State Fair	300,720	0.38%
8	Churchill Downs Inc	278,017	0.35%
9	The University of Louisville Campus	275,408	0.34%
10	Seaboard System RR-00822	260,138	0.33%
	Total	5,928,230	7.42%
	Total FY 21 Drainage Revenue:	$ 79,915,505	

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
COMPARATIVE SCHEDULE OF DEBT SERVICE COVERAGE
YEARS ENDED JUNE 30
DOLLARS IN THOUSANDS

	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Revenues:										
Service charges	$ 356,870	$ 325,717	$ 312,859	$ 289,173	$ 274,504	$ 253,943	$ 238,480	$ 225,462	$ 214,056	$ 205,222
Other operating income	8,497	3,701	6,198	5,195	4,645	5,691	4,810	4,407	2,576	4,823
Assessments	583	799	909	1,258	1,232	1,375	9,457	1,901	2,129	2,392
Investment income	8,877	12,175	15,600	18,692	16,531	14,273	17,278	17,623	20,330	20,119
Less: capitalized investment income	-	-	-	-	-	-	-	-	-	(3,817)
Total revenues	374,827	342,392	335,566	314,318	296,912	275,282	270,025	249,393	239,091	228,739
Operating expenses:										
Service and administrative costs[1]	161,144	151,527	149,945	142,082	131,948	119,586	117,671	106,301	108,814	108,041
Less: capitalized overhead	(42,166)	(41,785)	(39,643)	(38,383)	(38,148)	(31,949)	(30,516)	(30,056)	(33,568)	(33,110)
Capitalization Rate	26%	28%	26%	27%	29%	27%	26%	28%	31%	31%
Total operating expenses	118,978	109,742	110,302	103,699	93,800	87,637	87,155	76,245	75,246	74,931
Net revenues	255,849	232,650	225,264	210,619	203,112	187,645	182,870	173,148	163,845	153,808
Aggregate debt service:										
Current maturities of long-term debt	51,597	43,802	40,637	40,358	33,906	33,655	31,825	29,415	28,525	27,035
Interest expense - senior lien	86,792	93,067	92,274	94,831	95,041	90,117	86,818	83,404	80,613	92,616
Less: capitalized interest expense	(7,464)	(12,050)	(13,043)	(18,582)	(21,859)	(20,074)	(21,051)	(20,511)	(19,103)	(26,358)
Aggregate net debt service	$ 130,925	$ 124,819	$ 119,868	$ 116,607	$ 107,088	$ 103,698	$ 97,592	$ 92,308	$ 90,035	$ 93,293
Debt service coverage ratio[2]	195%	186%	188%	181%	190%	181%	187%	188%	182%	165%

[1]Excludes the actuarial portion of changes to GASB 68 pension expense and GASB 75 OPEB for the year

[2]Excludes the actuarial portion of changes to GASB 68 pension expense and GASB 75 OPEB for the year

This table has been prepared using the definitions of revenue, expense and debt service contained in MSD's 1993 Sewer & Drainage System Revenue Bond Resolution.

The 1993 Resolution and its supplements require MSD to provide "Available Revenues", as defined in the Resolution, sufficient to pay 110% of each fiscal year's "Aggregate Net Debt Service" on Revenue Bonds and 100% of "Operating Expenses". "Available Revenues", as used only for purposes of the Resolution, means all revenues and other amounts received by MSD and pledged as security for payment of Bonds issued pursuant to the Resolution, but excludes any interest income which is capitalized in accordance with generally accepted accounting principles. "Operating Expenses" includes all reasonable, ordinary, usual or necessary current expenses of maintenance, repair and operation determined in accordance with generally accepted accounting principles and the enterprise basis of accounting. "Operating Expenses" does not include reserves for extraordinary maintenance and repair, nor does it include administrative and engineering expenses of MSD which are necessary or incidental to capital improvements for which debt has been issued and which may be paid from the proceeds of such debt. "Aggregate Net Debt Service" is aggregate current principal and interest requirements on all Bonds issued pursuant to the Resolution, excluding (i) interest expense, which in accordance with generally accepted accounting principles, is capitalized and which may be paid from the proceeds of debt, and (ii) other amounts, if any, available, or expected to become available in the ordinary course for payment of principal and interest, and not included in "Available Revenues".

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
COMPARATIVE SCHEDULE OF OUTSTANDING DEBT
YEARS ENDED JUNE 30
DOLLARS IN THOUSANDS (except per capita)

	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Senior debt:										
Series 2005A	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 18,820	$ 20,770
Series 2006A	-	-	-	-	-	-	-	87,290	89,325	91,280
Series 2007A	-	-	-	-	-	42,965	44,425	45,815	48,080	50,240
Series 2008A	-	-	-	-	-	65,520	97,860	99,850	100,860	101,810
Series 2009A	-	-	-	-	6,640	13,040	41,485	47,280	52,720	57,945
Series 2009B	-	-	-	35,155	52,975	69,725	136,115	150,900	164,785	177,785
Series 2009C	180,000	180,000	180,000	180,000	180,000	180,000	180,000	180,000	180,000	180,000
Series 2010A	330,000	330,000	330,000	330,000	330,000	330,000	330,000	330,000	330,000	330,000
Series 2011A	-	243,910	246,225	248,440	250,565	252,610	254,590	256,490	258,330	260,125
Series 2013A	115,790	117,480	115,790	115,790	115,790	115,790	115,790	115,790	115,790	115,790
Series 2013B	109,280	109,280	112,575	114,100	115,550	116,940	118,255	119,515	119,515	119,515
Series 2013C	125	250	99,250	99,375	99,500	99,625	99,750	99,875	100,000	-
Series 2014A	79,650	79,700	79,750	79,800	79,850	79,900	79,950	80,000	-	-
Series 2015A	171,395	172,175	173,160	173,360	173,735	174,280	175,000	-	-	-
Series 2015B	65,975	68,815	71,515	74,160	76,685	79,085	81,350	-	-	-
Series 2016A	147,500	148,415	149,290	149,530	149,760	150,000	-	-	-	-
Series 2016B	19,910	21,960	23,915	25,825	28,095	28,095	-	-	-	-
Series 2016C	12,995	32,305	50,515	67,685	73,415	67,685	-	-	-	-
Series 2017A	149,390	155,790	161,895	169,270	169,270	-	-	-	-	-
Series 2017B	31,210	32,055	32,885	33,670	34,520	-	-	-	-	-
Series 2018A	60,380	60,380	60,380	60,380	60,380	-	-	-	-	-
Series 2019A	8,845	17,065	24,770	-	-	-	-	-	-	-
Series 2020A	224,000	224,750	-	-	-	-	-	-	-	-
Series 2020C	109,605	110,790	-	-	-	-	-	-	-	-
Series 2021A	240,485	-	-	-	-	-	-	-	-	-
Series 2022A	224,750	-	-	-	-	-	-	-	-	-
Total senior debt	2,281,285	2,105,120	1,911,915	1,956,540	1,996,730	1,865,260	1,754,570	1,612,805	1,578,225	1,505,260
Subordinate debt:										
Bond anticipation note	226,340	226,340	226,340	226,340	226,340	226,340	226,340	226,340	226,340	226,340
Commercial paper	50,000	150,000	255,000	120,000	-	-	-	-	-	-
Notes payable	-	-	100	100	-	-	-	-	-	-
Series 2009 general obligation bonds	400	785	1,155	-	-	-	-	-	-	-
Series 2014 general obligation bonds	7,010	7,445	7,865	-	-	-	-	-	-	-
Series 2017 general obligation bonds	3,364	3,399	3,433	-	-	-	-	-	-	-
Financing lease	1,870	2,030	2,180	-	-	-	-	-	-	-
Loan A09-41	1,433	1,548	1,659	1,767	1,871	1,973	2,072	2,168	2,261	2,351
Loan A10-04	1,702	1,840	1,974	-	-	-	-	-	-	-
Loan A10-05	622	670	715	-	-	-	-	-	-	-
Loan A10-06	70	76	81	-	-	-	-	-	-	-
Loan A10-07	1,581	1,703	1,821	-	-	-	-	-	-	-
Loan A11-15	402	434	466	-	-	-	-	-	-	-
Loan A12-29	4,932	5,228	5,520	-	-	-	-	-	-	-
Loan A17-028	2,084	2,084	2,013	-	-	-	-	-	-	-
Loan A18-010	1,045	1,092	1,116	-	-	-	-	-	-	-
Loan A98-04	-	-	454	891	-	-	-	-	-	-
Loan A19-015	2,640	-	-	-	-	-	-	-	-	-
Loan A19-028	22,918	17,788	-	-	-	-	-	-	-	-
Loan B10-01	236	-	-	-	-	-	-	-	-	-
Loan B10-04	262	-	-	-	-	-	-	-	-	-
Loan B15-006	70	-	-	-	-	-	-	-	-	-
Total subordinate debt	328,982	422,461	511,891	349,098	228,211	228,313	228,412	228,508	228,601	228,691
Total senior and subordinate debt	2,610,267	2,527,581	2,423,806	2,305,638	2,224,941	2,093,573	1,982,982	1,841,313	1,806,826	1,733,951
Unamortized bond premiums	(1,052)	(1,101)	(868)	(916)	(963)	(1,011)	(1,431)	(1,495)	(1,560)	(7,562)
Unamortized bond discounts	89,102	75,918	75,326	81,337	91,591	75,339	68,893	62,292	61,823	64,326
Total debt	$ 2,698,317	$ 2,602,398	$ 2,498,265	$ 2,386,059	$ 2,315,569	$ 2,167,901	$ 2,050,444	$ 1,902,110	$ 1,867,088	$ 1,790,715
Debt per capita[1]	NA	$ 3,346	$ 3,194	$ 3,112	$ 3,005	$ 2,833	$ 2,682	$ 2,491	$ 2,457	$ 2,366
Debt - percentage of personal income[1]	NA	NA	1.78%	1.76%	1.73%	1.74%	1.78%	1.82%	1.85%	1.86%

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
COMPARATIVE SCHEDULES OF PLANT, LINES AND OTHER FACILITIES
YEARS ENDED JUNE 30
DOLLARS IN THOUSANDS

	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Completed projects										
Sewer lines	$ 2,070,342	$ 1,761,425	$ 1,746,705	$ 1,648,891	$ 1,497,090	$ 1,440,360	$ 1,379,153	$ 1,277,745	$ 1,274,180	$ 1,265,437
Wastewater treatment facilities	696,900	641,414	627,903	669,041	648,503	637,166	629,083	489,292	489,289	479,998
Drainage facilities	1,011,678	997,461	880,863	839,159	561,341	542,271	515,898	448,853	448,899	443,577
Pumping and lift stations	286,975	260,231	256,228	240,963	183,795	166,158	139,651	96,812	96,819	89,503
Administrative facilities	52,471	52,348	52,297	51,734	50,818	50,817	49,342	49,342	49,342	49,317
Maintenance facilities	14,576	14,301	12,459	12,074	8,504	8,504	8,504	8,037	8,037	8,037
Machinery, equipment and other	136,797	121,868	121,265	118,879	97,407	98,138	90,702	85,395	85,395	83,882
Total completed projects	4,269,739	3,849,048	3,697,720	3,580,741	3,047,458	2,943,414	2,812,333	2,455,476	2,451,961	2,419,751
Less accumulated depreciation	(1,396,934)	(1,305,547)	(1,221,668)	(1,208,329)	(1,109,966)	(1,046,707)	(979,405)	(925,901)	(871,412)	(816,291)
Total completed projects - net	2,872,805	2,543,501	2,476,052	2,372,412	1,937,492	1,896,707	1,832,928	1,529,575	1,580,549	1,603,460
Total construction in progress	420,200	625,113	538,013	460,501	711,655	581,222	487,674	623,181	463,167	371,816
Total net plant, lines and other facilities	$ 3,293,005	$ 3,168,614	$ 3,014,065	$ 2,832,913	$ 2,649,147	$ 2,477,929	$ 2,320,602	$ 2,152,756	$ 2,043,716	$ 1,975,276

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
COMPARATIVE SUMMARIES OF SERVICE AND ADMINISTRTIVE COSTS
YEARS ENDED JUNE 30
DOLLARS IN THOUSANDS

	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Service and administrative costs:										
Labor[1]	$ 81,552	$ 77,789	$ 73,476	$ 71,379	$ 64,718	$ 59,183	$ 55,229	$ 54,378	$ 55,356	$ 55,028
Utilities	16,595	16,265	17,923	19,520	16,640	14,427	18,256	13,817	14,563	12,821
Materials & supplies	8,012	6,840	7,591	8,639	8,647	7,976	4,183	9,706	8,151	8,990
Contractual services	31,288	34,084	37,326	28,604	27,864	25,021	27,448	20,478	19,036	20,540
Chemicals	6,905	5,017	4,649	4,761	4,429	5,298	4,372	3,681	3,306	4,082
Fuel	1,658	1,083	1,069	1,393	1,276	1,077	1,326	1,616	1,837	1,825
Insurance premiums & claims	7,216	3,624	2,249	2,057	2,423	1,669	1,316	1,505	1,948	1,968
Bad debt	6,422	5,501	4,009	3,748	3,938	3,495	2,603	2,068	1,781	2,050
Other operating expense	1,496	1,323	1,654	1,981	2,012	1,440	2,939	1,052	943	737
Service and administrative costs	161,144	151,526	149,945	142,082	131,947	119,586	117,671	108,301	106,921	108,536
Less: capitalized overhead										
Capitalized project cost	(42,166)	(41,785)	(39,643)	(38,383)	(38,147)	(31,949)	(30,516)	(30,056)	(33,568)	(33,110)
Net service and administrative costs	$ 118,978	$ 109,741	$ 110,302	$ 103,699	$ 93,800	$ 87,637	$ 87,155	$ 78,245	$ 73,353	$ 75,426

[1]Excludes the actuarial portion of changes to GASB 68 pension expense and GASB 75 OPEB for the year

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
BUDGETARY COMPARISON SCHEDULE
FOR FISCAL YEAR 2022
DOLLARS IN THOUSANDS

	Approved Budget	Actual Expenditures	Variance
Expenditures			
Salaries & wages	56,398	55,014	1,384
Labor related overhead	27,012	26,538	474
Utilities	18,277	16,595	1,682
Materials & supplies	7,314	8,012	(698)
Contractual services	35,733	31,288	4,445
Chemicals	6,708	6,905	(197)
Fuel	1,356	1,658	(302)
Insurance premiums & claims	3,803	7,216	(3,413)
Bad debt	3,516	6,422	(2,906)
Other operating expense	2,086	1,496	590
Interest expense	114,261	95,763	18,498
	276,464	256,907	19,557

Reconciliation between total budgetary basis expenditures and total expenses reported in statements of revenues, expenses and changes in net position:

Actual budget expenditures	256,907
Capitalized overhead	(42,166)
Depreciation and amortization expense	103,964
GASB 68 pension expense	7,071
GASB 75 OPEB expense	1,654
Capitalized interest	(7,464)
Change in fair value - derivative instruments	(11,293)
Total expenses reported in statements of revenues, expenses and changes in net position	308,673

Expenses reported in statements of revenues, expenses and changes in net position:4

Total operating expenses	231,667
Interest expense - bonds	86,792
Interest expense - swaps	9,502
Interest expense - other	12,873
Amortization of debt discount / premium	(17,172)
Amortization of loss on refunding	3,768
Capitalized interest	(7,464)
Change in fair value - derivative instruments	(11,293)
Total expenses reported in statements of revenues, expenses and changes in net position	308,673

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
MISCELLANEOUS OPERATING INDICATORS
YEARS ENDED JUNE 30

	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
Miscellaneous Operating Indicators											
Jefferson County											
Miles of sewers	3,390	3,372	3,488	3,348	3,463	3,322	3,293	3,240	3,263	3,240	3,332
Miles of stormwater mains*	1,175	1,160	-	-	-	-	-	-	-	-	-
Number of treatment plants	5	5	5	5	5	5	5	16	19	19	20
Daily average treatment (MGD)	153	157	164	173	150	112	139	143	141	131	145
Daily treatment capacity (MGD)	200	200	200	200	200	170	170	177	177	177	173
Oldham County											
Miles of sewers	145	135	-	-	-	-	-	-	-	-	-
Number of treatment plants	8	8	-	-	-	-	-	-	-	-	-
Daily average treatment (MGD)	2	2	-	-	-	-	-	-	-	-	-
Daily treatment capacity (MGD)	4	4	-	-	-	-	-	-	-	-	-
Bullitt County											
Miles of sewers	54	-	-	-	-	-	-	-	-	-	-
Number of treatment plants	7	-	-	-	-	-	-	-	-	-	-
Daily average treatment (MGD)	1	-	-	-	-	-	-	-	-	-	-
Daily treatment capacity (MGD)	2	-	-	-	-	-	-	-	-	-	-

MGD - millions of gallons per day
*Historical data not available

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
WASTEWATER TREATMENT PLANT CAPACITY
2022

Location[1]	Design Capacity	Avg Daily Flow	Eventual Capacity	Active Customers[2] Residential	Commercial	Industrial	Total	Year Built	Treatment Process
Jefferson County Water Quality Treatement Centers									
Morris Forman	120.0	100.3	120.0	119,846	13,826	306	133,978	1958	Secondary added in 1976.
Derek R. Guthrie	60.0	37.6	60.0	64,330	3,786	38	68,154	1986	Secondary
Cedar Creek	7.5	6.9	11.3	19,075	1,105	12	20,192	1995	Tertiary: sand filter
Floyd's Fork	6.5	3.8	9.8	10,476	572	5	11,053	2001	Tertiary: sand filter
Hite Creek	6.0	4.3	9.0	11,215	673	9	11,897	1970	Tertiary: sand filter
Oldham County plants (combined)	4.3	2.1	4.3	6,379	216	1	6,596	Varies	
Bullitt County plants (combined)	1.7	1.2	1.7	3,896	115	1	4,012	Varies	
Total wastewater treatment system	206.0	156.2	216.0	235,217	20,293	372	245,274		

[1]Only MSD-owned treatment plants are included.

[2]Active customer counts include Louisville Metro customers. Metro wastewater services are provided free of charge.

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
GREATER LOUISVILLE, KENTUCKY / INDIANA
EMPLOYERS OF 1,000 EMPLOYEES OR MORE

	2022		2021		2020		2019		2018		2017		2016		2015		2014		2013			
Employers	**Rank**	**Employees**	**Rank**	**Employees**	**Rank**	**Employees**	**Rank**	**Employees**	**Rank**	**Employees**	**Rank**	**Employees**	**Rank**	**Employees**	**Rank**	**Employees**	**Rank**	**Employees**	**Rank**	**Employees**		**Type of business**
United Parcel Service, Inc.	1	25,169	1	24,110	1	25,090	1	23,533	1	21,233	1	22,354	1	22,080	1	22,189	1	20,931	1	20,047	P	Air cargo transport and distribution
Norton Healthcare (formerly Alliant Health)	2	14,413	3	14,403	3	13,828	4	12,579	4	12,247	5	11,944	5	11,389	4	10,739	4	10,245	4	9,666	N	Hospital and health care facilities
Jefferson County, KY Public Schools	3	13,596	2	14,484	2	14,484	2	14,250	2	14,476	2	14,553	2	14,739	2	14,719	2	14,676	2	14,269	G	Primary and secondary education
UofL Health Inc.	4	13,111	5	12,568	6	12,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	N	Hospital and health care facilities
Ford Motor Company	5	13,020	4	13,020	4	13,020	3	13,042	3	12,600	3	12,600	3	12,990	5	9,028	5	8,987	6	8,512	P	Vehicle manufacturing
Humana, Inc.	6	11,243	6	12,526	5	12,360	5	12,000	5	12,000	4	12,500	4	12,500	3	12,900	3	12,371	3	11,235	P	Group health insurance/HMOs
Baptist Healthcare System	7	9,030	7	9,666	8	7,346	7	8,143	9	6,159	7	6,786	10	4,995	9	5,116	11	5,339	11	4,854	N	Hospital and health care facilities
Walmart Inc.	8	8,600	8	7,500	9	6,650	8	6,650	0	-	0	-	0	-	0	-	0	-	0	-	P	Grocery Retailer
GE Appliances, a Haier company	9	8,100	10	7,100	11	6,000	10	6,000	10	6,000	10	6,000	9	6,000	7	6,000	6	6,230	8	6,000	P	Appliance manufacturing
University of Louisville	10	6,585	11	6,574	10	6,619	9	6,394	6	6,933	6	7,065	7	6,375	6	6,264	7	6,161	7	6,187	G	Higher education
Louisville-Jefferson County Metro Government	11	5,702	13	5,628	13	5,645	12	5,987	8	6,226	9	6,192	8	6,095	8	5,584	8	5,654	9	5,651	G	City/County Government
Amazon.com	12	5,700	12	5,700	12	5,700	13	5,700	7	6,500	8	6,500	6	6,500	7	6,000	-	-	-	-	P	Logistics & Customer Service
The Kroger Company	13	5,000	9	7,421	7	9,235	6	9,235	12	3,079	12	3,079	11	4,626	10	4,892	10	5,417	10	5,152	P	Grocery Retailer
Manna Inc	14	2,300	14	2,325	15	2,300	16	2,300	14	2,300	14	2,600	12	3,120	13	2,400	16	2,250	-	-	P	Food service provider
Roman Catholic Archdiocese of Louisville	15	2,193	17	2,202	17	2,202	18	2,202	15	2,252	13	2,660	17	2,263	17	2,237	14	2,260	14	2,345	N	Religious, educational, social services
LG&E and KU Energy (formerly EON)	16	2,084	15	2,209	16	2,240	17	2,208	16	2,162	17	2,201	18	2,211	18	1,993	18	2,178	16	2,131	P	Gas & Electric Utility
Robley Rex VA Medical Center	17	2,084	18	2,002	19	1,922	19	1,876	18	1,816	21	1,800	21	1,900	19	1,800	20	1,703	18	1,799	N	Hospital and health care facilities
Bullitt County Public Schools	18	1,716	20	1,737	20	1,753	23	1,649	19	1,736	22	1,718	22	1,739	21	1,671	22	1,633	21	1,629	G	Primary and secondary education
Oldham County Public Schools	19	1,704	19	1,777	21	1,710	15	2,325	24	1,567	23	1,638	24	1,604	15	2,300	23	1,576	22	1,602	G	Primary and secondary education
Samtec Inc.	20	1,575	21	1,575	23	1,601	21	1,700	26	1,500	35	1,200	29	1,300	-	-	-	-	-	-	P	Electronic connectors & microelectronics products
Rawlings Group	21	1,505	22	1,495	24	1,531	24	1,520	29	1,440	28	1,332	30	1,211	-	-	-	-	-	-	P	Insurance subrogation
New Albany - Floyd County Schools	22	1,475	23	1,475	26	1,414	26	1,500	21	1,652	26	1,405	25	1,600	22	1,622	21	1,648	20	1,640	G	Primary and secondary education
Anthem, Inc.	23	1,400	0	-	31	1,245	30	1,320	32	1,269	34	1,238	29	1,300	26	1,350	32	1,139	37	1,100	P	Health Insurance sales and services
Churchill Downs Inc.	24	1,317	0	-	38	1,000	25	1,508	25	1,515	25	1,526	0	-	0	-	0	-	0	-	P	Racing, gaming and online entertainment
Trilogy Health Services	25	1,271	0	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-	P	Senior Living Services
Material Handling Systems	26	1,205	0	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-	P	Conveyor and Automated Sortation Systems
JBS USA	27	1,200	26	1,165	32	1,200	35	1,200	34	1,200	37	1,189	34	1,180	-	-	-	-	-	-	P	Pork Products
Spectrum (formerly Charter Communications)	27	1,200	25	1,200	14	2,330	14	2,330	13	2,400	15	2,400	33	1,200	35	1,131	34	1,200	-	-	P	Call Center
Brown-Forman Corp.	29	1,166	27	1,149	28	1,300	31	1,300	30	1,300	31	1,304	29	1,300	31	1,266	31	1,256	32	1,244	P	Distilled spirits manufacturing
Seven Counties Services	30	1,153	31	1,072	0	-	32	1,266	31	1,284	27	1,340	36	1,165	34	1,168	33	1,129	36	1,111	N	Health care provider
Yum! Brands Inc. (formerly Tricon)	31	1,129	29	1,096	0	-	0	-	0	-	30	1,314	28	1,343	32	1,226	30	1,270	23	1,544	P	Food service provider
Faurecia	32	1,108	0	-	32	1,200	35	1,200	34	1,200	40	1,000	-	-	-	-	-	-	-	-	P	Exhaust systems, interiors & seat systems
US Census Bureau	33	1,107	16	2,147	18	2,113	29	1,330	33	1,209	38	1,185	38	1,037	-	-	-	-	-	-	N	Government
Greater Clark County, IN School Corp.	34	1,057	28	1,143	30	1,253	33	1,251	28	1,447	32	1,295	32	1,247	24	1,447	24	1,303	30	1,357	G	Primary and secondary education
Signature Healthcare	35	1,013	0	-	0	-	40	1,093	0	-	24	1,558	0	-	0	-	0	-	0	-	N	Post-acute and long-term care provider
ADP Inc.	36	1,000	34	1,000	38	1,000	42	1,000	0	-	0	-	0	-	0	-	0	-	0	-	P	Grocery Retailer
Shelby County Public Schools	36	1,000	34	1,000	0	-	0	-	0	-	40	1,000	0	-	0	-	0	-	0	-	G	Primary and secondary education
Kindred Healthcare (formerly Vencor Inc.)	0	-	30	1,082	35	1,185	34	1,246	23	1,571	16	2,216	16	2,381	16	2,244	17	2,249	17	2,130	P	Long-term health care, facilities
BrightSpring Health Services	0	-	32	1,062	37	1,057	20	1,800	17	1,948	19	1,948	14	2,435	28	1,312	35	1,054	0	-	P	Health care provider
Malone Workforce Solutions	0	-	33	1,020	27	1,400	37	1,182	-	-	-	-	-	-	-	-	-	-	-	-	P	Grocery Retailer
Texas Roadhouse Inc.	0	-	25	1,452	25	1,452	26	1,500	26	1,500	29	1,320	35	1,179	-	-	-	-	-	-	P	Food service provider
U.S. Postal Service	0	-	0	-	22	1,691	22	1,691	20	1,691	20	1,896	23	1,659	12	2,401	13	2,546	13	2,509	G	Mail distribution
Papa John's International	0	-	0	-	29	1,263	28	1,485	22	1,626	18	2,088	19	2,088	30	1,279	25	1,503	35	1,143	P	Quick service restaurant
Caesars Southern Indiana	0	-	0	-	32	1,200	38	1,135	38	1,160	33	1,239	31	1,252	29	1,303	29	1,404	26	1,418	P	Gaming and entertainment resort
Clark Memorial Hospital	0	-	0	-	36	1,063	41	1,011	39	1,060	0	-	33	1,225	33	1,225	30	1,270	0	-	P	Health care provider
Martinrea Heavy Stamping	0	-	0	-	0	-	39	1,100	0	-	0	-	0	-	0	-	0	-	0	-	P	Grocery Retailer
LSC Communications (formerly Publisher's Printing)	0	-	0	-	0	-	0	-	34	1,200	35	1,200	27	1,400	25	1,413	28	1,432	24	1,516	P	Trade, professional, special printing
PNC Bank	0	-	0	-	0	-	0	-	37	1,175	39	1,175	26	1,500	23	1,569	0	-	0	-	P	Financial Services
Mortenson Dental Partners	0	-	0	-	0	-	0	-	40	1,047	0	-	0	-	0	-	0	-	0	-	P	Dental Services
Commonwealth of Kentucky	0	-	0	-	0	-	0	-	0	-	0	-	13	2,514	11	3,794	12	4,042	12	4,161	G	General purpose government
U.S. Federal Government	0	-	0	-	0	-	0	-	0	-	0	-	15	2,406	14	2,397	15	2,252	15	2,191	G	General purpose government
Floyd Memorial Hospital & Health Services	0	-	0	-	0	-	0	-	0	-	0	-	20	1,950	20	1,756	19	1,769	19	1,711	P	Hospital and health services provider
Securitas Security Services USA Inc.	0	-	0	-	0	-	0	-	0	-	0	-	0	-	27	1,328	26	1,476	25	-	P	Security Services
Al J Schneider Co	0	-	0	-	0	-	0	-	0	-	40	1,000	37	1,047	37	1,000	36	1,050	0	-	P	Hotel / Restaurants
American Commercial Lines	0	-	0	-	0	-	0	-	0	-	0	-	0	-	36	1,100	0	-	0	-	P	Marine Transportation Service
Total employees		173,231		173,085		177,602		167,741		150,680		156,558		158,045		149,163		138,603		125,854		

P=for-profit organization N=not-for-profit organization G=governmental organization
Source: Business First of Louisville, KY, July 15, 2022

Fiscal Year	Population[1]	Personal Income[2]	Unemployment Rate[3]	# of MSD Employees	Miles of Sewer Line
2013	756,832	$ 33,314,513	5.4%	649	3,240
2014	760,026	$ 34,609,792	6.4%	606	3,263
2015	763,623	$ 34,575,582	4.9%	591	3,288
2016	764,378	$ 36,517,217	4.6%	617	3,293
2017	765,352	$ 37,813,140	4.6%	626	3,322
2018	770,517	$ 40,017,970	4.2%	632	3,463
2019	766,757	$ 41,968,275	4.2%	645	3,348
2020	782,123	$ 44,407,286	6.4%	675	3,488
2021	777,874	N/A	5.3%	648	3,507
2022	N/A	N/A	3.4%	674	3,589

[1]Jefferson County, Kentucky, source: U.S. Census Bureau (https://www.census.gov/quickfacts/fact/table/jeffersoncountykentucky/POP010220)
[2]Jefferson County, Kentucky, source: Bureau of Economic Analysis website (www.bea.gov)
[3]Louisville Metropolitan Statistical Area, source: U.S. Bureau of Labor Statistics (https://www.bls.gov/eag/eag.ky_louisville_msa.htm)

Cover photo: Turkey Run

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Louisville, KY 40203-1911
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24/7 Customer Relations
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A publication of MSD Finance Department

APPENDIX C
UNAUDITED INTERIM FINANCIAL STATEMENTS
FOR THE PERIOD ENDING MARCH 31, 2023

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
STATEMENT OF NET POSITION - UNAUDITED
AS OF MARCH 31, 2023
DOLLARS IN THOUSANDS

	FY 2023 YTD	FY 2022 YTD
Current Assets		
Unrestricted Current Assets		
Cash and cash equivalents	$ 69,760	$ 51,153
Investments	53,878	64,919
Accounts receivable, less allowance for doubtful accounts of $4,536 (2023), $4,766 (2022)	27,679	28,482
Inventories	5,589	5,272
Accrued interest receivable	341	231
Prepaid expenses and other current assets	4,375	4,383
Total unrestricted current assets	161,622	154,440
Restricted Current Assets		
Cash and cash equivalents	79,105	67,243
Investments	3,039	33,044
Total restricted current assets	82,144	100,287
Total Current Assets	243,766	254,727
Noncurrent Assets		
Unrestricted Noncurrent Assets		
Accounts receivable, non-current	6,515	9,523
Restricted Noncurrent Assets:		
Cash and cash equivalents	3,988	1,844
Investments	77,704	79,133
Total restricted non-current assets	81,692	80,977
Capital Assets		
Utility plant in service	4,298,458	3,907,613
Less allowance for depreciation	(1,491,527)	(1,393,212)
	2,806,931	2,514,401
Construction in progress	553,409	710,898
Net capital assets	3,360,340	3,225,299
Other Noncurrent Assets		
Prepaid Regulatory Assets	442,224	428,969
Less allowance for depreciation	(157,584)	(146,716)
Net Prepaid Regulatory Assets	284,640	282,253
Unamortized bond issuance costs	13,875	14,866
Unamortized reserve fund insurance	742	771
Total other noncurrent assets	299,257	297,890
Total Non-current Assets	3,747,804	3,613,689
Total Assets	3,991,570	3,868,416
Deferred Outflow of Resources		
Deferred outflow - Pension	21,836	25,932
Deferred outflow - OPEB	23,447	21,962
Deferred outflow - SWAPs	-	3,898
Unamortized loss on refunding	23,971	27,779
Total deferred outflow of resources	69,254	79,571
Total Assets and Deferred Outflow of Resources	**$ 4,060,824**	**$ 3,947,987**

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
STATEMENT OF NET POSITION - UNAUDITED (continued)
AS OF MARCH 31, 2023
DOLLARS IN THOUSANDS

	FY 2023 YTD	FY 2022 YTD
Current Liabilities		
Current Liabilities To Be Paid From Unrestricted Assets		
Accounts payable	$ 12,805	$ 8,936
Accrued salaries and related benefits	7,634	9,451
Total unrestricted current liabilities	20,439	18,387
Current Liabilities To Be Paid From Restricted Assets		
Accounts payable and accrued expenses (capital), includes contractor retainage of $5,562 (2023), $11,615 (2022)	12,686	15,657
Accrued interest payable	39,158	37,386
Refundable deposits	1,922	2,338
Revenue bonds payable	52,880	51,480
Bank notes	-	-
Other subordinate debt	2,420	2,027
Total restricted current liabilities	109,066	108,888
Total Current Liabilities	129,505	127,275
Noncurrent Liabilities		
Bonds payable, net	2,309,196	2,373,352
Bond anticipation note	226,340	226,340
Commercial paper notes	110,000	20,000
Other subordinate debt	48,681	45,971
Net pension liability	124,564	139,401
Net OPEB obligation	37,395	43,904
Investment Derivative Asset Liability	32,337	55,170
At-Market Derivative Asset Liability	-	3,898
Total Noncurrent Liabilities	2,888,513	2,908,036
Total Liabilities	3,018,018	3,035,311
Deferred Inflow of Resources		
Deferred inflow - pension	17,811	-
Deferred inflow - OPEB	17,068	7,420
Other deferred inflows	16,270	2,503
Total deferred inflow of resources	51,149	9,923
Total Liabilities and Deferred Inflow of Resources	**$ 3,069,167**	**$ 3,045,234**
Net Position		
Net investment in capital assets	$ 870,694	$ 723,907
Assets restricted for debt service	42,663	122,809
Liabilities associated with restricted debt service	-	-
Unrestricted	78,300	56,037
Total net position	991,657	902,753
Total Liabilities, Deferred Inflow of Resources and Net Position	**$ 4,060,824**	**$ 3,947,987**

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
STATEMENT OF REVENUES, EXPENSES AND CHANGES IN NET POSITION - UNAUDITED
FOR THE MONTH ENDED MARCH 31, 2023
DOLLARS IN THOUSANDS

	FY 2023 YTD	FY 2022 YTD
Operating Revenues		
Service charges	$ 289,603	$ 270,102
Other operating income	5,189	7,090
Total operating revenues	294,792	277,192
Operating Expenses		
Service and administrative costs	93,121	91,377
GASB 68 pension/GASB 75 OPEB actuarial expense	-	-
Depreciation and amortization	81,770	75,227
Total operating expenses	174,891	166,604
Income from Operations	119,901	110,588
Non-operating Revenue (Expenses)		
Gain/Loss disposal of assets	(2,667)	126
Investment income	5,460	(1,437)
Build America bond refund	8,240	7,762
Interest expense - bonds	(68,706)	(62,974)
Interest expense - swaps	(3,439)	(7,472)
Interest expense - other	(10,871)	(10,534)
Amortization of debt discount / premium	10,387	13,156
Amortization of loss on refunding	(2,856)	(2,817)
Capitalized interest	5,792	-
Change in fair value - swaps	5,562	8,262
Total non-operating revenue (expenses) - net	(53,098)	(55,928)
Income before capital contributions	66,803	54,660
Capital contributions	1,822	327
Increase in net position	68,625	54,987
Net position, beginning	923,032	847,765
Net position, ending	$ 991,657	$ 902,752

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
COMPARATIVE STATEMENT OF CASH FLOWS - UNAUDITED
FOR THE MONTH ENDED MARCH 31, 2023
DOLLARS IN THOUSANDS

	FY 2023 YTD	FY 2022 YTD
Cash Flows from Operating Activities		
Cash received from customers	$ 293,327	$ 272,997
Cash paid to suppliers	(49,542)	(59,456)
Cash paid to employees	(45,288)	(41,046)
Net Cash Provided by Operating Activities	198,497	172,495
Cash Flows from Capital and Related Financing Activities		
Proceeds from issuance of revenue bonds	-	248,821
Proceeds from issuance of bond anticipation note	229,468	232,924
Proceeds from issuance of commercial paper	300,000	335,000
Proceeds from other subordinate debt	-	2,695
Payments for retirement of revenue bonds	-	(4,023)
Payments for retirement of bond anticipation note	(226,340)	(226,340)
Payments for retirement of commercial paper	(240,000)	(465,000)
Payments for retirement of other subordinated debt	(1,674)	(1,441)
Payments for interest expense	(57,043)	(56,215)
Payments for interest on swaps	(3,439)	(7,472)
Build America bond interest subsidy	8,240	7,762
Proceeds from sales of capital assets	(2,667)	126
Payments for capital assets	(156,021)	(152,643)
Proceeds from assessments	693	975
Net Cash Provided (Used) by Capital and Related Financing	(148,783)	(84,831)
Cash Flows from Investing Activities		
Purchase of investments	(99,521)	(117,022)
Maturity of investments	127,216	46,294
Investment income	3,590	1,310
Net Cash Provided (Used) by Investing Activities	31,285	(69,418)
Net Increase (Decrease) in Cash and Cash Equivalents	80,999	18,246
Cash and Cash Equivalents, Beginning of Year	71,854	101,986
Cash and Cash Equivalents, End of Year	$ 152,853	$ 120,232

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
COMPARATIVE STATEMENT OF CASH FLOWS - UNAUDITED (continued)
FOR THE MONTH ENDED MARCH 31, 2023
DOLLARS IN THOUSANDS

	FY 2023 YTD	FY 2022 YTD
Reconciliation of Operating Income to Net Cash provided by Operating Activities		
Income from operations	$ 119,901	$ 110,588
Adjustments to reconcile operating income to net cash provided by operating activities		
Depreciation and amortization	81,770	75,226
Accounts receivable	(1,467)	(3,776)
Inventories	(327)	(186)
Prepaid expense	(1,426)	1,773
Accounts payable	2,998	(9,409)
Customer deposits	2	(418)
Accrued liabilities	(2,954)	(1,303)
Pension liability	-	-
OPEB liability	-	-
Net Cash Provided by Operating Activities	$ 198,497	$ 172,495
Non-Cash Capital Financing and Investing Activities		
Contribution of plant, lines and other facilities by developers and property owners	$ -	$ -
Construction costs in accounts payable	12,686	(15,657)
Unrealized (gain)/loss on investments	(1,903)	2,978
Decrease in interest rate swap deferred revenue	(373)	(373)
Change in fair value - derivative instruments	(5,562)	(8,262)
Bonds issued for refunding of debt - Series 2011A	-	246,555

APPENDIX D-1
FORM OF NOTE COUNSEL OPINION
FOR TAX-EXEMPT NOTES

The form of the legal approving opinion of Dinsmore & Shohl LLP, Bond Counsel, is set forth below. The actual opinion will be delivered on the date of delivery of the Commercial Paper Notes referred to therein and may vary from the form set forth to reflect circumstances both factual and legal at the time of such delivery. Recirculation of the Offering Memorandum shall create no implication that Dinsmore & Shohl LLP has reviewed any of the matters set forth in such opinion after the date of such opinion.

[Delivery Date]

Louisville and Jefferson County Metropolitan Sewer District
Louisville, Kentucky
Ladies and Gentlemen:

We have acted as bond counsel in connection with the authorization, sale, and issuance by the Louisville and Jefferson County Metropolitan Sewer District (the "District"), a public body corporate and a political subdivision duly established and validly existing under the laws of the Commonwealth of Kentucky (the "Commonwealth"), acting by and through its Board, as its duly authorized governing body, of $500,000,000 aggregate principal amount of Sewer and Drainage System Subordinated Program Notes, Commercial Paper Sub-Series 2023___ and Commercial Paper Sub-Series 2023___ (collectively, the "Tax-Exempt Notes").

The Tax-Exempt Notes have been authorized and issued in accordance with (i) Chapters 58, 65, and 76 of the Kentucky Revised Statutes (the "Act"), (ii) the 2023 Program Note Resolution adopted by the Board of the District on March 27, 2023 (the "2023 Program Note Resolution"), and (iii) the Sewer and Drainage System Revenue Bond Resolution adopted by the Board of the District on December 7, 1992, as amended on March 4, 1993, June 30, 1993, December 14, 1994, January 25, 1996, and February 24, 2003 (collectively, the "Bond Resolution"). Under the 2023 Program Note Resolution, the District has authorized the issuance of the Tax-Exempt Notes for the purposes of (a) paying the costs of issuing the Tax-Exempt Notes; (b) paying the costs of various capital projects for the District's sewer and drainage system (the "System"); and (c) refunding (1) any Program Notes issued by the District under the 2023 Program Note Resolution and (2) any Prior Program Notes previously issued by the District under the Prior Program Resolution. All capitalized terms used but not defined herein shall have the meanings ascribed to such terms in the Bond Resolution and the 2023 Program Note Resolution.

We have examined such portions of the Constitution and Statutes of the United States, the Constitution and Statutes of the Commonwealth, and such applicable court decisions, regulations, rulings, and opinions as we have deemed necessary or relevant for the purposes of the opinions set forth below.

We have also examined all of the records and the transcript of proceedings relating to the authorization and issuance of the Tax-Exempt Notes, including a specimen Tax-Exempt Note, and other relevant matters. We have also made such investigation as we have deemed necessary for the purposes of such opinions, and have relied upon certificates of officials of the District as to certain factual matters. Based upon the foregoing, we advise you that, in our opinion, under existing law:

1. The District is a public body corporate and a political subdivision duly established under the laws of the Commonwealth and validly existing under the provisions of the Constitution and laws of the Commonwealth, including the Act, with right and power under the Act to adopt the Bond Resolution and the 2023 Program Note Resolution.

2. The Bond Resolution and the 2023 Program Note Resolution have been duly and lawfully adopted by the Board of the District, and constitute valid and binding special and limited obligations of the District enforceable in accordance with their respective terms.

3. The Tax-Exempt Notes have been duly and lawfully authorized, executed, and issued by the District in accordance with the Constitution and Statutes of the Commonwealth, including the Act, and in accordance with the Bond Resolution and the 2023 Program Note Resolution, and constitute valid and binding special obligations of the District, payable as to principal, interest, and premium, if any, solely from the property pledged therefor in the 2023 Program Note Resolution (the "Pledged Property"). The pledge of the Pledged Property securing the Tax-Exempt Notes is inferior and subordinate to the pledge thereof to the Bonds (as defined in the Bond Resolution).

4. The Tax-Exempt Notes are special and limited revenue obligations of the District and do not constitute a debt, liability, or general obligation of the District, the Commonwealth, or any political subdivision or taxing authority thereof, including the Louisville/Jefferson County Metro Government and the County of Jefferson, Kentucky, within the meaning of the Constitution and laws of the Commonwealth. The District has no taxing power.

5. Interest on the Tax-Exempt Notes is not subject to taxation by the Commonwealth, and the Tax-Exempt Notes are not subject to ad valorem taxation by the Commonwealth or by any political subdivision thereof.

6. Under the laws, regulations, rulings, and judicial decisions in effect as of the date hereof, interest on the Tax-Exempt Notes is excludible from gross income for federal income tax purposes under the Internal Revenue Code of 1986, as amended (the "Code"). Further, interest on the Tax-Exempt Notes will not be treated as a specific item of tax preference, under Section 57(a)(5) of the Code, in computing the alternative minimum tax; provided, however, that interest on any Tax-Exempt Notes held by an applicable corporation, as defined in Section 59(k) of the Code (generally, a corporation with more than $1,000,000,000 in average annual adjusted financial statement income over a period of three tax years), will be taken into account (a) in calculating average annual adjusted financial statement income for the purpose of determining whether a corporation is an applicable corporation, and (b) in determining adjusted financial statement income of applicable corporations for the purpose of computing the alternative minimum tax imposed on applicable corporations under Section 55 of the Code for tax years beginning after December 31, 2022. In rendering the opinions in this paragraph, we have assumed continuing compliance with certain covenants designed to meet the requirements of Section 103 of the Code. We express no other opinion as to the federal or state tax consequences of purchasing, holding or disposing of the Tax-Exempt Notes.

7. The District has <u>not</u> designated the Tax-Exempt Notes as "qualified tax-exempt obligations" with respect to investments by certain financial institutions under Section 265 of the Code.

In rendering this opinion, we have relied upon the covenants and the certifications of facts, estimates, and expectations made by officials of the District and others contained in the transcript for the

Tax-Exempt Notes, which we have not independently verified. It is to be understood that the enforceability of the Bond Resolution, the 2023 Program Note Resolution, the Tax-Exempt Notes, and any other agreements relating thereto may be limited by bankruptcy, insolvency, reorganization, moratorium, insolvency, or other similar laws relating to or affecting the enforcement of creditors' rights or by general equitable principles.

Very truly yours,

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APPENDIX D-2
FORM OF NOTE COUNSEL OPINION
FOR TAXABLE NOTES

The form of the legal approving opinion of Dinsmore & Shohl LLP, Bond Counsel, is set forth below. The actual opinion will be delivered on the date of delivery of the Commercial Paper Notes referred to therein and may vary from the form set forth to reflect circumstances both factual and legal at the time of such delivery. Recirculation of the Offering Memorandum shall create no implication that Dinsmore & Shohl LLP has reviewed any of the matters set forth in such opinion after the date of such opinion.

[Delivery Date]

Louisville and Jefferson County Metropolitan Sewer District
Louisville, Kentucky
Ladies and Gentlemen:

We have acted as bond counsel in connection with the authorization, sale, and issuance by the Louisville and Jefferson County Metropolitan Sewer District (the "District"), a public body corporate and a political subdivision duly established and validly existing under the laws of the Commonwealth of Kentucky (the "Commonwealth"), acting by and through its Board, as its duly authorized governing body, of $500,000,000 aggregate principal amount of Sewer and Drainage System Subordinated Program Notes, Commercial Paper Sub-Series 2023___ and Commercial Paper Sub-Series 2023___ (collectively, the "Taxable Notes").

The Taxable Notes have been authorized and issued in accordance with (i) Chapters 58, 65, and 76 of the Kentucky Revised Statutes (the "Act"), (ii) the 2023 Program Note Resolution adopted by the Board of the District on March 27, 2023 (the "2023 Program Note Resolution"), and (iii) the Sewer and Drainage System Revenue Bond Resolution adopted by the Board of the District on December 7, 1992, as amended on March 4, 1993, June 30, 1993, December 14, 1994, January 25, 1996, and February 24, 2003 (collectively, the "Bond Resolution"). Under the 2023 Program Note Resolution, the District has authorized the issuance of the Taxable Notes for the purposes of (a) paying the costs of issuing the Taxable Notes; (b) paying the costs of various capital projects for the District's sewer and drainage system (the "System"); and (c) refunding (1) any Program Notes issued by the District under the 2023 Program Note Resolution and (2) any Prior Program Notes previously issued by the District under the Prior Program Resolution. All capitalized terms used but not defined herein shall have the meanings ascribed to such terms in the Bond Resolution and the 2023 Program Note Resolution.

We have examined such portions of the Constitution and Statutes of the United States, the Constitution and Statutes of the Commonwealth, and such applicable court decisions, regulations, rulings, and opinions as we have deemed necessary or relevant for the purposes of the opinions set forth below.

We have also examined all of the records and the transcript of proceedings relating to the authorization and issuance of the Taxable Notes, including a specimen Taxable Note, and other relevant matters. We have also made such investigation as we have deemed necessary for the purposes of such opinions, and have relied upon certificates of officials of the District as to certain factual matters. Based upon the foregoing, we advise you that, in our opinion, under existing law:

1. The District is a public body corporate and a political subdivision duly established under the laws of the Commonwealth and validly existing under the provisions of the Constitution and laws of the Commonwealth, including the Act, with right and power under the Act to adopt the Bond Resolution and the 2023 Program Note Resolution.

2. The Bond Resolution and 2023 Program Note Resolution have been duly and lawfully adopted by the Board of the District, and constitute valid and binding special and limited obligations of the District enforceable in accordance with their respective terms.

3. The Taxable Notes have been duly authorized, executed, and issued by the District in accordance with the Constitution and Statutes of the Commonwealth, including the Act, and in accordance with the Bond Resolution and the 2023 Program Note Resolution, and constitute valid and binding special obligations of the District, payable as to principal, interest, and premium, if any, solely from the property pledged therefor in the 2023 Program Note Resolution (the "Pledged Property"). The pledge of the Pledged Property securing the Taxable Notes is inferior and subordinate to the pledge thereof to Bonds (as defined in the Bond Resolution).

4. The Taxable Notes are special and limited revenue obligations of the District and do not constitute a debt, liability, or general obligation of the District, the Commonwealth, or any political subdivision or taxing authority thereof, including the Louisville/Jefferson County Metro Government and the County of Jefferson, Kentucky, within the meaning of the Constitution and laws of the Commonwealth of Kentucky. The District has no taxing power.

5. Interest on the Taxable Notes is subject to taxation by the Commonwealth, but the Taxable Notes are not subject to ad valorem taxation by the Commonwealth or by any political subdivision thereof.

6. Under the laws, regulations, rulings, and judicial decisions in effect as of the date hereof, interest on the Taxable Notes is includable in gross income for federal income tax purposes, under the Internal Revenue Code of 1986, as amended (the "Code").

In rendering this opinion, we have relied upon the covenants and the certifications of facts, estimates, and expectations made by officials of the District and others contained in the transcript for the Taxable Notes, which we have not independently verified. It is to be understood that the enforceability of the Bond Resolution, the 2023 Program Note Resolution, the Taxable Notes, and any other agreements relating thereto may be limited by bankruptcy, insolvency, reorganization, moratorium, insolvency, or other similar laws relating to or affecting the enforcement of creditors' rights or by general equitable principles.

Very truly yours,

APPENDIX E
BOOK-ENTRY ONLY SYSTEM

The Depository Trust Company ("DTC"), New York, New York, will act as securities depository for the Program Notes. The Program Notes will be issued as fully-registered securities registered in the name of Cede & Co. (DTC's partnership nominee) or such other name as may be requested by an authorized representative of DTC. One fully-registered, a Commercial Paper Note certificate will be issued for each maturity date of the Program Notes, each in the aggregate principal amount of such maturity, and will be deposited with DTC.

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. 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"). DTC has a Standard & Poor's rating of AA+. 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 Program Notes under the DTC system must be made by or through Direct Participants, which will receive a credit for the Program Notes on DTC's records. The ownership interest of each actual purchaser of each Commercial Paper Note ("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 Program Notes 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 Program Notes, except in the event that use of the book-entry system for the Program Notes is discontinued.

To facilitate subsequent transfers, all Program Notes 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 Program Notes with DTC and their registration in the name of Cede & Co. or such other DTC nominee do not affect any change in beneficial ownership. DTC has no knowledge of the actual Beneficial Owners of the Program Notes; DTC's records reflect only the identity of the Direct Participants to whose accounts such Program Notes 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 Program Notes may wish to take certain steps to augment the transmission to them of notices of significant events with respect to the Program Notes, such as redemptions, tenders, defaults, and proposed amendments to the Commercial Paper Note documents. For example, Beneficial Owners of Program Notes may wish to ascertain that the nominee holding the Program Notes 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 Program Notes 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.

Neither DTC nor Cede & Co. (nor any other DTC nominee) will consent or vote with respect to Program Notes unless authorized by a Direct Participant in accordance with DTC's MMI Procedures. Under its usual procedures, DTC mails an Omnibus Proxy to the District 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 Program Notes are credited on the record date (identified in a listing attached to the Omnibus Proxy).

Redemption proceeds, distributions, and dividend payments on the Program Notes 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 detailed information from the District or Agent, on payable date 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, Agent, or the District, subject to any statutory or regulatory requirements as may be in effect from time to time. Payment of redemption proceeds, distributions, and dividend payments to Cede & Co. (or such other nominee as may be requested by an authorized representative of DTC) is the responsibility of the District or Agent, disbursement of such payments to Direct Participants will be the responsibility of DTC, and disbursement of such payments to the Beneficial Owners will be the responsibility of Direct and Indirect Participants.

DTC may discontinue providing its services as depository with respect to the Program Notes at any time by giving reasonable notice to the District or Agent. Under such circumstances, in the event that a successor depository is not obtained, Commercial Paper Note certificates are required to be printed and delivered.

The District may decide to discontinue use of the system of book-entry-only transfers through DTC (or a successor securities depository). In that event, Commercial Paper Note certificates will be printed and delivered to DTC.

The information in this section concerning DTC and DTC's book-entry system has been obtained from sources that the District believes to be reliable, but the District takes no responsibility for the accuracy thereof.

APPENDIX F
BANK OF AMERICA, N.A.

Bank of America, N.A. (the "*Bank")* is a national banking association organized under the laws of the United States, with its principal executive offices located in Charlotte, North Carolina. The Bank is a wholly-owned indirect subsidiary of Bank of America Corporation (the "*Corporation")* and is engaged in a general consumer banking, commercial banking and trust business, offering a wide range of commercial, corporate, international, financial market, retail and fiduciary banking services. As of March 31, 2023, the Bank had consolidated assets of $2.518 trillion, consolidated deposits of $2.015 trillion and stockholder's equity of $232.471 billion based on regulatory accounting principles.

The Corporation is a bank holding company and a financial holding company, with its principal executive offices located in Charlotte, North Carolina. Additional information regarding the Corporation is set forth in its Annual Report on Form 10-K for the fiscal year ended December 31, 2022, together with its subsequent periodic and current reports filed with the Securities and Exchange Commission (the "SEC").

The SEC maintains a website at www.sec.gov which contains the filings that the Corporation files with the SEC such as reports, proxy statements and other documentation. The reports, proxy statements and other information the Corporation files with the SEC are also available at its website, www.bankofamerica.com.

The information concerning the Corporation and the Bank is furnished solely to provide limited introductory information and does not purport to be comprehensive. Such information is qualified in its entirety by the detailed information appearing in the referenced documents and financial statements referenced therein.

The Bank will provide copies of the most recent Bank of America Corporation Annual Report on Form 10-K, any subsequent reports on Form 10-Q, and any required reports on Form 8-K (in each case, as filed with the SEC pursuant to the Securities Exchange Act of 1934, as amended), and the publicly available portions of the most recent quarterly Call Report of the Bank delivered to the Comptroller of the Currency, without charge, to each person to whom this document is delivered, on the written request of such person. Written requests should be directed to:

Bank of America Corporation
Office of the Corporate Secretary/Shareholder Relations
One Bank of America Center
150 N College St. NC1-028-28-03
Charlotte, NC 28255

PAYMENTS OF PRINCIPAL AND INTEREST ON THE COMMERCIAL PAPER NOTES, SUB-SERIES 2023A-1 WILL BE MADE BY THE LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT (THE "DISTRICT") FROM ADVANCES BY THE BANK UNDER THE REVOLVING CREDIT AGREEMENT BETWEEN THE BANK AND THE DISTRICT (THE "REVOLVING CREDIT AGREEMENT"). ALTHOUGH THE REVOLVING CREDIT AGREEMENT IS A BINDING OBLIGATION OF THE BANK, THE COMMERCIAL PAPER NOTES, SUB-SERIES 2023A-1 ARE NOT DEPOSITS OR OBLIGATIONS OF THE BANK, THE CORPORATION OR ANY OF ITS AFFILIATED BANKS AND ARE NOT GUARANTEED BY ANY OF THESE ENTITIES. THE COMMERCIAL PAPER NOTES, SUB-SERIES 2023A-1 ARE NOT INSURED BY THE FEDERAL DEPOSIT INSURANCE CORPORATION OR ANY OTHER GOVERNMENTAL AGENCY AND ARE SUBJECT TO CERTAIN INVESTMENT RISKS,

INCLUDING POSSIBLE LOSS OF THE PRINCIPAL AMOUNT INVESTED.

The delivery of this information shall not create any implication that there has been no change in the affairs of the Corporation or the Bank since the date of the most recent filings referenced herein, or that the information contained or referred to in this Appendix F is correct as of any time subsequent to the referenced date.

APPENDIX G
JPMORGAN CHASE BANK, NATIONAL ASSOCIATION

JPMorgan Chase Bank, National Association, a national banking association ("JPMorgan Chase Bank, N.A.), is the principal bank subsidiary of JPMorgan Chase & Co. JPMorgan Chase Bank, N.A., offers a wide range of banking services to its customers both in the United States and internationally, including investment banking, financial services for consumers and small businesses, commercial banking, financial transaction processing and asset management. JPMorgan Chase Bank, N.A. is chartered and its business is subject to examination and regulation by the Office of the Comptroller of the Currency, a bureau of the U.S. Department of the Treasury. As of December 31, 2022, JPMorgan Chase Bank, N.A. had total assets of $3.2 trillion and total stockholder's equity of $303.6 billion.

JPMorgan Chase Bank, N.A. files quarterly Consolidated Reports of Condition and Income for A Bank With Domestic and Foreign Offices ("Call Reports") with the Federal Financial Institutions Examinations Council (the "FFIEC"). The non-confidential portions of the Call Reports can be viewed on the FFIEC's website at *https://cdr.ffiec.gov/public*. The Call Reports are prepared in accordance with regulatory instructions issued by the FFIEC and do not in all cases conform to U.S. generally accepted accounting principles ("GAAP").

Additional information concerning JPMorgan Chase Bank, N.A., including the Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q and Current Reports on Form 8-K filed by JPMorgan Chase & Co. with the Securities and Exchange Commission (the "SEC"), as they become available, can be viewed on the SEC's website at *www.sec.gov.* Those reports and additional information concerning JPMorgan Chase Bank, N.A. can also be viewed on JPMorgan Chase & Co.'s investor relations website at https://www.jpmorganchase.com/corporate/investor-relations/investor-relations.htm.

The information contained in this Appendix relates to and has been obtained from JPMorgan Chase Bank, N.A. The delivery of the Offering Memorandum shall not create any implication that there has been no change in the affairs of JPMorgan Chase Bank, N.A. since the date hereof, or that the information contained or referred to in this Appendix is correct as of any time subsequent to its date.

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APPENDIX H
ESTIMATED DEBT SERVICE REQUIREMENTS

Fiscal Year Ending June 30	Existing Senior Lien Principal [(1)(2)]	Existing Senior Lien Interest [(1)]	Total Senior Lien Bond Debt Service	Direct Payments [(3)]	Net Senior Lien Bond Debt Service	Subordinated Debt Service [(4)(5)(6)]	Total Net Debt Service
2024	$52,375,000.00	$89,446,782.86	$141,821,782.86	($10,359,939.45)	$131,461,843.41	$26,363,997.68	$157,825,841.09
2025	55,670,000.00	87,344,547.28	143,014,547.28	(10,359,939.45)	132,654,607.83	21,865,874.77	154,520,482.60
2026	56,180,000.00	85,059,456.78	141,239,456.78	(10,359,939.45)	130,879,517.33	28,288,848.14	159,168,365.47
2027	74,465,000.00	82,853,992.78	157,318,992.78	(10,359,939.45)	146,959,053.33	15,072,324.21	162,031,377.54
2028	73,225,000.00	79,228,632.28	152,453,632.28	(9,637,955.08)	142,815,677.21	21,816,032.79	164,631,710.00
2029	75,595,000.00	77,003,814.02	152,598,814.02	(9,637,955.08)	142,960,858.95	21,685,329.85	164,646,188.80
2030	56,547,900.00	76,329,488.67	132,877,388.67	(9,637,955.08)	123,239,433.60	41,418,416.99	164,657,850.59
2031	36,119,000.00	75,633,187.97	111,752,187.97	(10,220,525.00)	101,531,662.97	62,607,411.51	164,139,074.48
2032	37,071,000.00	74,260,056.67	111,331,056.67	(10,220,525.00)	101,110,531.67	62,851,564.45	163,962,096.12
2033	37,958,000.00	72,861,935.97	110,819,935.97	(10,220,525.00)	100,599,410.97	63,332,653.15	163,932,064.12
2034	99,376,000.00	71,568,968.87	170,944,968.87	(10,220,525.00)	160,724,443.87	2,981,527.45	163,705,971.32
2035	88,578,000.00	68,784,087.16	157,362,087.16	(10,220,525.00)	147,141,562.16	2,900,166.62	150,041,728.78
2036	95,461,000.00	65,022,906.80	160,483,906.80	(10,220,525.00)	150,263,381.80	2,241,120.04	152,504,501.84
2037	109,683,000.00	61,310,066.61	170,993,066.61	(10,220,525.00)	160,772,541.61	2,044,025.03	162,816,566.64
2038	113,780,000.00	57,210,529.50	170,990,529.50	(10,220,525.00)	160,770,004.50	1,844,837.49	162,614,841.99
2039	117,991,000.00	53,003,073.26	170,994,073.26	(10,220,525.00)	160,773,548.26	1,839,083.13	162,612,631.39
2040	122,296,000.00	46,870,849.54	169,166,849.54	(8,393,859.25)	160,772,990.29	1,835,868.31	162,608,858.60
2041	126,773,000.00	40,450,154.84	167,223,154.84	(6,453,125.00)	160,770,029.84	1,799,405.40	162,569,435.24
2042	131,591,000.00	33,563,485.26	165,154,485.26	(4,383,859.38)	160,770,625.89	943,866.24	161,714,492.13
2043	136,595,000.00	26,409,137.04	163,004,137.04	(2,233,875.00)	160,770,262.04	-	160,770,262.04
2044	113,295,000.00	18,977,416.55	132,272,416.55	-	132,272,416.55	-	132,272,416.55
2045	116,905,000.00	15,365,153.04	132,270,153.04	-	132,270,153.04	-	132,270,153.04
2046	120,595,000.00	11,678,635.29	132,273,635.29	-	132,273,635.29	-	132,273,635.29
2047	87,055,000.00	7,719,182.28	94,774,182.28	-	94,774,182.28	-	94,774,182.28
2048	54,795,000.00	4,976,792.29	59,771,792.29	-	59,771,792.29	-	59,771,792.29
2049	17,136,000.00	3,225,882.29	20,361,882.29	-	20,361,882.29	-	20,361,882.29
2050	17,426,000.00	2,802,946.59	20,228,946.59	-	20,228,946.59	-	20,228,946.59
2051	11,169,000.00	2,373,130.38	13,542,130.38	-	13,542,130.38	-	13,542,130.38

2052	9,315,000.00	2,091,925.09	11,406,925.09	-	11,406,925.09	-	11,406,925.09
2053	6,465,000.00	1,861,259.58	8,326,259.58	-	8,326,259.58	-	8,326,259.58
2054	6,618,000.00	1,708,039.09	8,326,039.09	-	8,326,039.09	-	8,326,039.09
2055	6,775,000.00	1,551,192.49	8,326,192.49	-	8,326,192.49	-	8,326,192.49
2056	6,935,000.00	1,390,624.99	8,325,624.99	-	8,325,624.99	-	8,325,624.99
2057	7,099,000.00	1,226,265.49	8,325,265.49	-	8,325,265.49	-	8,325,265.49
2058	7,268,000.00	1,058,019.19	8,326,019.19	-	8,326,019.19	-	8,326,019.19
2059	7,440,000.00	885,767.59	8,325,767.59	-	8,325,767.59	-	8,325,767.59
2060	7,616,000.00	709,439.59	8,325,439.59	-	8,325,439.59	-	8,325,439.59
	$2,301,236,900.00	$1,403,816,825.97	$3,705,053,725.97	($183,803,066.65)	$3,521,250,659.32	$383,732,353.25	$3,904,983,012.57

Notes:	
(1)	Existing Senior Lien Principal and Interest includes WIFIA Loan. MSD anticipates the first draw on the WIFIA Loan to occur in 2023 with the final draw occurring in November 2026. At the final draw, the outstanding balance will total $96,926,900. The WIFIA Loan is not included in the Debt Service Reserve Calculation until the first draw occurs. Refer to "Recent and Pending Transactions of the District" for additional information on the WIFIA Loan.
(2)	Existing Senior Lien Principal and Interest excludes debt service on the District's refunded 2013A Bonds and includes the estimated debt service on the District's Series 2023A and Series 2023B Bonds.
(3)	Due to sequestration, the federal direct payments on the Louisville and Jefferson County Metropolitan Sewer District Sewer and Drainage System Revenue Bonds, Series 2009C Build America Bonds and Louisville and Jefferson County Metropolitan Sewer District Sewer and Drainage System Revenue Bonds, Series 2010A Build America Bonds are reduced by 5.7% through fiscal year 2030. For fiscal years 2031 through 2043, the federal direct payments are assumed at the original rate due on the outstanding Series 2009C BABs and 2010A BABs.
(4)	Includes estimated net swap payments based on the 1-month LIBOR 5-year average as of May 16, 2023 (1.57234%).
(5)	Subordinated debt service for FY 2023 and FY 2024 takes into account the interest payable at maturity for the 2021 and 2022 Bond Anticipation Notes, respectively. Subordinated debt service also includes estimated debt service on outstanding General Obligation, KACO and KIA debt service.
(6)	Does not include the principal of the Series 2022 Bond Anticipation Notes payable at maturity.

APPENDIX I
CONSULTING ENGINEER'S REPORT

2020 Engineer's Report for Sewer and Drainage System

Louisville and Jefferson County Metropolitan Sewer District
Sewer and Drainage System Revenue Bonds, Series 2020A

June 2020

JACOBS

In preparing this report, Jacobs has relied upon certain historical and projected performance data provided by the Louisville and Jefferson County Metropolitan Sewer District (MSD). Jacobs has not independently verified the detailed accuracy of such data. Additionally, the cost estimates presented for the FY 2021 CIP projects appear to be reasonable for the work to be performed. The proposed FY 2021 CIP and the 5-Year CIP are technically sound and are in accordance with generally accepted engineering practice.

Clay Bostic, P.E.	Leisha L. Pica
Professional Engineer No. 27317	Enterprise Program Manager

Table of Contents

1. Introduction 7

1.1 History of MSD 7

1.2 Background of Capital Priorities 8

1.2.1 2005 Consent Decree & 2009 Amended Consent Decree 8
1.2.2 2012 IOAP Modification 9
1.2.3 2017 Critical Repair and Reinvestment Plan 10
1.2.4 2018 Agreed Order for Morris Forman WQTC 10
1.2.5 2019 Reprioritization Discussions 11

1.3 Purpose of the 2020A Bonds 11

2. MSD Organization 12

2.1 Executive Offices Division 14

2.2 Supply Chain and Economic Inclusion Division 14

2.3 Legal Division 14

2.4 Human Resources Division 14

2.5 Information Technology Division 14

2.6 Finance Division 15

2.7 Engineering Division 15

2.8 Operations Division 16

3. Stormwater Drainage and Management 17

3.1 Stormwater Service Area 17

3.2 Stormwater & Drainage Regulatory Requirements 19

3.2.1 Metro Government Local Ordinances Related to Stormwater 19
3.2.2 Municipal Separate Storm Sewer System (MS4) Program 20

3.3 Stormwater Drainage Programs 20

3.4 Stormwater & Drainage Capital Projects 21

3.4.1 Projects Funded from Program Notes 21
3.4.2 5-Year CIP for Stormwater & Drainage System 23

4. Flood Protection System 24

4.1 Service Area 24

4.2 Regulatory Requirements 27

4.2.1 Metro Government Local Ordinances Related to Flood Protection 28

4.3 Flood Protection System Evaluation 28

4.3.1 2019 USACE ORFPS Reliability Improvements Evaluation 28

4.4 Flood Protection Capital Projects 30

4.4.1 Projects Funded from Program Notes 30
4.4.2 5-Year CIP for Flood Protection System 31

5. Wastewater Collection System 34

5.1 Wet Weather Storage 35

5.2 Service Area 36

5.3 Regulatory Requirements 36
5.3.1 Metro Government Local Ordinances Related to Wastewater Collection 37
5.3.2 IOAP/Consent Decree Work 38
5.3.3 Remaining IOAP/Consent Decree Work 38

5.4 Wastewater Collection System Programs 40
5.4.1 Capacity, Management, Operations and Maintenance (CMOM) Program 40
5.4.2 Industrial Pretreatment Program 40
5.4.3 Nine Minimum Controls Program....41
5.4.4 Sewer Asset Management Program 41
5.4.5 Planning Initiatives....42

5.5 Wastewater Collection System Capital Projects 42
5.5.1 Projects Funded from Program Notes 42
5.5.2 5-Year CIP for Wastewater Collection System....43

6. Wastewater Treatment 46

6.1 Service Area 47

6.2 Regulatory Requirements 48
6.2.1 Metro Government Local Ordinances Related to Wastewater Treatment 49
6.2.2 Morris Forman WQTC Agreed Order 50

6.3 WQTC Performance 51
6.3.1 WQTC Permitted Capacity 51
6.3.2 WQTC Permitted Effluent Quality....51
6.3.3 Historical Wastewater Flows....52
6.3.4 Historical Wastewater Loads 53

6.4 Wastewater Treatment Programs 54
6.4.1 District-Wide Biosolids Management 54
6.4.2 WQTC Expansions 56
6.4.3 Planning Initiatives....56

6.5 Wastewater Treatment Capital Projects 56
6.5.1 Projects Funded from Program Notes 57
6.5.2 5-Year CIP for Wastewater Treatment System 58

7. Support Systems 61

7.1 Support Systems Capital Projects....61
7.1.1 Projects Funded from Program Notes 61
7.1.2 5-Year CIP for Support Systems 62

7.2 Support Services....62

8. Regionalization & Economic Development **63**

8.1 Jefferson County Development *63*
8.1.1 5-Year CIP for Development Program 63

8.2 Regionalization to Adjacent Counties *63*
8.2.1 Oldham County 64

9. Conclusions **66**

9.1.1 Wastewater Systems 66
9.1.2 Stormwater System 67
9.1.3 Flood Protection System 68

List of Tables

Table 1-1: Overview of Capital Work Performed Since Last Bond Issue 11
Table 3-1: Federal and State Stormwater Management Regulations 19
Table 3-2: Stormwater Projects Completing Design/Construction Since 2017 22
Table 3-3: Overview of 5-Year Forecasted Spending for Stormwater 23
Table 4-1: Federal and State Flood Protection Regulations 27
Table 4-2: Summary of Flood Protection System CIP Needs 29
Table 4-3: Flood Protection Projects Completing Design/Construction Since 2017 31
Table 4-4: Summary of 5-Year CIP Forecasted Spending for ORFPS 32
Table 5-1: Inventory of Wastewater Collection System by Sewershed 34
Table 5-2: Wet Weather Storage Systems 35
Table 5-3: Federal and State Applicable Wastewater Regulations 37
Table 5-4: Consent Decree Projects Completing Design/Construction Since 2017 38
Table 5-5: Wastewater Collection Projects Completing Design/Construction Since 2017 43
Table 5-6: Overview of 5-Year Forecasted Spending for Wastewater Collection System 44
Table 6-1: Federal and State Applicable Wastewater Treatment Regulations 48
Table 6-2: MFWQTC Projects Under Agreed Order CAP Consideration 50
Table 6-3: Water Quality Treatment Center Capacities 51
Table 6-4: WQTCs Permitted Effluent Limitations 51
Table 6-5: Historical Wastewater Flows 52
Table 6-6: Historical Wastewater Loads – Annual Average BOD 53
Table 6-7: WQTC Projects Completing Design/Construction Since 2017 57
Table 6-8: Overview of 5-Year Forecasted Spending for Regional WQTCs 58
Table 6-9: Overview of 5-Year Forecasted Spending for Morris Forman WQTC 59
Table 7-1: Facilities Projects Completing Design/Construction Since 2017 61
Table 7-2: Overview of 5-Year Forecasted Spending for Facilities 62
Table 8-1: Overview of 5-Year Forecasted Spending for Oldham County 65

List of Figures

Figure 2-1: MSD's Board Members 12
Figure 2-2: MSD's Organizational Chart 13
Figure 3-1: Stormwater and MS4 Service Areas 18
Figure 4-1: Ohio River Flood Protection System 25
Figure 4-2: MSD's Topographic Regions 26
Figure 5-1: MSD's Wastewater Service Area 36

Figure 5-2: Summary of 5-Year CIP for Wastewater Collection System 44
Figure 6-1: MSD’s Water Quality Treatment Centers Service Areas 48
Figure 6-2: Historical Collective Flows from All WQTCs 52
Figure 6-3: Comparison of Monthly Flow from 2015 – 2020 for Morris Forman WQTC 53
Figure 6-4: Effluent Quality from Morris Forman WQTC 54

Acronyms & Abbreviations

AADF	Annual Average Daily Flow
ADF	Average Daily Flow
BG	Billions of Gallons
BMP	Best Management Practices
CAP	Corrective Action Plan
cBOD	Chemical Biochemical Oxygen Demand
CIP	Capital Improvement Plan
CMOM	Capacity, Management, Operation & Maintenance
CRRP	Critical Repair and Reinvestment Plan
CPE-CCP	Comprehensive Performance Evaluation – Composite Correction Plan
CRS	Community Rating System
CSO	Combined Sewer Overflow
DOJ	U.S Department of Justice
DRI	Drainage Response Initiative
ESU	Equivalent Service Unit
FEMA	Federal Emergency Management Agency
FM	Force Main
FOG	Fats, Oils and Grease
FPS	Flood Pump Station
FY	Fiscal Year
GI	Green Infrastructure
GIS	Geographical Information System
ILA	Interlocal Agreement
IOAP	Integrated Overflow Abatement Plan
IT	Information Technology
KDEP	Kentucky Department of Environmental Protection
LOJIC	Louisville Jefferson County Information Consortium
KPDES	Kentucky Pollution Discharge Elimination System
KRS	Kentucky Revised Statutes
lb/d	Pounds per Day
LF	Linear Feet
LTCP	Long Term Control Plan
mg/l	Milligram per Liter
MG	Millions of Gallons
MGD	Millions of Gallons per Day
mL	Milliliters
MS4	Municipal Separate Storm Sewer System
MSD	Louisville & Jefferson County Metropolitan Sewer District
NMC	Nine Minimum Controls
NPDES	National Pollution Discharge Elimination System

ORFPS	Ohio River Flood Protection System
ORSANCO	Ohio River Valley Water Sanitation Commission
RTC	Real Time Control
SCADA	Supervisory Control and Data Acquisition
SCAP	Sewer Capacity Assurance Plan
SORP	Sewer Overflow Response Plan
SSDP	Sanitary Sewer Discharge Plan
SSO	Sanitary Sewer Overflow
THP	Thermal Hydrolysis Process
TMDL	Total Maximum Daily Load
TSS	Total Suspended Solids
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UV	Ultraviolet Disinfection
WIFIA	Water Infrastructure Finance and Investment Act
WQTC	Water Quality Treatment Center
WWTF	Wet Weather Treatment Facility
WWTP	Wastewater Treatment Plant

1. Introduction

This report was prepared in connection with the issuance by the Louisville and Jefferson County Metropolitan Sewer District (the "District" or "MSD") of its Sewer and Drainage Revenue Bonds, Series 2020A (the "2020A Bonds") being issued in the estimated principal amount of approximately $247,500,000 for the purpose of paying at maturity, redeeming, and refunding MSD's Program Notes issued and outstanding as Senior Subordinated Debt under MSD's General Bond Resolution and under MSD's Program Note Resolution.

MSD utilizes a sewer and drainage system ("System"), which includes the collection, transmission, treatment and effluent disposal of wastewater; processing, management, and disposal of biosolids; the collection, transmission of stormwater within the City and adjacent areas; and operations and maintenance of the Ohio River flood protection system infrastructure. Also included in the sewer and drainage system are the existing properties and assets, real and personal, tangible and intangible, owned or operated by MSD that are used or useful for the aforementioned purposes and all properties and assets constructed or acquired as additions, improvements and betterments to the sewer and drainage system and extensions thereof.

Portions of MSD's sewer and drainage system have been in service since the late 1800's and have/are reaching the end of their useful life. MSD is implementing an industry-standard asset management program to coordinate repair and replacement of existing assets in a timely and cost-effective manner. Current work activities related to MSD's asset management program includes upgrading tools, training staff, determining asset condition, calculating remaining useful life, and developing protocols for prioritizing capital needs. In addition to improving existing assets, MSD is investing in new infrastructure in accordance with a federally mandated Consent Decree to address sewer overflows and unauthorized discharges.

This report (i) provides an overview of MSD's infrastructure, (ii) describes the sewer and drainage system improvements made since the District's last public bond issuance in 2017, and (iii) provides an overview of MSD's 5-year Capital Improvement Plan (CIP).

1.1 History of MSD

Beginning at or around 1850, the first sewers were constructed in Louisville and the first combined storm and sanitary sewers were constructed in 1860. MSD was formed in 1946 as a public body corporate and subdivision of the Commonwealth of Kentucky. MSD was created to 1) operate and maintain the existing City of Louisville sewer and drainage system and 2) to expand the system throughout Jefferson County.

In 1986, an Interlocal Agreement (ILA) was executed between MSD, the City of Louisville, and Jefferson County[1] to improve and enhance flood control and stormwater drainage services. The ILA transferred all drainage and flood control facilities and property to the custodianship of MSD and mandated MSD be the responsible agency for providing flood and stormwater drainage services. The communities of Anchorage,

[1] The City of Louisville and Jefferson County subsequently merged to form Louisville Metro.

Jeffersontown, Shively, and St. Matthews own and operate the drainage systems serving their communities. However, MSD continues to provide flood protection services that benefit these communities through the Ohio River flood protection system floodwalls, levees, and flood pump stations. These communities are co-permittees under the stormwater management program that MSD administers.

1.2 Background of Capital Priorities

MSD is responsible for the operation of the sewer and drainage system serving most of Louisville Metro, which encompasses the City of Louisville and all of Jefferson County. MSD is authorized by Chapter 76 of the Kentucky Revised Statues (KRS) to construct additions, betterments, and extensions within its service area and to recover the cost of its services in accordance with rate schedules adopted by the MSD Board. Like many utilities throughout the country, MSD is faced with maintaining its existing utility assets in a fit-for-purpose condition while balancing changing environmental conditions that have started to impact its infrastructure.

1.2.1 2005 Consent Decree & 2009 Amended Consent Decree

On August 12, 2005, MSD entered into a Consent Decree with the Kentucky Energy and Environment Cabinet, Division of Water of the Kentucky Department of Environmental Protection (KDEP), U.S. Environmental Protection Agency (USEPA), and the U.S. Department of Justice (DOJ) (collectively referred to as "the Regulators"). The Consent Decree was in response to an enforcement action taken by USEPA and KDEP alleging violations of the Clean Water Act, primarily related to sewer overflows and unauthorized discharges. The enforcement actions initiated by the USEPA are not unique in the wastewater treatment industry. The Consent Decree created the framework for a long-term capital program to manage and mitigate combined sewer overflows (CSOs) and eliminate sanitary sewer overflows (SSOs) up to a certain storm event.

The Consent Decree called for MSD to submit a final Long-Term Control Plan (LTCP) that included schedules, deadlines, and timetables for projects to be completed by December 31, 2020. In addition, a Sanitary Sewer Discharge Plan (SSDP) was required that included schedules and deadlines for capital projects to be completed by the end of 2024. Both plans (LTCP and SSDP) were subsequently consolidated into the Integrated Overflow Abatement Plan (IOAP). The IOAP is expected to improve water quality in Beargrass Creek and the Ohio River.

On April 10, 2009, the Consent Decree was amended to address recordkeeping and Water Quality Treatment Center (WQTC) bypasses and treatment performance. The amendment called for MSD to implement projects to upgrade the separate sewer system, combined sewer system, and the WQTCs to adequately address SSOs and CSOs from locations identified in the Morris Forman WQTC Kentucky Pollution Discharge Elimination System (KPDES) permit. The first submittal of the IOAP was approved with the Amended Consent Decree.

1.2.2 2012 IOAP Modification

MSD's Wet Weather Team, which includes a broad range of community stakeholders, MSD staff, and consultants identified the need for modifications to the IOAP to incorporate through an adaptive management process additional information developed from continued flow monitoring, enhanced hydraulic modeling, and a detailed review of the project types, size, location and schedule. Modifications represented a revision to 28 separate projects set forth in the original IOAP, dated September 30, 2009. The IOAP Modifications were approved on June 19, 2014; and superseded and replaced the 2009 IOAP.

The following highlights the projects incorporated into the IOAP Modification to control CSOs:

- 3 sewer separation projects
- 14 storage basin projects including in-line storage/real-time control and off-line storage (250 MG)
- 1 project to replace and expand the Nightingale Sanitary Pump Station
- 2 conveyance expansion projects
- 1 additional green infrastructure project
- 1 high rate wet weather treatment facility (WWTF)

The following highlights the projects incorporated into the IOAP Modification to control SSOs:

- 19 conveyance capacity upgrades and interceptor relief projects
- 9 storage projects (in-line and off-line)
- 13 pump station upgrades or replacements
- 12 pump station eliminations
- 7 small WQTC eliminations

Over the past 10 years, MSD's CIP has been focused on implementing the projects required to comply with a federally mandated Consent Decree and subsequent IOAP. Since 2005, MSD has focused $1.01 billion of its resources toward mitigating and reducing unauthorized discharges and has made great progress in that effort as highlighted below.

- **Engaged Stakeholders:** In 2006, MSD initiated a Wet Weather Team Stakeholder Group which is still in existence and active today.

- **Mitigated CSOs**: MSD certified completion of 38 CSO LTCP projects to date, 4 remain. Overflows to local waterways have been reduced by approximately 5 billion gallons per typical year.

- **Eliminated SSOs**: MSD certified completion of 48 SSO SSDP projects to date, 18 remain. SSOs have been reduced approximately 61% by location and approximately 70% by volume.

- **Eliminated Facilities**: MSD certified completion of the required Comprehensive Performance Evaluation – Composite Correction Plan (CPE-CCP) projects, which included elimination of 6 WQTCs. Five regional wastewater treatment facilities remain.

- **Improved Ohio River Water Quality**: MSD received ORSANCO sampling data on the Ohio River indicating significant reductions in median fecal coliform levels downstream of Louisville, Kentucky.

- **Verifying Results**: MSD initiated a post construction compliance monitoring program on completed projects to proactively ensure satisfactory achievement of the design level of control as approved.

- **Fulfilled Amended Consent Decree Programmatic Elements**: Early Action Plan projects completed; Nine Minimum Controls (NMC) Program approved and ongoing; Capacity, Management, Operation, and Maintenance (CMOM) Program approved and ongoing; community input, outreach and notification program approved and ongoing; Sewer Overflow Response Protocol (SORP) approved and ongoing; Sewer Capacity Assurance Plan (SCAP) approved and ongoing; and certified completion of the required supplemental environmental projects.

- **Realized Additional Improvements for Our Community**: MSD exceeded the original commitments made to the community by spending 35% more for community benefits including: expanded system monitoring and rain gage networks to improve model calibration and discharge reporting; increased system storage capacity over original commitments by 25%; increased sanitary pump station capacity over original commitments by 50%; and improved community engagement and created neighborhood green spaces.

In order to fund the new infrastructure, MSD had to continue deferring critical existing infrastructure needs for piping, pumps, treatment plants, and flood gates. In 2019, MSD initiated discussions with the Regulators to reprioritize funding for critical infrastructure needs in lieu of some of the remaining SSDP projects included in the 5-year CIP. These discussions were slowed due to the COVID19 pandemic.

1.2.3 2017 Critical Repair and Reinvestment Plan

While MSD was implementing the Amended Consent Decree, it conducted a comprehensive assessment of its major infrastructure to assess long-term investment needs. In June 2017, the District published its *20-Year Comprehensive Facility Plan, Critical Repair and Reinvestment Plan* (CRRP)[2]. The CRRP estimated MSD needs to invest approximately $4.3 billion over a 20-year period to address all wastewater ($1.85 billion); stormwater ($2.34 billion) and support systems ($124.5 million) needs.

1.2.4 2018 Agreed Order for Morris Forman WQTC

On May 3, 2018, MSD entered into an Agreed Order with KDEP addressing improvements necessary to recover from a mechanical failure due to a lightning strike resulting with a power outage at Morris Forman WQTC that occurred April 8, 2015. Extensive damage was experienced to the primary treatment, secondary treatment, and electrical systems causing the plant to be out of compliance with effluent discharge limits established in Permit KY0022411. MSD is working diligently to restore the Morris Forman WQTC to its full

[2] 20-Year Comprehensive Facility Plan, Critical Repair and Reinvestment Plan, June 2017

operational capacity. MSD invested $37 million in this facility since 2016 and developed a draft Corrective Action Plan (CAP) for additional improvements necessary to:

- Assist with reduction effluent Biochemical Oxygen Demand (BOD)
- Assist with reduction effluent Total Suspended Solids (TSS)
- Allow continued operation of critical systems
- Prevent catastrophic failure at the plant
- Address safety issues/concerns.

The proposed CAP remains under discussion with KDEP.

1.2.5 **2019 Reprioritization Discussions**

Some deferred infrastructure has continued to deteriorate to the level that immediate investment is required for sustained regulatory compliance and protection of public health and community safety. In 2019, MSD updated its conceptual 30-year CIP forecast inclusive of all capital needs (approximately $4.6 billion) in conjunction with discussions with the Regulators. This forecast includes the projects identified in the CRRP, current regulatory requirements, additional planning evaluations, regionalization discussions, and partial funding for replacement of the Morris Forman WQTC. More information regarding these capital programs is presented throughout this report.

1.3 Purpose of the 2020A Bonds

Program Notes were issued by the District to finance on a short-term basis capital additions and improvements to the System pending the permanent refinancing of the Program Notes by the issuance of the District's bonds under its General Bond Resolution. An overview of the additions/improvements financed over the past couple years is provided in Table 1-1. More details regarding specific projects is provided in subsequent sections of this report.

Table 1-1: Overview of Capital Work Performed Since Last Bond Issue

CIP Program	Projects Finishing Design		Projects Finishing Construction	
	Number of Projects	Lifetime Actuals	Number of Projects	Lifetime Actuals
Consent Decree	0	$ -	5	$ 152,466,921
Facilities	1	$ 157,209	3	$ 3,769,146
Flood Protection	5	$ 1,481,044	8	$ 2,503,644
Stormwater	1	$ 18,866	7	$ 7,109,421
Wastewater Collection	7	$ 8,167,250	7	$ 20,981,312
Wastewater Treatment	8	$ 8,164,405	12	$ 57,343,141
TOTAL	**22**	**$ 17,988,774**	**42**	**$ 244,173,584**

This report does not discuss financial considerations. All information regarding rates, revenues, debt, and other financial considerations are discussed in the Official Statement.

2. MSD Organization

An eight-member citizen Board appointed by the Louisville Metro Mayor governs MSD's budget, rates, policies and initiatives. These members serve three-year overlapping terms and are eligible for reappointment. Each member represents a different state senatorial district in Louisville Metro. No more than five board members can belong to the same political party. The Board holds one regular meeting on the fourth Monday of each month, and committees meet as necessary. The current MSD Board Members are listed in Figure 2-1.

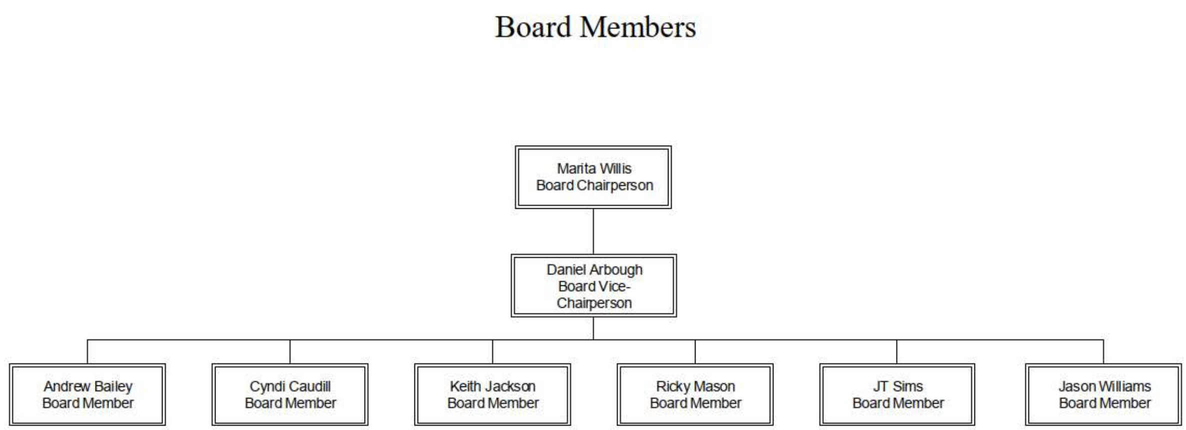

Figure 2-1: MSD's Board Members

The Board has delegated and placed the conduct of the day-to-day business affairs of the District under the direction of an Executive Director. The current Executive Director of MSD is James A. "Tony" Parrott. Mr. Parrott has been the full time MSD Executive Director since September 2015. Mr. Parrott leads an executive leadership team comprised of Division heads from eight divisions (refer to Figure 2-2):

- Executive Offices Division
- Supplier Diversity & Economic Inclusion Division
- Legal Division
- Human Resources Division
- Information Technology Division
- Finance Division
- Engineering Division
- Operations Division

MSD currently employs approximately 640 staff throughout the eight divisions. A brief description of each division is provided herein.

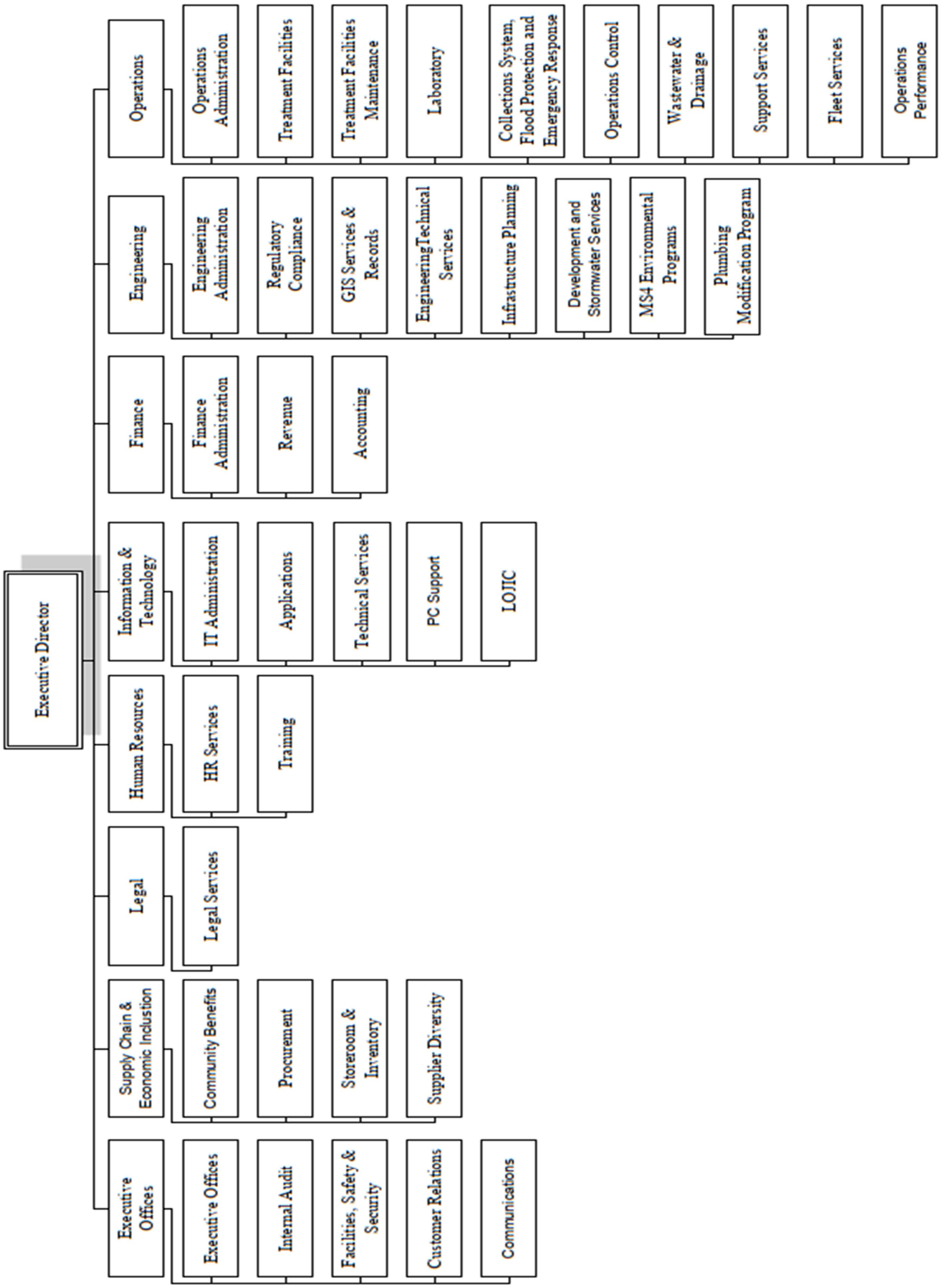

Figure 2-2: MSD's Organizational Chart

2.1 Executive Offices Division

The Executive Offices Division includes 13 executive positions; 18 customer relations and communications positions; and 21.5 facilities, safety, and security positions. The executive positions are comprised of Chief and Director level staff who provide leadership for the various Divisions. The customer relations and communication staff are part of the One Water Shared Services. One Water is organizational unit that operates in conjunction with the Louisville Water Company. This initiative is designed to provide consistent, high quality support services between the utilities, as well as to lower overall support costs for both MSD and the Water Company. The facilities staff provides support for keeping buildings operational for MSD's staff. The health and safety staff provide training for all MSD staff. Security staff provide on-site security services and investigate events as needed.

2.2 Supply Chain and Economic Inclusion Division

This One Water Division has 23 positions and is led by the One Water Chief Procurement Officer. The Division provides procurement buying services; management of the storeroom and materials; management and enforcement of the supplier diversity program; and services focused on community benefits.

2.3 Legal Division

The Legal Division includes 10 positions including the General Counsel/MSD Legal Director and Deputy General Counsel. Services provided by the Legal Division include contract reviews; claims and disputes; regulatory agreements; and interpretation of documents and terms of conditions.

2.4 Human Resources Division

The Human Resources Division includes 18 positions led by MSD's Human Resources Director. The Division provides organizational development, staff training, performance analytics, benefits and payroll administration, employee relations, and complete human resources support.

2.5 Information Technology Division

The Information Technology (IT) Division includes 32 positions led by the One Water Chief Information Officer. The Division manages IT hardware (servers, networks, computers, mobile phones); provides cybersecurity and staff technical support; oversees and supports software applications; and administers and manages the Louisville – Jefferson County Information Consortium (LOJIC) Program.

2.6 Finance Division

The Finance Division includes 29 positions led by MSD's Chief Financial Officer. A new Chief Financial Officer was selected in 2020. In May 2020, some job functions and roles within the Division were realigned to better support MSD with advancing regionalization and financial reporting. Services provided by the Finance Division include budget development and management; revenue and collections management; accounting; records management; and information governance.

2.7 Engineering Division

The Engineering Division includes 94 positions led by MSD's Chief Engineer. A new Chief Engineer was selected in 2020. Services provided by the Engineering Division include regulatory compliance; geographical information system (GIS) administration; engineering technical services (35.5 positions); and development and stormwater services (44 positions).

- **Regulatory Compliance**: leads the organization in process improvement activities that improve communication, documentation and efficiency required to maintain compliance with permits and regulations and advance the asset management program. Additionally, the team manages and coordinates Consent Decree-mandated activities including sewer overflow response, discharge and overflow reporting activities, and periodic reporting to regulators, and provides support to implement business requirements in information systems like IPS® and Telog®.

- **GIS Services**: supports MSD's mission by building and maintaining an accurate and detailed database model, generate high quality maps, perform spatial analysis, and serve as a support network to all departments within MSD. Additionally, the GIS Team provides support and information not only to MSD, but to outside customers and agencies as well.

- **Engineering Technical Services:** provides planning, design oversight, and construction management of all capital projects related to wastewater, stormwater, drainage, flood protection, and facility improvements. This group also administers the Drainage Response Initiative Program (DRI) to address localized drainage problems ranging from structural flooding to minor standing water problems.

- **Development Services:** responsible for review and permitting of development projects throughout Louisville Metro including proposed land disturbing activities on behalf of the community to advocate for public health, safety and protection in accordance with Louisville MSD's mission and the Louisville and Jefferson County Erosion Prevention and Sediment Control and Floodplain Ordinances. This group also provides construction field inspection services to confirm assets are built in accordance with MSD's standards and administers the plumbing modification program to prevent rain-related sewer backups into basements.

- **Stormwater Services:** manages and administers the Municipal Separate Storm Sewer System (MS4) and Floodplain Management Programs. The MS4 Program addresses drainage related issues related to pollution, erosion, water quality monitoring, and construction site management. The Floodplain Management Program coordinates grants from the Federal Emergency Management Agency (FEMA) to purchase homes located in flood prone areas.

2.8 Operations Division

The Operations Division includes 342 positions led by MSD's Chief of Operations. Operations staff are spread across five working groups including: treatment facilities (130 positions); collections, flood protection, and emergency response (77 positions); wastewater and drainage; (194 positions); operations support services (36 positions); and the One Water Fleet Services (19 positions).

- **Treatment Facilities Services**: responsible for operation and maintenance of the five water quality treatment centers 24 hours per day, 7 days per week including all electrical and mechanical components; performance analytics; and laboratory services. This group actively participates in the Operator-in-Training program to grow the next generation of staff.

- **Collections, Flood Protection, & Emergency Response Services**: responsible for operation and maintenance of all sanitary pump stations, sanitary and combined sewer systems; real time control facilities; SCADA system; and flood protection system (floodwall, levee, gates, and flood pump stations). This group provides emergency response for sewer force main breaks and pump station overflows and updates the Emergency Preparedness Plan required for the Flood Protection System per the U.S. Army Corps of Engineers (USACE).

- **Wastewater & Drainage Services**: responsible for operation and maintenance of the stormwater drainage network including field inspection of customer complaints. Wastewater services provided by this group include televising sewer systems and performing standard routine maintenance related to root control, cleaning, condition assessment, debris removal, and response to cave-ins.

- **Operational Support Services**: responsible for management and administration of industrial programs related to industrial pretreatment, grease management, hazardous materials, and industrial stormwater discharges. This group provides water quality sampling and performance analysis and tracking for all operating groups.

- **One Water Fleet Services**: provides full service maintenance for MSD's fleet vehicles and heavy equipment

3. Stormwater Drainage and Management

MSD is responsible for the operation, maintenance, replacement, improvements and additions to the public stormwater facilities. Runoff during rain events is collected and either stored, retained, and/or conveyed to sewers, rivers, streams, creeks, channels, and ditches for eventual discharge to the Ohio River, either directly or through one of its tributaries. The drainage system includes the following infrastructure that is operated by MSD (or through a combination of MSD staff and contractors).

- 3,616 miles of channels, ditches, and culverts
- 1,080 miles of storm sewers pipe (including culverts under roads)
- 870 miles of inland streams (both natural and improved)

MSD's combined sewer system provides storage, conveyance, and treatment of both sanitary sewage and stormwater. During dry weather, the system carries only sanitary sewage to the Morris Forman WQTC for treatment and discharge. During wet weather events, the combined sewers also convey urban runoff in the same pipe system. The boundaries of the combined sewer system are shown in Figure 3-1.

In April 2017, MSD published the *Louisville MSD Watershed Mater Plan* to help effectively manage present and future regional stormwater drainage in Louisville Metro. The basis of this Plan was MSD's original Watershed Master Plan, which was created in 1988 as part of the *Stormwater Drainage Master Plan*, and the *2010 Stormwater Management Master Plan*, which was the most recent update of that plan.

MSD is working on a comprehensive update to the *Stormwater Drainage Master Plan* which, after public participation and approvals by local governments, will be used by the District for implementing improvements and extensions to the existing drainage facilities. It is currently anticipated the first working draft of the *Stormwater Drainage Master Plan* will be published in 2025. Over the next few years, a significant effort will continue to inventory and document the condition of existing drainage system assets.

3.1 Stormwater Service Area

Louisville Metro is a river city located along the Ohio River. The area is drained by two major drainage systems: the Ohio River and the Salt River[3]. The Ohio River receives discharges from Mill Creek, Beargrass Creek, Goose Creek, Harrods Creek, and the combined sewer system. Cedar Creek and Pennsylvania Run discharge into Floyds Fork, which in turn, discharges in the Salt River. The Salt River also receives discharge from Pond Creek near its confluence with the Ohio River.

The challenges still facing MSD with regard to stormwater are exacerbated by the County's geography. Some areas are previous swampland with little slope, while other areas are very hilly. As such, if not properly

[3] April 2017 Louisville MSD Watershed Master Plan

controlled, development could lead to excessive streamflow and erosion. Much of the area within the old Louisville city limits is in the combined sewer system. When the system reaches capacity, many places in this highly developed urban area flood despite not being next to an open stream. This occurs because the combined sewer system took the place of the original streams and ditches.

The District through ILAs with the City of Louisville and Jefferson County assumed responsibility for stormwater management in 1987 for all of Jefferson County, except for the Cities of Anchorage, Jeffersontown, Shively, and St. Matthews. Those cities provide most of those services within their borders, and partner with MSD on other aspects including review of new development plans and water quality reporting.

The District serves a population of approximately 650,000 and bills for stormwater services using equivalent service units (ESUs). The District currently has approximately 6,956,000 ESUs, in total, from residential, commercial, industrial, and city-owned properties.

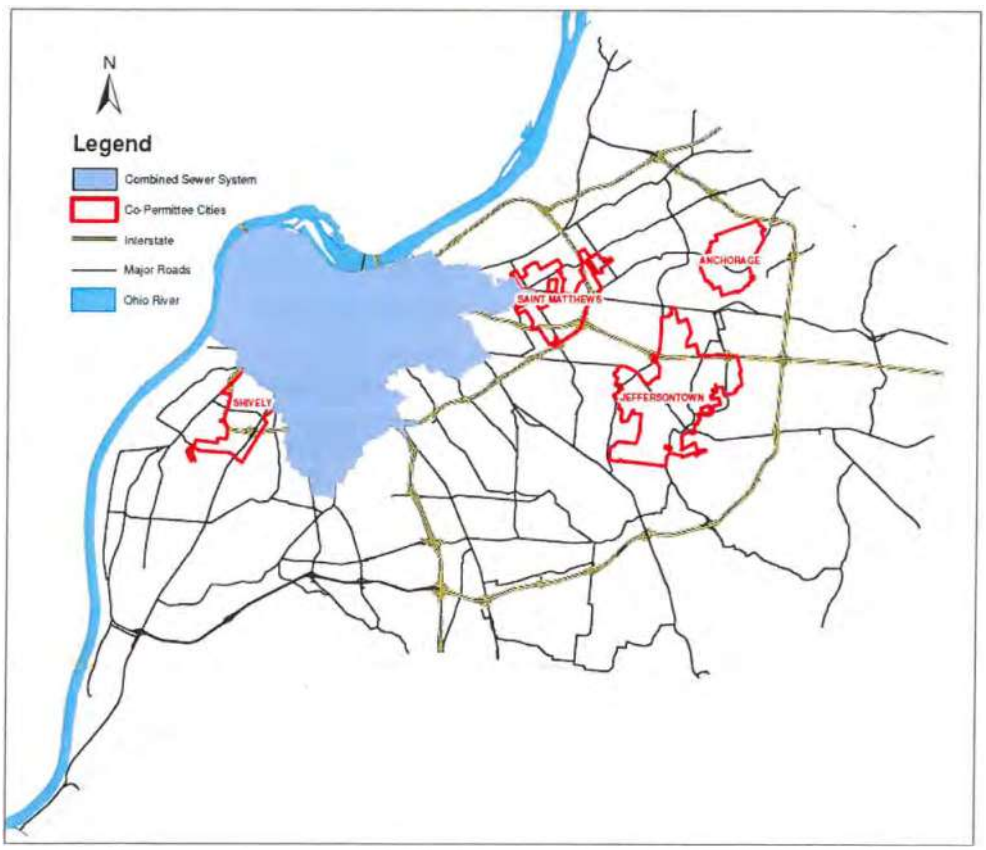

Figure 3-1: Stormwater and MS4 Service Areas

3.2 Stormwater & Drainage Regulatory Requirements

MSD is required to comply with the Federal and State Regulations related to stormwater management listed in Table 3-1.

Table 3-1: Federal and State Stormwater Management Regulations

Reference	Title	Description
401 KAR 5:060 Section 12	Municipal Separate Storm Sewer Systems	Establishes procedures for permitting Phase I and II municipal separate storm sewer systems (MS4s).
401 KAR 4:200; 33 US Code, Title 33, Chapter 26, Section 1341	Section 401 Application for Water Quality Certification	Establishes the requirements for permitting discharges to streams in the KDEP jurisdiction.
33 US Code, Title 33, Chapter 26, Section 1342	National Pollutant Discharge Elimination System (NPDES)	Establishes procedures for permitting discharges that may affect floodplains or navigable waters.
33 US Code, Title 33, Chapter 26, Section 1344	Section 404 Nationwide Permit	Establishes the requirements for permitting discharges of soil, sand, gravel, or dredged material into streams under USACE jurisdiction.
401 KAR 5:005	KPDES for the Morris Forman WQTC	Establishes procedures and permits for operation of the combined sewer system and its associated storage and treatment facilities

3.2.1 Metro Government Local Ordinances Related to Stormwater

MSD is required to comply with the following local regulations related to the stormwater system.

- Drainage Master Plan. Louisville Metro Government Code of Ordinances, Title V, Chapter 50.67
- Comprehensive Storm Water Drainage Authority. Louisville Metro Government Code of Ordinances, Title V, Chapter 50.55-99.
- Floodplain Management. Louisville Metro Government Code of Ordinances, Title XV, Chapter 157.
- Erosion Prevention and Sediment Control. Louisville Metro Government Code of Ordinances, Title XV, Chapter 159.
- Engineering Standards. Louisville and Jefferson County MSD Design Manual

3.2.2 Municipal Separate Storm Sewer System (MS4) Program

The permit to operate a drainage system and discharge stormwater to waterways is administered by the KDEP. Management of stormwater in the District outside the combined sewer area is regulated through a Municipal Separate Storm Sewer System (MS4) permit, which requires periodic reporting on water quality in area streams. The Louisville MS4 Permit includes over 100 activities and is organized into several program elements including:

- Illicit Discharge Detection and Elimination
- Construction Site Runoff Controls (Erosion Prevention and Sediment Control)
- Post Construction Site Runoff Controls (Long-term Water Quality Control)
- Public Involvement and Outreach Programs
- Monitoring
- Reporting and Assessment

3.3 Stormwater Drainage Programs

Stormwater management is a vital component of MSD's system, because it directly impacts the health and safety of all Louisville and Jefferson County residents. Inland drainage systems include the infrastructure to collect and convey drainage across the County via pipes, ditches, streams, and channels to the Ohio River. The flood protection system is described in Section 4. The combined sewer system is described in Section 5.

The CRRP included a number of programs related to drainage and floodplain management. A summary of the Stormwater Drainage Programs included in the 5-year CIP forecast is provided below.

- **Community Rating System Program**: The National Flood Insurance Program Community Rating System (CRS) is a voluntary incentive program encouraging community floodplain management activities that exceed the minimum requirements. Communities taking part in this program are awarded points for participating in public information, mapping and regulation, flood damage reduction, and flood preparedness. Through MSD's participation in the program, Louisville Metro is a Class 3 community, granting the community a 35-percent discount on flood insurance premiums. The Class 3 rating saves the Louisville Metro community approximately $2 million each year in flood insurance premiums.

- **Municipal Separate Storm Sewer System Program (MS4):** The MS4 Program is a drainage-related program to improve the quality of surface waters through controls on stormwater runoff quality in Jefferson County and to protect the public health, safety, and welfare by reducing the introduction of harmful materials into the MS4s that discharge into community streams. The CRRP identified several large stormwater retention basins with the potential for conversion of all or part of the basin to provide infiltration of stormwater.

- **Drainage Response Initiative Program (DRI)**: Since 2003, MSD has been implementing an aggressive program to address a wide variety of drainage issues that are pointed out by customers to address problems ranging from structural flooding to alleviating minor standing water problems. MSD has invested nearly $200 million in stormwater improvements through the DRI Program.

- **Floodplain Management Program**: Since 1997, MSD has purchased homes located in flood prone areas through federal grant programs. Following a number of spring flooding events in 2015, the Mayor formed a multiagency Flood Mitigation Workgroup to address impacted residents who were unable, for a variety of reasons, to get back in their homes after the floodwaters receded. The Flood Mitigation Workgroup recommended several mitigation approaches, including establishment of a "quick-buy" program to allow property owners to sell flood-impacted property in a much shorter time than would typically be possible. The Workgroup recommended annual fund be established to provide timely relief to property owners impacted by future extreme storm events. The projects continue to be advanced but are not part of the CIP due to the reimbursement portion of the program.

- **Stormwater Master Plan Implementation Program:** MSD has begun an extensive 5-year stormwater asset inventory project. Following this effort, the *Stormwater Master Plan* will be updated to prioritize stormwater needs throughout the District. The CRRP estimated approximately $600 million would be required to address the stormwater needs. Implementation of the *Stormwater Master Plan* will occur after the 5-year CIP.

3.4 Stormwater & Drainage Capital Projects

MSD continues to fund stormwater and drainage projects with its annual CIP. Projects are generally a combination of discrete local improvements and appropriations for District-wide needs/services.

3.4.1 Projects Funded from Program Notes

The projects completed since 2017 have primarily been focused on construction of green infrastructure (refer to Table 3-2). The green infrastructure program was included in the Amended Consent Order. MSD has invested more than $40 million in green infrastructure projects over the past 10 years.

Table 3-2: Stormwater Projects Completing Design/Construction Since 2017

Program	Budget ID	Project	Task Name	Finish	Lifetime Actuals
Stormwater & Drainage Improvements	H20164	346 S Peterson Ave Stream Restoration	Design Finish	4/21/2020	$18,866
	H19249	Stormwater Drainage Early Action Planning	Construction Finish	6/30/2019	$84,000
Green Infrastructure Projects	H20144	Churchill Downs East Side Improvements GI	Construction Finish	3/4/2020	$1,200,000
	H20168	Louisville FC Stadium Green Infrastructure	Construction Finish	12/31/2019	$250,000
	H13099	Spalding University Green Infrastructure	Construction Finish	11/22/2019	$539,826
	H19059	Churchill Downs Green Infrastructure Ph 2	Construction Finish	11/15/2018	$2,960,819
	H18332	Botanical Garden Biofilter Upgrades	Construction Finish	9/28/2018	$61,509
	H18195	Churchill Downs Green Infrastructure Ph 1	Construction Finish	8/23/2018	$2,013,267
TOTAL STORMWATER PROJECTS					**$7,128,287**

In addition to these projects, MSD funds the following appropriations annually in support of activities related to the stormwater and drainage system:

- **Environmental Data Collection**: MSD collects over 3 million individual water quality records each year. This monitoring program provides a detailed picture of the health of streams in Jefferson County. Monitoring results are summarized on an annual basis in the *Stormwater MS4 Annual Report*. The data are provided electronically annually to the Kentucky Division of Water. MSD budgets approximately $875,000 per year to support this effort.

- **Tree Program**: MSD's Urban Reforestation Program plants 1,000 trees annually by working with local businesses, municipal organizations and neighborhood associations. The program replenishes and expands the tree canopy throughout Jefferson County. These trees redirect an average of 1.35 million gallons of stormwater away from the sewer system every year, which decreases sewer overflows into waterways. MSD budgets approximately $150,000 per year to support the program.

- **MS4 Program**: MSD budgets approximately $600,000 per year to manage and administer the MS4 Program. Work performed includes but is not limited to: public education and outreach; pollution prevention program; performance assessment and reporting; recreational monitoring for bacteria levels between May 1st and October 31st; and wet weather monitoring during storm events.

- **USGS Stream Monitoring**: In 1988, MSD and the United States Geological Survey (USGS) began monitoring water quality and stream flow throughout the Jefferson County area. The Long-Term

Monitoring Network has changed over the years and currently includes 27 monitoring sites. The monitoring sites were selected to represent streams in each of eleven watersheds. Each monitoring site is sampled four times per year and is analyzed for a variety of parameters including fertilizers, sediment, and metals. MSD budgets approximately $400,000 per year to support this effort.

3.4.2 5-Year CIP for Stormwater & Drainage System

During the 5-year CIP, the following stormwater and drainage projects will be partially or wholly budgeted.

Table 3-3: Overview of 5-Year Forecasted Spending for Stormwater

Stormwater Priorities		5-Year CIP Forecasted Spending
Stormwater & Drainage Improvements	Local Drainage Improvements	**Stormwater $6.9 million**
	3-Forks Beargrass Creek USACE General Investigation	
	Stormwater Master Plan	
MS4 Program	Environmental Data Collection	**MS4 $9.5 million**
	MS4 Program Support	
	Tree Program	
	USGS Stream Monitoring	
Drainage Response Initiative (DRI)	DRI Projects	**DRI $13 million**
	DRI Field Inspections	
Green Infrastructure (GI) Projects	GI Projects with Signed Agreements	**GI $2.3 million**
	Future GI Projects	
Land Use Planning	Maple Street Land Use Planning	**Land Use $60,000**
	Other Future Projects	
	Total 5-Year CIP Forecast for Stormwater & Drainage	**$31.8 million**

4. Flood Protection System

Louisville's flood problems originate from the Ohio River as it rises above its normal pool depth, as well as contributing creeks, storm sewers, and major drainage systems. After devastating floods on the Ohio River in 1937, the U.S. Army Corps of Engineers (USACE) was given authority by Congress to construct flood damage reduction projects under the Flood Control Act of 1936. Under this authority, the USACE built the Ohio River Flood Protection System (ORFPS) that stretches from Butchertown to the southwestern part of Jefferson County near West Point, Kentucky. The original 13.9 mile section of the floodwall was constructed along the Ohio River between 1946 and 1956 (Louisville Reach) and turned over to MSD as functional pieces were completed in 1953, 1954, and 1957. The USACE constructed the 12.6 mile southwestern Jefferson County floodwall extension (Southwestern Jefferson County Reach) between 1973 and 1989.

When the elevation of the Ohio River rises, MSD's service area is protected from flooding through levees and floodwalls. The 185 street crossings, pipe openings, and gates that allow creeks to pass through are sealed and the river is held back. With the creeks and storm sewer system prevented from discharging into the Ohio River, MSD relies on the 16 flood pump stations to pump drainage over the floodwall and levee to prevent stormwater from backing up and causing flooding within the area. It is important to understand that the operation of the flood pumping stations is intermittent and infrequent, only occurring when both the Ohio River is in flood stage and there is a rain event within the drainage system. Many of the pumping stations operate only once every few years. The existing system is more than 60 years old and most components are original parts. In many cases, the original equipment is no longer available for replacement.

MSD is responsible for ensuring all components of the ORFPS are fully operational when they are needed. Today, the ORFPS protects 240,000 people and $60 billion of property within the levee area and includes the following components (refer to Figure 4-1):

- 22.2 miles of earthen levee
- 3.9 miles of concrete wall
- 16 flood pump stations (total of 73 pumps)
- 152 gates
- 97 closures (21 permanently sealed)

4.1 Service Area

A large portion of Jefferson County lies within the broad floodplain of the Ohio River. Approximately 17,600 acres of this floodplain (extending from Beargrass Creek to Pond Creek) are protected by the ORFPS.

Figure 4-1: Ohio River Flood Protection System

Several flood pump stations have watersheds and sewersheds that extend across the Metro area and into eastern Jefferson County. Four distinct topographic regions exist throughout MSD's service area as shown in Figure 4-2 and described below[4].

Figure 4-2: MSD's Topographic Regions

- **Flood Plain**: A strip of land bordering one-half to five miles wide along the Ohio River. The Flood Plain extends from the Salt River in the southwest, north to downtown Louisville, and continues northeast to the Oldham County line. The area is best characterized as flat to gently rolling and with very flat sloped stream beds. Mill Creek and the combined sewer system drain the majority of this region.

- **Knobs**: A triangular area in the southwestern portion of the county bounded approximately by Iroquois Park on the north, South Park Hills on this southeast, and the Southern Railroad on the southwest. The hills in this region have been highly dissected by stream erosion. Most streams in this area drain to Pond Creek.

- **Central Basin**: The west central portion of the county, bounded approximately by I-264 on the north, Shepherdsville Road on the east, and the "Knobs" region on the south and west, is the "Central Basin. Various improvements to the Northern and Southern Ditch systems have helped alleviate the lack of natural drainage in the region.

4 2016 Louisville Metro Hazard Mitigation Plan

- **Eastern Uplands**: The remainder and largest portion of the county. This region is characterized by gently rolling to hilly plains to moderate to very steep valleys. Goose Creek, Harrods Creek, Floyds Fork, and the Beargrass Creek system drain this region.

4.2 Regulatory Requirements

As previously noted, the interior drainage system is regulated by MSD's MS4 permit. The Ohio River flood-protection system is not regulated by a single agency or permit. A series of requirements and standards established by multiple state and federal agencies such as FEMA and USACE regulate the flood protection system.

Table 4-1: Federal and State Flood Protection Regulations

Reference	Title	Description
40 CFR, Chapter 1, Part 230, Section 230.30	Threatened and Endangered Species	Identifies endangered or threatened species likely to become endangered in the foreseeable future.
44 CFR, Chapter 1, Part 73	National Flood Insurance Program Flood Insurance Manual, Appendix F, Community Rating Systems	The CRS offers NFIP policy premium discounts in communities that develop and execute extra measures beyond minimum floodplain management requirements to provide protection from flooding.
44 CFR Chapter 1, Part 79	Flood Mitigation Grants	Establishes procedures and requirements for grant programs to mitigate losses from flooding.
44 CFR, Chapter 1, Part 207	Disaster Mitigation Act of 2000	Provides information for state and local governments to identify and mitigate natural hazards.
16 US Code, Title 16, Chapter 84, Section 6514	National Environmental Policy Act Environmental Assessment	Establishes criteria to determine whether an impact significantly affects the quality of the human environment.
33 US Code, Title 33, Chapter 15, Section 701b-12	Floodplain Management Requirements	Established following construction, the non-federal sponsor (MSD) has full legal responsibility for replacing, repairing, and rehabilitating the flood protection facilities.
33 US Code, Title 33, Chapter 46, Section 3301	USACE Regulations regarding Operations and Maintenance of flood damage and reduction facilities	Established guidelines for maintenance and operation of levees, floodwalls, drainage structure, closures, pumping stations, channels and floodways.
42 US Code, Title 42, Chapter 68, Section 5165	Mitigation Planning	Provides information on the policies and procedures for mitigation planning as required by the provisions of section 322 of the Stafford Act, 42 U.S.C. 5165.

4.2.1 Metro Government Local Ordinances Related to Flood Protection

MSD is required to comply with the following local regulations related to the flood protection system.

- **Engineering Standards**. Louisville and Jefferson County MSD Design Manual

4.3 Flood Protection System Evaluation

As noted, the USACE inspect the ORFPS components every two years to ensure it remains fit for purpose. A more comprehensive evaluation was completed in 2019.

4.3.1 2019 USACE ORFPS Reliability Improvements Evaluation

The most recent condition assessment for MSD's ORFPS components was performed by the USACE in 2018-2019. The following conclusions were made[5]:

- The National Flood Insurance Program Levee System Evaluation determined the floodwall and levee features are in an acceptable condition.
- The 2019 Periodic Inspection rated the overall system as "minimally acceptable".
- The 2019 Semi-Quantitative Risk Assessment performed by USACE identified features with a performance issue to lessen likelihood or consequences of failure in accordance with Tolerable Risk Guidelines.
- MSD's CRRP recommended rehabilitation/expansion for 15 of the 16 aging flood pump stations to have sufficient capacity forecasted through 2065.

In 2019, the USACE completed its Feasibility Study and recommended projects needed to ensure flood protection levels meet today's standards. These projects may be eligible for federal dollars through USACE construction appropriation. The improvements are restricted for RELIABLITY purposes and exclude any capacity upgrades. The study indicated the following flood protection system needs:

- **Levee System**: Well maintained and has not had any significant performance issues during high water events, but no event has significantly loaded the levee system.
- **Mechanical/Electrical**: The systems are aging, and mechanical and electrical components are requiring regular and often significant maintenance each year.

[5] USACE Louisville Metro Flood Protection System, Emergency Supplemental Reconstruction Feasibility Study with Integrated Environmental Assessment, Volume 1, 2019.

- **Pumps & Motors**: Approximately 75% of the pumps and motors need rebuilt or replaced. The original pumps, motors, and ancillary systems are still in service and have not had a major rebuild since they were originally installed.

- **Control Systems**: 80% of the controls systems at the flood pump stations are outdated. The control systems are rudimentary by today's standards, requiring the station to be fully staffed at all times during flood pumping operations.

- **Transformers & Motor Control Centers**: 88% of the electrical components need to be replaced. The electrical system is original equipment, which cannot be repaired with currently available components.

- **Gates and Floodwalls**: 25% of the system needs to be replaced or refurbished: 15 new actuators, 13 new gates, and 10 gates to be refurbished. Most of the 152 gates are 65 years old.

The USACE identified $167 million of improvements needed to increase the reliability of the Flood Pump Stations (FPS) along the Ohio River as well as other components, such as gates and flood walls. The USACE will contribute approximately $109 million and MSD will contribute approximately $58 million toward the total cost. MSD does not have any control regarding the timing of projects completed by USACE. Therefore, MSD must be ready with its cost share portion at the USACE's schedule. Preliminary discussions have indicated design for the FPS Reliability Improvements Projects could begin in FY21 with construction advancing FY23 through FY 25.

In addition to these reliability improvements, the CRRP completed multiple evaluations of the 16 flood pump stations and identified additional needs that will not be addressed by the USACE's Reliability Improvements Program. A preliminary breakdown of the projects qualifying for the USACE Reliability Improvements Program and other CRRP projects not covered by USACE are listed in the table below. The 5-Year CIP includes MSD's full share of the USACE Reliability Improvements Program.

Table 4-2: Summary of Flood Protection System CIP Needs

Flood Protection System Project	Estimated USACE Participation for Reliability Improvements	Estimated MSD Participation for Reliability Improvements	CRRP FPS Improvements Not Included in Reliability Program
Paddy's Run FPS Improvements	$12,194,300	$6,566,000	$44,260,000
10th Street FPS Improvements	$2,131,200	$1,147,600	$750,000
17th Street FPS Improvements	$1,368,400	$736,800	$4,313,200
27th Street FPS Improvements	$3,701,300	$1,993,000	$10,027,000
34th Street FPS Improvements	$1,827,700	$984,200	$1,020,000

Flood Protection System Project	Estimated USACE Participation for Reliability Improvements	Estimated MSD Participation for Reliability Improvements	CRRP FPS Improvements Not Included in Reliability Program
4th Street FPS Improvements	$0	$0	$12,920,000
5th Street FPS Improvements	$1,403,800	$755,900	$700,000
Beargrass Creek FPS Improvements	$16,009,000	$8,620,200	$88,259,800
Bingham Way FPS Improvements	$0	$0	$6,590,000
Lower Mill Creek FPS Improvements	$3,481,000	$1,874,400	$11,575,700
Pond Creek FPS Improvements	$15,434,200	$8,310,700	$9,750,000
Riverport FPS Improvements	$1,358,200	$731,300	$5,378,700
Shawnee Park FPS Improvements	$7,832,600	$4,217,500	$38,512,500
Starkey FPS Improvements	$3,500,00	$1,885,100	$4,360,000
Upper Middle Creek FPS Improvements	$7,647,400	$4,117,900	$44,922,200
Western Parkway FPS Improvements	$1,183,300	$637,200	$21,832,900
Levees, Floodwalls, Gates & Closures	$19,846,400	$8,201,500	$1,049,700
Cultural Mitigation & Engineering	$13,529,200	$7,885,000	$0
TOTAL	**$108,948,000**	**$58,664,300**	**$306,221,700**

Note: The projects and preliminary costs presented in this table are for informational purposes only and are subject to change as discussions continue between MSD and the USACE. They represent a level of capital investment for each location. However, the actual costs are likely to vary from these preliminary values as projects are further planned and vetted.

4.4 Flood Protection Capital Projects

The projects completed since 2017 have primarily been focused on replacing aging assets (refer to Table 4-3). The 5-year CIP includes several projects that will increase the capacity of the flood pump stations and improve the overall system reliability.

4.4.1 Projects Funded from Program Notes

Minimal investment has been focused on the flood protection system due to the requirements of the Amended Consent Decree and other MSD priorities. MSD completed repairs for valves, gates, pump, and motors at six of the flood pump stations.

Table 4-3: Flood Protection Projects Completing Design/Construction Since 2017

Program	Budget ID	Project	Task Name	Finish	Lifetime Actuals
Flood Pump Station Improvements	F20265	Beargrass Creek Bay Gate 4 Repairs	Construction Finish	1/10/2020	$109,652
	F19277	Beargrass Creek FPS Wetwell Relief Gate	Design Finish	12/12/2019	$41,530
	F20013	Beargrass FPS Pump 8	Design Finish	12/3/2019	$491
	F19276	FPS Auto Grease Systems Upgrades	Design Finish	12/3/2019	$43,997
	F20240	Shawnee Park FPS Motor No 3 Emergency Repairs	Construction Finish	10/14/2019	$112,130
	F18295	Starkey Check Valve Replacement	Construction Finish	7/31/2019	$190,998
	F18302	Paddy's Run FPS Pumps 1, 2 and 6 Rehab	Design Finish	4/18/2019	$1,288,560
	F19269	Upper Mill Creek Emergency Pump Repairs	Construction Finish	4/17/2019	$1,092,856
	F18279	Paddys Run FPS Access Road	Construction Finish	11/30/2018	$293,034
	F18296	5th Street FPS Roof Replacement	Construction Finish	11/9/2018	$57,517
Levee, Floodwall, and Gate Improvements	F19245	Flood Gate 1 Replacement	Design Finish	9/24/2019	$106,466
	F16021	Gates 136 and 145 Floodwall Actuator Replacement	Construction Finish	4/11/2019	$592,816
	F19218	Flood Gate 110 and 111 Elimination	Construction Finish	2/21/2019	$54,641
TOTAL FLOOD PROTECTION PROJECTS					**$3,984,688**

4.4.2 5-Year CIP for Flood Protection System

MSD is forecasting to spend $153 million of the $306 million of flood protection needs during the 5-year CIP. These projects are not part of the USACE Reliability Improvements Program. The ORFPS is a critical component for public protection and as such has become a priority for the capital program. During the 5-year CIP, the following Flood Pump Station Capacity Upgrades projects will be partially or wholly budgeted. These projects were identified and estimated in the CRRP.

Table 4-4: Summary of 5-Year CIP Forecasted Spending for ORFPS

CIP Program	Project	5-Year CIP Forecasted Spending
Capacity or Electrical Improvements	10th Street FPS - Generator Improvements	**$99.7 million**
	17th Street FPS - Capacity and Generator Improvements	
	27th Street FPS - Capacity and Generator Improvements	
	34th Street FPS - Generator Improvements	
	4th Street FPS - Capacity and Electrical Service Improvements	
	5th Street FPS - Generator Improvements	
	Bingham Way FPS - Capacity and Generator Improvements	
	Paddys Run FPS Capacity Upgrade	
	Pond Creek FPS - Electrical Service Improvements	
	Starkey FPS Transformer Replacement and Generator	
	Upper Mill Creek FPS Transformer Replacement	
Asset Management Improvements	Beargrass Creek FPS Wetwell Relief Gate	**$53.5 million**
	Beargrass FPS Pump 8	
	Flood Gate 1 Replacement	
	FPS Auto Grease System Upgrades	
	Flood Structures & Flood Pump Station Equipment R&R	
	Gate 102 Replacement	
	Paddy's Run FPS Pumps 1, 2, and 6 Rehab	
	Pond Creek Emergency Pump Repairs	
	Canal Street Floodwall	
	Total 5-Year CIP Forecast	**$153.2 million**

Note: These projects exclude MSD's $58 million participation in the USACE Reliability Improvements Program

- **Paddy's Run FPS Capacity Improvements**: The $79 million Paddy's Run Flood Protection Station Capacity Improvements project is MSD's highest ranked capital priority to mitigate flood pump station public health protection risk. MSD completed an Alternatives Analysis for increasing the capacity of the station to 975 mgd. The CRRP recommended two equally important project phases for the Paddy's Run FPS. The first phase will improve the reliability of the existing Paddy's Run FPS (originally constructed in 1953) by removing, inspecting, and rehabilitating or replacing the station's existing pumps and motors to maintain the station's current total pumping capacity of 925 mgd. The reliability improvements will be implemented through the USACE Program. MSD must construct the capacity improvements project independent of the USACE project.

As noted in Table 4-3, MSD funds the following appropriations annually in support of activities related to the flood protection system:

- **Flood Pump Station Equipment Repair & Replacement**: This annual appropriation is intended to better facilitate key equipment replacements. Funds are budgeted to replace pumps, motors, electrical switchgear, generators, and other critical equipment. MSD budgets approximately $1 million per year to support this effort.

- **Flood Structures Repair & Replacement**: MSD maintains a proactive maintenance program to assure the integrity of the levee and floodwall system. Worked performed using these funds includes: repair and/or replacement of trusses, sheeting, and closure walkways; corrugated metal pipe replacement; toe drain access repairs; trail repairs and unwanted vegetation removal; level gate repair or automation; painting; floodwall joint repair; and floodwall concrete sealing and surface crack repairs. MSD budgets approximately $2 million per year to support the program.

5. Wastewater Collection System

Like many cities developing in the 19th century, Louisville's sewers were constructed many decades prior to the construction of the treatment facilities. MSD's first sewers were installed before 1850 and routed directly to the Ohio River. By the end of the 19th century, the collection system had expanded to almost 100 miles of clay, brick, and timber-lined sewers. Today, MSD has over 3,200 miles of sewers, approximately 500 miles being over 100 years old. The oldest sewers in the system are primarily in the combined sewer system built between the 1860s to the 1950s. Beginning in 1955, all of the sewer systems built in the Louisville Metro area have been separate sanitary sewers. MSD's first Sewer Master Plan was developed in 1964.

MSD serves approximately 243,000 customer accounts and 650,000 people. The collection system operated and maintained by MSD includes:

- 256 wastewater pump stations
- ≈79,000 manholes
- ≈2,500 miles of sanitary sewers
- ≈700 miles of combined sewers (24,000 acres)
- ≈160 miles of force mains
- ≈1,400 miles of lateral connections to buildings
- Real Time Control facilities to reduce overflows 48%
- In-Line Storage Systems
- Waterway Protection Tunnel for wet weather management (currently under construction)

A breakdown of the major collection components by sewershed is presented in Table 5-1.

Table 5-1: Inventory of Wastewater Collection System by Sewershed

WQTC SEWERSHED	MANHOLES	GRAVITY SEWERS (FT)	PUMP STATIONS	FORCE MAINS (FT)
Morris Forman	41,315	9,055,643	94	325,109
Derek R. Guthrie	21,184	4,777,509	41	75,831
Hite Creek	5,089	963,949	51	190,596
Floyds Fork	5,256	966,863	34	125,576
Cedar Creek	5,998	1,114,183	36	136,648
Total	**78,842**	**16,878,147**	**256**	**853,760**

5.1 Wet Weather Storage

Under the Amended Consent Decree, MSD constructed the wet weather storage facilities listed in Table 5.2. These systems are consistent with the USEPA's Nine Minimum Controls (NMC) Program that requires utilities to maximize storage within the collection system. Many of MSD's wet weather storage facilities are operated using real-time control (RTC) to optimize available flow and storage capacities within the wastewater collection system.

A summary of MSD's wet weather storage systems is presented in Table 5-2. These systems are preventing billions of gallons of sewer overflows from occurring. In FY19 nearly 2 billion gallons of flow was stored in the system and later treated – in lieu of resulting in unauthorized discharges. In FY20, through March 31st, nearly 1.3 billion gallons have been stored and subsequently treated. These systems are proving to be very effective with managing wet weather flows.

Table 5-2: Wet Weather Storage Systems

Wet Weather Storage and Real Time Control	Capacity (MG)	Date Storage On-line	FY19 Volume Stored (MG)	FY20 Volume Stored* (MG)
Southwestern Pump Station Sluice Gates Chamber (SWSG)	14.25	2006	484.85	267.65
Southwest Outfall Retention Basin #2 (SWOR2)	4.1	12/31/2008	151.75	67.65
Brady Lake & Executive Inn Storage Basin (Upper Dry Run Trunk System)	21.5	2006	278.85	221.15
Ashland In-Line Storage Facility	1.0	2008 Upgraded 2019	361.45	15.8
Southern Outfall In-Line Storage @43rd Street (SOR1)	14.05	11/30/2018	29.75	272.85
Ohio River Interceptor (MDS)	1.8	2008	205.85	69.25
Sneads Branch In-Line Storage	2.5	9/30/2006	56.85	19.65
Logan & Breckinridge Street CSO Basin	17	12/20/2017	317.55	234.3
Nightingale Pump Station Replacement & Storage (NGPS)	8.0	6/30/2017	11.4	21.85
Clifton Heights CSO Storage Basin	6.9	12/21/2018	13.6	44
Southwestern Parkway Storage Basin	17.5	3/29/2019	0	45
Portland CSO Basin	6.7	8/30/2019	0	0
Total	**115.3**		**1,911.9**	**1,279.15**
Waterway Protection Tunnel	52.2	Future	0	0
Idlewood Inline Storage	TBD	Future	0	0

**FY20 Volume Stored July 1, 2019 through March 31, 2020.*

5.2 Service Area

By Kentucky state statute, MSD is authorized to provide wastewater collection, treatment, and disposal services in Jefferson County. Through interlocal agreements, MSD also provides these services to portions of Oldham County and small parts of Bullitt County (refer to Figure 5-1). This area includes approximately 270 square miles and serves approximately 243,000 customers.

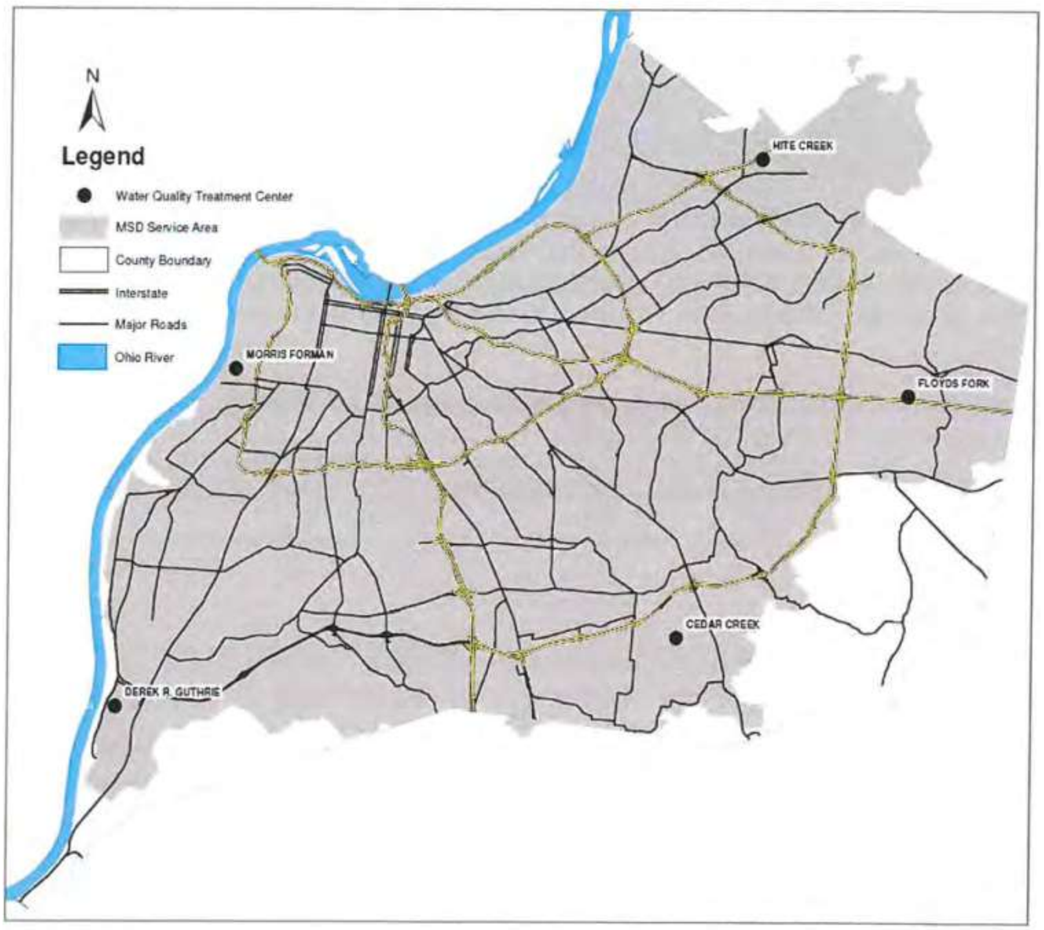

Figure 5-1: MSD's Wastewater Service Area

5.3 Regulatory Requirements

MSD is required to comply with the regulations listed in Table 5-3 related to wastewater systems as referenced in the Kentucky Revised Statutes (KRS).

Table 5-3: Federal and State Applicable Wastewater Regulations

Reference	Title	Description
401 KAR 5:050, 5:060; 5:065 KRS 224.16-050	Permits and Planned Changes	Establishes fees and procedures to obtain a permit and criteria for alterations or additions that must obtain a permit.
401 KAR 5:005	Permits to construct, modify or operate a facility	Establishes when permits are required for construction, of sewer line extensions & defines application submittals and fees.
401 KAR 5:006	Wastewater Regional Planning Requirements	Defines requirements for Regional Facility Plan to construct new infrastructure to serve 30% more of the population.
401 KAR 5:010 401 KAR 11:030 KRS 224.73-110	Operation of Wastewater Systems by Certified Operators	Establishes requirements for certification of collection system operations staff. Specifies Operator in Training Program requirements.
401 KAR 5:015	Releases to be Reported	Establishes reporting requirements for certain releases, spills, and bypasses of pollutants into the environment.
401 KAR 5:065 KRS 224.99-010	Monitoring & Records	Establishes information retainage requirements for monitoring and performance records.
401 KAR 5:055 KRS 224.70-110 40 CFR Part 403	Pretreatment Requirements	Establishes pretreatment requirements as part of the Kentucky Pollutant Discharge Elimination System (KPDES). Provides for the protection of domestic wastewater facilities from pass through or interference from pollutants contributed by industrial users of the domestic wastewater facility.
401 KAR 5:320	Wastewater Laboratory Certification Program	Defines the minimum laboratory quality assurance, methodological and reporting requirements.
KRS 224.73-120	Monitor/Report Introduction of Incompatible Pollutants	Authorizes application of monitoring, record keeping, and reporting requirements of pollutants which interfere with, pass through, or are otherwise incompatible with WQTC.

5.3.1 Metro Government Local Ordinances Related to Wastewater Collection

MSD is required to comply with the following local regulations related to the wastewater collection system.

- **Sewerage Plan Review and Inspection**. Louisville Metro Government Code of Ordinances, Title V, Chapter 50.06
- **Capacity Charge**. Louisville Metro Government Code of Ordinances, Title V, Chapter 50.45-48.
- **Engineering Standards**. Louisville and Jefferson County MSD Design Manual.

5.3.2 IOAP/Consent Decree Work

As has been noted throughout this report, much of MSD's annual capital program has been focused on the Consent Decree Requirements. The following projects were completed since the 2017 bonds were issued. The Waterway Protection Tunnel was under construction and has required significant capital investment to-date.

Table 5-4: Consent Decree Projects Completing Design/Construction Since 2017

Program	Budget ID	Project	Task Name	Finish	Lifetime Actuals
Sewer Separation Projects	H20215	Camp Taylor 2A SSR - Union St Sewers	Construction Finish	2/16/2020	$41,676
Wet Weather Storage Capacity & Real Time Control Projects	H09125	Portland CSO Basin	Construction Finish	8/9/2019	$37,829,646
	D17047	MF Brady Lake and Executive Inn Gate Study	Study Finish	7/25/2019	$37,992
	H09132	Southwestern Parkway Storage Basin	Construction Finish	5/10/2019	$80,623,143
	H09123	Clifton Heights Storage Basin	Construction Finish	11/15/2018	$33,934,464
	H09133	Waterway Protection Tunnel	Construction In-Progress		$113,500,000
TOTAL CONSENT DECREE PROJECTS					**$265,966,921**

5.3.3 Remaining IOAP/Consent Decree Work

The cost of the capital improvements required to be completed under the Amended Consent Decree is currently estimated to be $1.5 billion of which MSD has spent $1.01 billion as of April 30, 2020.

During the 5-year CIP, construction for the Waterway Protection Tunnel will be completed. The remaining SSDP projects will be phased over time. The specific timing for each remaining project is currently under discussion with the federal and state Regulators. The remaining Consent Decree work to be completed includes the following projects.

- **Waterway Protection Tunnel ($55 million remaining):** The last Long-Term Control Plan project (Waterway Protection Tunnel) remains under construction with an estimated completion date in FY22. The following LTCP projects are nearly completed:
    - I-64 and Grinstead CSO Interceptor
    - Lexington and Payne CSO Interceptor
    - Rowan Pump Station & Downtown CSO Interceptor

- **Sanitary Sewer Discharge Plan (SSDP) Projects ($144 million remaining):** MSD must complete several remaining projects identified in the SSDP. The schedule for completion of these projects is currently under discussion with the Regulators given other urgent needs that have developed over the past few years related to Biosolids Management and the Ohio River Flood Protection System. The following SSDP projects have yet to be completed:

  - ***Sewer Projects***
    - Little Cedar Creek Interceptor Improvements
    - Dell Road and Charlaine Parkway Interceptor Improvements
    - Sutherland Interceptor

  - ***Storage Projects***
    - Idlewood Inline Storage
    - Gunpowder Pump Station In-Line Storage
    - Lucas Lane Pump Station Inline Storage
    - Goose Creek Pump Station Storage

  - ***Pump Station Projects***
    - Raintree Court & Marian Court Pump Station Eliminations Phase 1A
    - Bardstown Road Pump Station Improvements
    - Cinderella Pump Station Elimination
    - Kavanaugh Road Pump Station Improvements
    - Leven Pump Station Elimination
    - Monticello Pump Station Elimination
    - Mellwood System Pump Station Eliminations
    - Upper Middle Fork Pump Station

- **Upper Middle Fork Pump Station ($86 million remaining):** The largest remaining SSDP project is the Upper Middle Fork bundle. This project includes replacement of the existing Upper Middle Fork Pump Station, which has a current capacity of 9 mgd, with a new efficient 30 mgd pump station. A relief interceptor will convey flows in excess of the current interceptor capacity, and a diversion gate will be installed on the existing interceptor to force flows into the pump station. This timing for completing this project is under discussion with the Regulators.

- **IOAP Support Projects (approximately $2 million per year):** Annual support for post construction compliance monitoring and external resources to assist with IOAP modifications is included in this investment.

5.4 Wastewater Collection System Programs

MSD administers and manages several programs related to the wastewater collection system. The key programs are summarized herein.

5.4.1 Capacity, Management, Operations and Maintenance (CMOM) Program

MSD's Consent Decree requires implementation of a CMOM Program including major renewal and replacement projects at the Hite Creek, Floyds Fork, Cedar Creek, and Derek R. Guthrie WQTCs to ensure MSD can maintain effective wastewater collection, transmission, and treatment. The CMOM Program provides proactive asset management of sewers, pump stations, and major interceptors that make up most of MSD's collection system. CMOM compliance is required as a component in each WQTC's KPDES permit with the following stated comprehensive CMOM Program goals:

- To better manage, operate, and maintain the collection system
- Investigate capacity constrained areas of the collection system
- Proactively prevent or minimize SSOs
- Respond to SSO events
- Proactively prevent or minimize the potential for release of pollutants

5.4.2 Industrial Pretreatment Program

MSD is the administering agency for the Metro Louisville Hazardous Materials Ordinance (HMO) and the approval authority for Hazardous Material Spill Prevention and Control (HMPC) Plans mandated by this ordinance. This ordinance was created for the protection of public health and safety in Louisville Metro, through the prevention and control of hazardous materials incidents and releases and the timely reporting of releases. The ordinance has been incorporated into MSD's Industrial Pretreatment Program which has the following objectives:

- Protect the Water Quality Treatment Centers and sewer collection system
- Protect the health and safety of MSD workers and general public
- Protect the waterways
- Prevent violations of permits
- Enhance biosolids reuse and water reclamation

The Industrial Pretreatment Program is subdivided into the following programmatic areas:

- **Fats, Oils and Grease (FOG) Program**: MSD's FOG Management Policy requires Food Service Establishments to use grease traps and/or grease interceptors to prevent FOG clogs. These devices must be certified annually by an MSD approved Certified Grease Waste Hauler or Plumber.

- **Dental Amalgam Program**: designed to reduce the amount of toxic metals entering the sanitary sewer system. MSD requires all dental facilities that discharge into the sanitary sewer system to complete a one-time compliance report for dental dischargers.

- **Unusual Discharge Request (UDR) Program**: Any short-term one-time discharge to the sewer system requires approval through MSD's UDR Program. The program gives MSD control over the type and characteristics of the wastewater being discharged to ensure that contaminants that might cause problems at the treatment plants are not allowed to enter the sewer system.

- **Pretreatment Requirements Review and Modification**: The Nine Minimum Control Program reviews and modifies business and industry wastewater pretreatment requirements in order to minimize the impacts of non-domestic dischargers on CSOs.

5.4.3 Nine Minimum Controls Program

MSD's Consent Decree requires compliance with the USEPA NMC Program that was initially developed as part of the Clean Water Act CSO Policy to address combined sewer system best management practices that do not require significant construction. NMC projects tend to be technology based. NMC programmatic compliance is required in the Morris Forman WQTC KPDES Permit. The 20-year CRRP includes projects focused on NMC including 1) real-time control (RTC) of assets in the combined sewer system and 2) capacity upgrades for WQTCs to maximize the flow able to be received and processes at the treatment plants.

The 5-year CIP includes projects for NMC including: annual as-needed appropriations for NMC improvements, CSO inspection cameras, and RTC refinements.

NMC #3 – Maximize Collection System Storage

- SGC RTC Enhancements Project
- NMC RTC Support, $2.4 million (as-needed annual appropriations)
- NMC Program Support, $690,000 (as-needed annual appropriations)

NMC # 4 – Maximize Flow to WQTC

- CCWQTC Expansion
- HCWQTC Expansion

NMC # 9 – Monitor CSO Controls

- NMC CSO Inspection Cameras, $445,000 (as-needed annual appropriations)

5.4.4 Sewer Asset Management Program

Asset management programs are required to ensure assets perform as intended and are available when needed. While the Consent Decree focused on constructing new assets to address wet weather and mitigate resulting overflows, asset management focuses on minimizing the risk of failure for existing assets. USEPA recognizes the importance of asset management and requires utilities to comply with programs intended to keep existing infrastructure fit for purpose.

Sewers represent some of the oldest components of the wastewater system. Some of MSD's sewers are 150 years old. MSD utilizes an industry-standard risk scoring system for the sewers. In total MSD estimates $2.2 billion is needed to address all sewer rehabilitation and known structural deficiencies.

MSD is focusing on large diameter interceptors for rehabilitation. Significant major interceptor failure has occurred in the past two years due to severe deterioration of large pipe segments. USEPA noted in its 2019 Inspection Report[6] that MSD had 12 major pipe collapses in a 15-month period. In addition to the Large Diameter Interceptor Rehabilitation Program, MSD continues to improve sewers and pump stations throughout the District.

5.4.5 Planning Initiatives

The 5-year CIP includes the following planning initiatives related to the wastewater collection system. These plans will be utilized to implement a comprehensive asset management program, prioritize capital needs, and update the CRRP.

- Odor Management Plan, $250,000
- SCADA Master Plan, $796,000
- Wastewater Pump Stations Facility Asset Management Plan, $750,000

5.5 Wastewater Collection System Capital Projects

MSD continues to fund wastewater collection projects with its annual CIP. Projects are generally a combination of discrete local improvements and appropriations for District-wide needs/services.

5.5.1 Projects Funded from Program Notes

Projects completed since the 2017 bond issuance have addressed both sewer and pump station needs. The largest project, the Ohio River Interceptor Structural Rehabilitation Project, necessitated expensive sewer repairs and replacement for portions of the major interceptor that failed in downtown Louisville.

[6] United States Environmental Protection Agency, Region 4, Water Protection Division, NPDES Permitting and Enforcement Branch, Compliance Evaluation Inspection Report, Louisville & Jefferson County Metropolitan Sewer District, June 25, 2019.

Table 5-5: Wastewater Collection Projects Completing Design/Construction Since 2017

Program	Budget ID	Project	Task Name	Finish	Lifetime Actuals
Real Time Control Facilities	F16003	Ashland RTC Facility Upgrades	Construction Finish	6/25/2019	$469,839
Pump Stations	H20153	SWPS Flood Repair	Design Finish	1/14/2020	$79,852
	E15033	Shively Pump Station Generator Replacement	Construction Finish	10/30/2019	$1,723,284
	D19275	MDS Downstream Flow Meter	Design Finish	9/17/2019	$251,121
	H19288	Terra Crossing Pump Station Upgrades	Construction Finish	6/30/2019	$13,361
	G18326	Catalpa Farms PS Odor Control Evaluation	Evaluation Finish	3/8/2019	$22,009
	F19234	Breakwater PS Electrical Modifications	Construction Finish	12/27/2018	$15,717
	A18324	Oreland Mill Pump Station Elimination	Construction Finish	5/2/2019	$294,952
Sewers	D18285	ORFM Odor and Corrosion Control	Design Finish	3/3/2020	$289,231
	H19142	Upper Floyds Fork Interceptor	Design Finish	2/4/2020	$232,887
	H16074	Nightingale Rehab	Design Finish	10/8/2019	$427,268
	A16073	Mud Lane Interceptor	Design Finish	8/6/2019	$1,490,854
	H19247	I-64 and Grinstead CSO Interceptor	Design Finish	4/2/2019	$5,396,037
	A18353	Ohio River Interceptor Structural Rehabilitation	Construction Finish	12/15/2018	$18,442,150
TOTAL WASTEWATER COLLECTION PROJECTS					**$29,148,562**

5.5.2 5-Year CIP for Wastewater Collection System

The following priorities are forecasted in the 5-year CIP to address deficiencies and mitigate risks for the wastewater collection system totaling $182 million. A breakdown of the projects is provided in Figure 5-2 and Table 5-6.

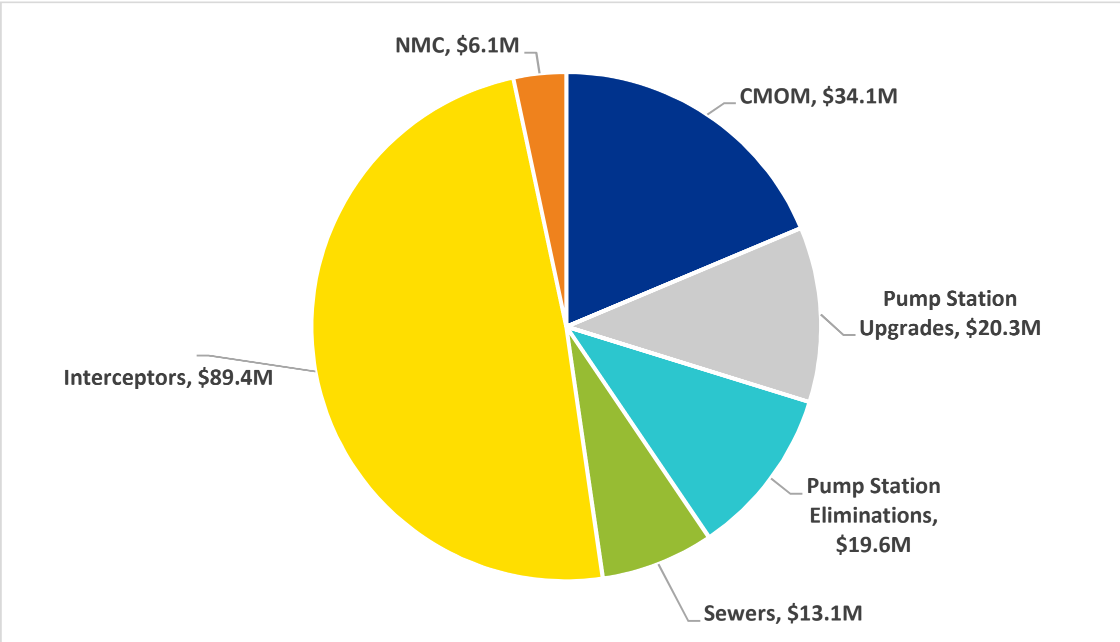

Figure 5-2: Summary of 5-Year CIP for Wastewater Collection System

Table 5-6: Overview of 5-Year Forecasted Spending for Wastewater Collection System

<table>
<tr><th colspan="2">Wastewater Collection System Priorities</th><th>5-Year CIP Forecasted Spending</th></tr>
<tr><td rowspan="15">Pump Station Projects</td><td>Enhanced Odor Control for Pump Stations</td><td rowspan="8">CMOM Program Pump Stations $18.8 million</td></tr>
<tr><td>Back-Up Power for Critical Pump Stations</td></tr>
<tr><td>Inventory for Critical Pump Stations</td></tr>
<tr><td>Upgrade Critical Pump Stations with</td></tr>
<tr><td>CMOM Collection System Pump R&R</td></tr>
<tr><td>CMOM Grinder R&R</td></tr>
<tr><td>CMOM I&C Implementation</td></tr>
<tr><td>CMOM Pump Station Generator Upgrades</td></tr>
<tr><td>Asset Management Pump Stations R&R</td><td rowspan="7">Pump Station Improvements $20.3 million</td></tr>
<tr><td>PS Replacement or Overhaul Projects</td></tr>
<tr><td>Northern Ditch Pump Station Replacement & Odor Control</td></tr>
<tr><td>Prospect Phase II PS Rehabilitation</td></tr>
<tr><td>Shively Area Suite PS Upgrades</td></tr>
<tr><td>Sneads Branch Pump Replacement</td></tr>
<tr><td>Southwestern Pump Station Improvements</td></tr>
</table>

	Wastewater Collection System Priorities	5-Year CIP Forecasted Spending
	Bluegrass Fields PS Renovation	
	Admiral Way PS Foundation Repairs	
Sewer Projects	Gravity Line Cleaning and Inspection	**CMOM Program Sewers $15.3 million**
	Program Management Assistance	
	CMOM SCAP, AAM, & FOG Programs	
	Operations R&R	
	Broadfern Pump Station Elimination	**Pump Station Eliminations $19.6 million**
	Gorham Way Pump Station Elimination	
	Kirby Lane Pump Station Elimination	
	Lake Forest Pump Station Eliminations	
	Lea Ann Way Pump Station Eliminations	
	Modesto Pump Station Elimination	
	Pirogue Pump Station Elimination	
	Shady Villa Pump Station Elimination	
	Shively Area Suite Pump Station Eliminations	
	Rehl Road East SSES	**Sewer Projects $13.1 million**
	Harrods Creek Force Main Repair	
	KTC Greenwood Road Assessment	
	Middle Fork Beargrass Creek SSR Phase 1	
	ORFM Odor and Corrosion Control	
Large Diameter Interceptor Projects	Broadway Interceptor Rehabilitation	**Interceptor Rehabilitation Projects $89.4 million**
	Buechel Branch Interceptor Rehabilitation	
	I-64 and Grinstead Interceptor Rehabilitation	
	Interceptors Rehabilitation and Replacement	
	Western Outfall Infrastructure Rehabilitation	
	Large Diameter Interceptor Rehabilitation Program	
	Nightingale Interceptor Rehabilitation	
	Rudd Avenue Sewer Rehabilitation	
Nine Minimum Control Projects	CSO Inspection Cameras	**NMC Projects $6.2 million**
	RTC Support Services	
	SGC RTC Enhancements	
	Total 5-Year CIP Forecast for Wastewater Collection System	**$182.7 million**

Note: excludes projects listed in the Consent Decree

6. Wastewater Treatment

MSD was formed in 1946, and the first treatment plant went into operation in 1958. MSD's Southwestern Outfall Pump Station went online in 1959 and pumped wastewater from the system's largest sewer to the first wastewater plant (Morris Forman). Although the 1964 Countywide Sewer Master Plan specified new treatment plants, a lack of financing for large treatment plants and their associated trunk sewers delayed their construction. As such septic systems and package treatment plants were constructed and/or installed by land developers and homeowners through the mid-1970s. By mid-1972, there were more than 300 small treatment plants in Jefferson County. In 2016, MSD decommissioned the final remaining package treatment facility leaving five regional water quality treatment centers (WQTC) to serve all of Louisville and Jefferson County. Elimination of these facilities in conjunction with removing 40,000 septic systems has helped improve the quality of local streams and the Ohio River. A summary of MSD's existing treatment facilities provided below.

- **Cedar Creek WQTC**: The Cedar Creek WQTC was originally constructed in 1995 with a capacity of 2.2 mgd. In 2005, the plant capacity was expanded to 7.5 mgd average daily flow (ADF). Today, approximately 5 mgd of flows are treated and disinfected (UV) before being released into Cedar Creek.

- **Derek R. Guthrie WQTC**: The original facilities at the Derek R. Guthrie WQTC site consisted of a screening chamber and a raw sewage pump station brought online in 1979. The secondary treatment facilities were brought online in 1986 when the WQTC was known as the West County Wastewater Treatment Plant. The WQTC had a capacity of 15 mgd with peak flow of 30 mgd. Plants expansions in 2001 and 2004 increased the ADF capacity to 30 mgd. In 2012 additional facilities enabled the WQTC to treat up to 200 mgd of wet weather flow using a modified contact stabilization process. Further improvements have since been constructed to increase plant capacity to 60 mgd ADF and 300 mgd peak (for short durations). MSD began construction of a new dewatering facility in 2019 to receive biosolids from all the regional WQTCs. Construction is scheduled for completion in FY22. Today approximately 40 mgd of flows are treated and disinfected (sodium hypochlorite) before being released into the Ohio River.

- **Floyds Fork WQTC**: The Floyds Fork WQTC was originally constructed in 2001 at a capacity of 3.25 mgd. In 2012, a major plant expansion increased capacity and added sludge holding tanks. Today approximately 3.5 mgd of flows are treated and disinfected (UV) before being released into Floyds Fork.

- **Hite Creek WQTC**: The Hite Creek WQTC was originally constructed in 1970 with a capacity of 2.2 mgd to serve the Ford truck assembly plant and its surrounding neighborhoods. The capacity of the treatment center was expanded to 6.6 mgd to eliminate sanitary sewer overflows upstream of the treatment center and allow for future growth. The WQTC is under construction to expand its capacity to 9 mgd ADF and 24 mgd peak flow. Construction is scheduled for completion in FY22. Today approximately 4.4 mgd of flows are treated and disinfected (UV) before being released into Hite Creek.

- **Morris Forman WQTC**: The Morris Forman WQTC was originally constructed in 1956 for preliminary and primary treatment and was referred to as the Fort Southworth Plant. It was designed to receive a maximum daily flow of 105 mgd and peak hour flow of 338 mgd. Secondary treatment facilities were installed in the 1970s in accordance with federal regulations. The plant was named after MSD's retired executive director. Plant upgrades in late 1990s and early 2000s improved performance and increased treatment capacity to its current level of 120 mgd with peak flow capacity of 350 mgd. Today approximately 100 mgd of flows are treated before being released into the Ohio River. The Morris Forman WQTC is the largest facility in Kentucky and treats over 70% of the wastewater generated in MSD's service area; including the entire combined sewered area.

- **Bells Lane WWTF**: The Bells Lane WWTF was brought online in 2017. The project converted an existing 105 mgd dry-pit pump station to a 160 mgd submersible pump station and added 1) screening and grit facilities; 2) 50 mgd high rate treatment basin to provide chemically-enhanced primary sedimentation; 3) disinfection/dechlorination; and 4) 25 MG equalization basin.

6.1 Service Area

As noted, MSD owns five WQTCs and one WWTF as shown in Figure 6-1.

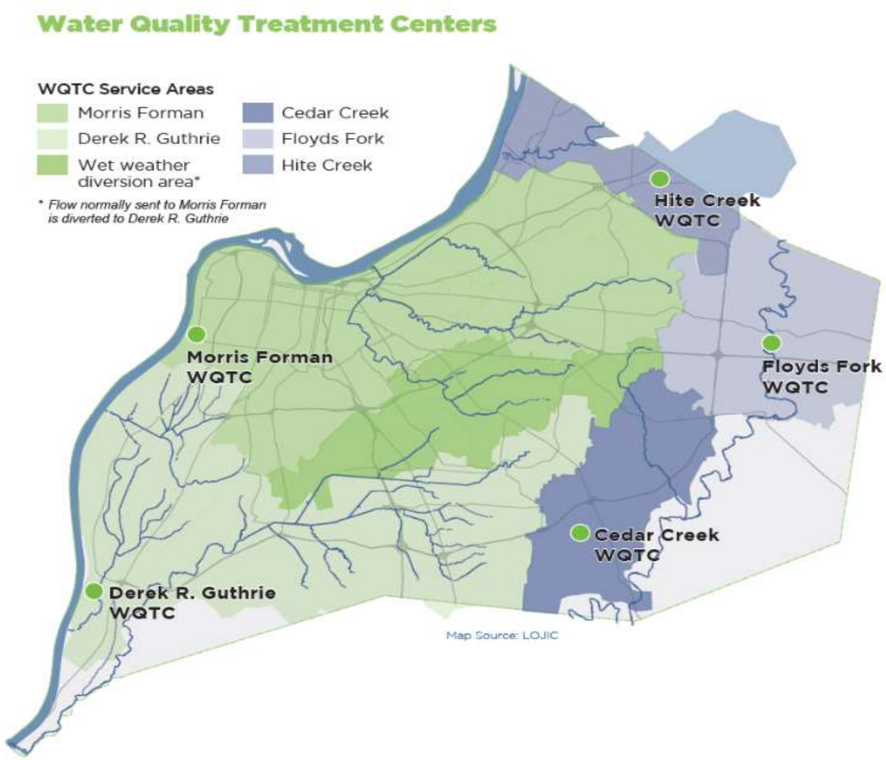

Figure 6-1: MSD's Water Quality Treatment Centers Service Areas

6.2 Regulatory Requirements

The District is required to comply with the regulations listed in Table 6-1 related to wastewater treatment systems as referenced in the Kentucky Revised Statutes (KRS).

Table 6-1: Federal and State Applicable Wastewater Treatment Regulations

Reference	Title	Description
KRS 224.16-050	Permits and Planned Changes	Establishes fees and procedures to obtain a permit and criteria for alterations or additions that must obtain a permit.
KRS 224.70-130 **401 KAR 5:080**	Criteria & Standards for KPDES	Establishes criteria and fees for permit to discharge into waters of the Commonwealth.
401 KAR 5:005	Permits to construct, modify or operate a facility	Establishes when permits are required for construction, of sewer line extensions, WQTC improvements, or new discharges & defines application submittals and fees.

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Reference	Title	Description
401 KAR 5:006	Wastewater Regional Planning Requirements	Defines requirements for Regional Facility Plan to construct new WQTC, expand existing WQTC by 30%, or serve 30% more of the population.
401 KAR 5:010 **401 KAR 11:030** **KRS 224.73-110**	Operation of Wastewater Systems by Certified Operators	Establishes requirements for certification of domestic wastewater treatment plant and collection system operations staff. Specifies Operator in Training Program requirements.
401 KAR 5:015	Releases to be Reported	Establishes reporting requirements for certain releases, spills, and bypasses of pollutants into the environment.
401 KAR 5:026	Designated Uses of Surface Waters	Establishes surface water designations of creeks and rivers and the associated water quality criteria.
401 KAR 5:029 **401 KAR 5:031** **401 KAR 10:030**	Antidegradation Policy Surface Water Standards	Establishes water quality criteria.
401 KAR 5:035 **401 KAR 5:045** **401 KAR 5:060**	Treatment Requirements and Compliance	Establishes minimum treatment requirements for domestic wastewater facilities and associated water quality sampling frequency.
401 KAR 5:065 **KRS 224.99-010**	Monitoring & Records	Establishes information retainage requirements for monitoring and performance records.
401 KAR 5:055 **KRS 224.70-110** **40 CFR Part 403**	Pretreatment Requirements	Establishes pretreatment requirements as part of the Kentucky Pollutant Discharge Elimination System (KPDES). Provides for the protection of domestic wastewater facilities from pass through or interference from pollutants contributed by industrial users of the domestic wastewater facility.
401 KAR 5:320	Wastewater Laboratory Certification Program	Defines the minimum laboratory quality assurance, methodological and reporting requirements.
KRS 224.73-120	Monitor/Report Introduction of Incompatible Pollutants	Authorizes application of monitoring, record keeping, and reporting requirements of pollutants which interfere with, pass through, or are otherwise incompatible with WQTC.
401 KAR 45 **40 CFR 503**	Sludge Disposal	Establishes procedures and requirements for disposal of biosolids.
401 KAR 52:020	Title V Air Permits	Establishes requirements for air contaminant sources located in Kentucky that are required to obtain a Title V permit.

6.2.1 Metro Government Local Ordinances Related to Wastewater Treatment

MSD is required to comply with the following local regulations related to the wastewater treatment:

- **Engineering Standards**. Louisville and Jefferson County MSD Design Manual.

6.2.2 Morris Forman WQTC Agreed Order

The Morris Forman WQTC experienced multiple non-compliance events due in part to 1)a lightning strike and 2) accelerated deterioration of the biosolids system. MSD is working with the KDEP to develop/execute a Corrective Action Plan (CAP) to address the deficiencies at the plant that are contributing or have the potential to contribute to permit exceedances. The projects included in the 5-Year CIP that have been suggested as candidates for the CAP are listed in Table 6-2.

Table 6-2: MFWQTC Projects Under Agreed Order CAP Consideration

MFWQTC Treatment Process	Morris Forman Agreed Order Projects	Estimated Completion Date
Primary Treatment	D17042 | MFWQTC Sedimentation Basin Rehabilitation	June 30, 2024
	D19227 | MFWQTC Primary Sludge Line Replacement	July 31, 2020
	New_BD096 | MFWQTC Primary Sludge Line Replacement Phase 2	June 30, 2022
Secondary Treatment	D18160 | MFWQTC Secondary Clarifiers Structural Repairs	June 30, 2024
	D20229 | MFWQTC Clarifier Floor Repairs	January 31, 2021
Disinfection	D18159 | MFWQTC HPO Tanks Structural Repairs	June 30, 2024
	D18161 | MFWQTC Chlorine Contact Tanks Structural Repairs	June 30, 2024
Final Effluent Pump Station (FEPS)	D18130 | MFWQTC FEPS MCC Replacement	June 30, 2021
	D18162 | MFWQTC FEPS Structural Repairs	June 30, 2024
	D19307 | MFWQTC FEPS VFD Replacement	Sept 30, 2020
	Multiple | MFWQTC FEPS Pump and Motor Repair	June 30, 2024
Biosolids	D18158 | MFWQTC Digester Control Building Structural Repairs	June 30, 2024
	D19045 | MFWQTC Sodium Hypochlorite Building Relocation	Dec 31, 2022
	D20228 | MFWQTC Centrifuge Replacement/Rehabilitation	August 31, 2020
	D20285 | MFWQTC LG Dryer Replacements	November 5, 2021
	D20284 | DRGWQTC Dewatering	October 5, 2021
	D20249 | District-Wide Biosolids Master Plan	Completed
	H14126 | HCWQTC Dewatering Improvements	January 21, 2022
	D20291 | DRGWQTC Phase 1 Dewatering	January 4, 2021
Other	New_BD106 | MFWQTC Asset Management Plan	Dec 31, 2021
Electrical	D18156 | MFWQTC Service & Blower Building Structural Repairs	June 30, 2022
	D20167 | MFWQTC East Headworks HVAC	October 29, 2020

6.3 WQTC Performance

The primary driver for capital improvements at the WQTCs is having the ability to reliably comply with permitted requirements. The following information summarizes the performance of MSD's WQTCs.

6.3.1 WQTC Permitted Capacity

MSD's active WQTC permits are listed in Table 6-3. The Morris Forman WQTC has been operating under the 2004 KPDES permit via an Administrative Order. All other WQTC permits have been updated.

Table 6-3: Water Quality Treatment Center Capacities

WQTC Facility	Average Day Capacity (MGD)	Peak Hour Capacity (MGD)	KPDES Permit Number	Permit Expiration Date	Receiving Water
Cedar Creek WQTC	7.5	N/A	KY0098540	August 31, 2020*	Cedar Creek
Derek R. Guthrie WQTC	60	300	KY0078956	April 30, 2023	Ohio River
Floyds Fork WQTC	6.5	N/A	KY0102784	August 31, 2020*	Floyds Fork
Hite Creek WQTC	6	16	KY0022420	March 31, 2023	Hite Creek
Morris Forman WQTC	120	350	KY0022411	September 30, 2004	Ohio River
Total	**200**	**666**			

*MSD submitted permit renewal applications for the Cedar Creek WQTC and Floyds Fork WQTC to KDEP on March 31, 2020. Both submittals have been approved as administrative complete by the Division of Water.

6.3.2 WQTC Permitted Effluent Quality

All five wastewater plants use similar treatment processes to meet the discharge requirements established for the waterways adjacent to each WQTC. The effluent requirements are presented in Table 6-4.

Table 6-4: WQTCs Permitted Effluent Limitations

Parameter	CCWQTC		DRGWQTC		FFWQTC		HCWQTC		MFWQTC	
	Monthly Average	Max Week Avg	Monthly Average	Max Week Avg	Monthly Average	Max Week Avg	Monthly Average	Max Week Avg	Monthly Average	Max Week Avg
$CBOD_5$, mg/L	10	15	N/A	N/A	6	9	N/A	N/A	N/A	N/A
BOD_5, mg/L	N/A	N/A	30	45	N/A	N/A	10	15	30	45
TSS, mg/L	30	45	30	45	30	45	30	45	30	45
Ammonia, mg/L May-Oct	4	6	20	30	1	1.5	2	3	20	30
Ammonia, mg/L Nov-Apr	10	15	20	30	3	4.5	5	7.5	20	30
E. Coli, #/100 ml[1]	130	240	130	240	130	240	N/A	N/A	N/A	N/A
Total Phos. mg/L, May-Oct	1.0	1.5	N/A	N/A	0.5	0.75	1.0	1.5	N/A	N/A
Total Phos. mg/L, Nov-Apr	2.0	3.0	N/A	N/A	0.5	0.75	2.0	3.0	N/A	N/A
Total Residual Chlorine, mg/L	N/A	N/A	0.019	0.019	N/A	N/A	N/A	N/A	N/A	0.019
Fecal Coliform #/100	N/A	N/A	N/A	N/A	N/A	N/A	200	400	200	400

1. *Expressed as 30-day geometric mean and 7-day geometric mean*
2. *pH limits are 6.0 minimum and 9.0 maximum*

6.3.3 Historical Wastewater Flows

The amount of flow processed at the WQTCs is dependent upon the volume of stormwater entering the combined sewer system. Over the past five years, MSD has processed an average of 150 mgd collectively through all the WQTCs. MSD treated more than 281 billion gallons of flow during 2015-2019.

Table 6-5: Historical Wastewater Flows

WQTC	2015 Flow		2016 Flow		2017 Flow		2018 Flow		2019 Flow	
	Monthly Average (mgd)	Total Flow Treated (MG)	Monthly Average (mgd)	Total Flow Treated (MG)	Monthly Average (mgd)	Total Flow Treated (MG)	Monthly Average (mgd)	Total Flow Treated (MG)	Monthly Average (mgd)	Total Flow Treated (MG)
CCWQTC	4.4	1,477	5.2	1,896	5.2	1,899	6.4	2,332	7.0	2,562
DRGWQTC	42.3	15,482	35.0	12,758	35.4	13,048	49.5	17,946	46.0	16,698
FFWQTC	2.9	1,069	3.1	1,112	3.2	1,179	4.1	1,473	4.6	1,673
HCWQTC	4.8	1,552	4.8	1,773	4.4	1,587	4.7	1,701	4.6	1,655
MFWQTC	99.8	36,471	90.1	32,908	87.6	31,937	113.1	40,948	106.4	38,002
	154.2	**56,052**	**138.2**	**50,446**	**135.8**	**49,650**	**177.8**	**64,399**	**168.6**	**60,590**

Values represent calendar years (not fiscal years) taken from Discharge Monitoring Reports submitted to KDEP.

The impact of weather on the collective total WQTC flows is demonstrated in Figure 6-2. Daily maximum flows can be 2.5 times higher than the monthly average flow.

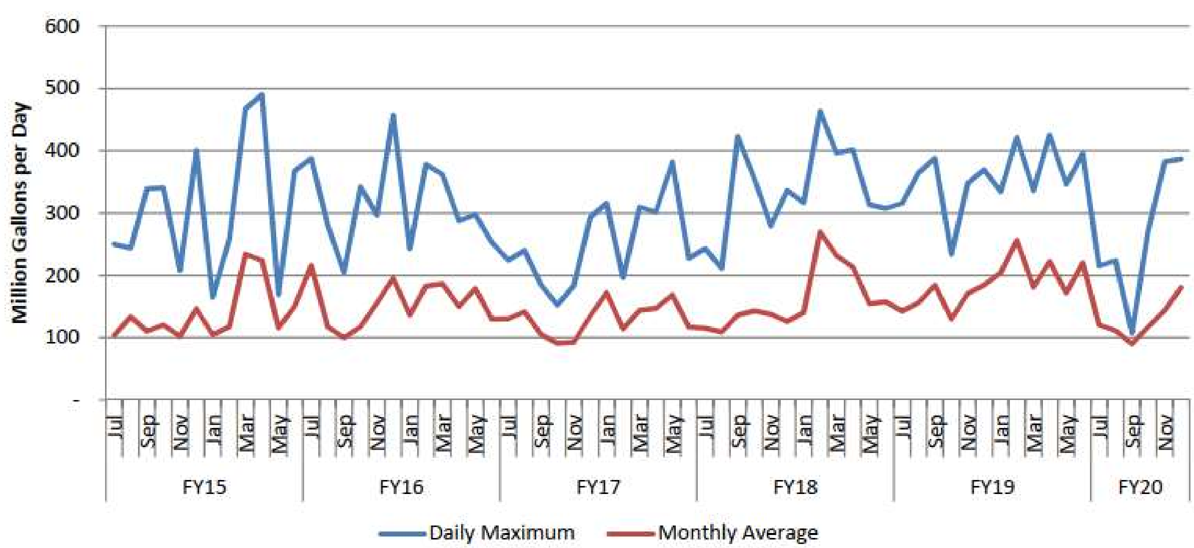


Figure 6-2: Historical Collective Flows from All WQTCs

Given the Derek R. Guthrie and Morris Forman WQTCs receive flow from the combined sewer system, they are most susceptible to high peak flows due to wet weather. The "wet season" impact is more clearly demonstrated for the Morris Forman WQTC in Figure 6-3.

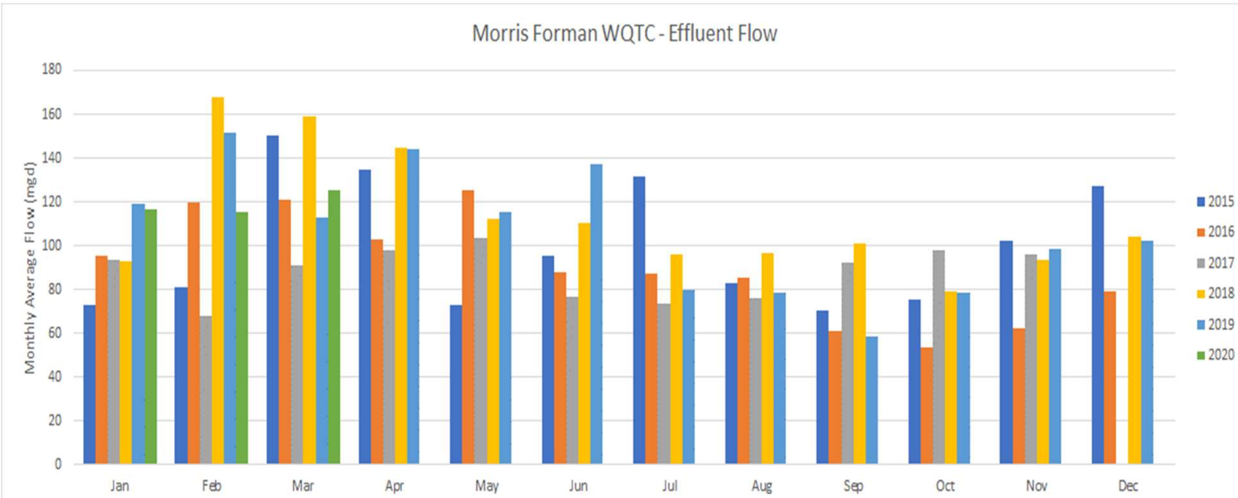


Figure 6-3: Comparison of Monthly Flow from 2015 – 2020 for Morris Forman WQTC

6.3.4 Historical Wastewater Loads

As shown in Table 6-6, excluding the Morris Forman WQTC, MSD has successfully met permit conditions for its WQTCs. In September 2018, there was an exceedance of the maximum weekly average BOD concentration.

Table 6-6: Historical Wastewater Loads – Annual Average BOD

WQTC	Permit Limits (Monthly Average, Max Weekly Average)	2015 BOD		2016 BOD		2017 BOD		2018 BOD		2019 BOD	
		Monthly Average (mg/L)	Max Weekly Average (mg/L)	Monthly Average (mg/L)	Max Weekly Average (mg/L)	Monthly Average (mg/L)	Max Weekly Average (mg/L)	Monthly Average (mg/L)	Max Weekly Average (mg/L)	Monthly Average (mg/L)	Max Weekly Average (mg/L)
CCWQTC	(10 mg/L, 15 mg/L)	2.7	6	2.6	5	2.8	5	2.9	10	3.0	6
DRGWQTC	(30 mg/L, 45 mg/L)	10.3	24	8.4	17	11.2	23	13.0	25	11.3	27
FFWQTC	(6 mg/L, 9 mg/L)	2.8	7	2.7	5	3.6	7	3.5	**21**	3.0	7
HCWQTC	(10 mg/L, 15 mg/L)	3.3	6	5.3	12	6.0	12	6.1	15	5.8	11
MFWQTC	(30 mg/L, 45 mg/L)	**31.3**	**140**	**36**	**126**	**34**	**107**	**54**	**194**	**61**	**201**
		50.4	**183**	**54.8**	**165**	**57.4**	**154**	**79.4**	**265**	**84.0**	**252**

Exceedances are shown in red.

As noted in Table 6-6, the Morris Forman WQTC has continued to experience permit exceedances for BOD and TSS since the 2014 lightning strike incident. The primary reason for these exceedances is failure of biosolids equipment (dryers, centrifuges, etc) which limited the plant's ability to reduce these pollutants. A historical perspective of effluent BOD for the Morris Forman WQTC is presented in Figure 6-4.

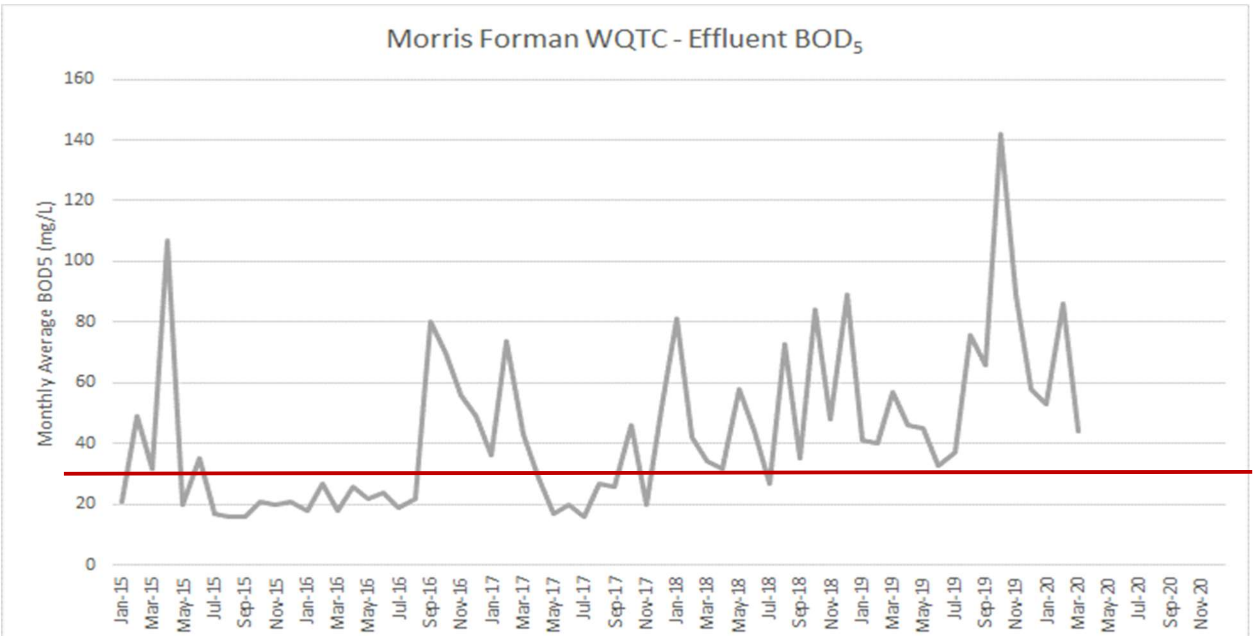


Figure 6-4: Effluent Quality from Morris Forman WQTC

6.4 Wastewater Treatment Programs

Most of MSD's investment at the wastewater treatment plants has been for asset management needs resulting from aging and deteriorating assets. In addition to asset management needs, MSD is in the process for addressing biosolids facilities and expanding one WQTC.

6.4.1 District-Wide Biosolids Management

The Morris Forman Water WQTC processes, markets (Louisville Green), and disposes of biosolids generated from all of MSD 's wastewater treatment facilities. The existing dewatering and drying equipment have reached the end of their useful life. Replacement of the biosolids infrastructure with a modern facility has been reviewed by two independent consulting engineers. MSD is ready to proceed with design-build procurement for the $198M project.

Due to the cost of the project, in 2018 MSD submitted a Letter of Interest to USEPA's Water Infrastructure Finance and Innovation Act Program (WIFIA) to request participation in a low-interest loan program for the

Morris Forman New Biosolids Facility. The project was accepted and the WIFIA loan closing date is scheduled for the summer of 2020.

In the meantime, the biosolids facilities have continued to deteriorate at an escalated rate. This has resulted in a situation in which MSD is able to process only 35% of the biosolids. In turn, the Morris Forman WQTC effluent permit limits for total dissolved solids (TSS) and biochemical oxygen demand (BOD_5) are not consistently met. In order to meet effluent permit water quality, MSD needs to process fewer biosolids at the Morris Forman WQTC. This challenge will continue until the new Biosolids Facility is operational in approximately five years.

In 2019, MSD commissioned Black & Veatch to prepare a District-Wide Biosolids Master Plan. The Master Plan confirmed the new Biosolids Facility to be constructed via the WIFIA loan program is the recommended long-term solution. The Master Plan identified short-term improvements that would help MSD achieve permit compliance and support construction of the new facility. The short-term improvements include replacing outdated equipment at Morris Forman (centrifuges and dryers) and offloading regional biosolids. All six centrifuges were sent to the manufacturer for refurbishment in a phased approach. An emergency certification project was issued in 2019 to replace the Morris Forman dryers.

To sufficiently offload regional biosolids from the Morris Forman WQTC, the Biosolids Master Plan recommended MSD construct dewatering facilities for the regional WQTCs. This approach will significantly increase MSD's reliability for processing biosolids. Staff and Black & Veatch confirmed the Derek R. Guthrie WQTC has adequate space to accommodate construction and operation of a regional dewatering facility. An emergency certification project was issued in 2019 to expedite off-loading the regional biosolids from Morris Forman by constructing a dewatering facility at the Derek R. Guthrie WQTC.

Brief descriptions of the major biosolids projects included in the 5-Year CIP are listed below.

- **New Biosolids Facility ($198M)**: This project will construct a modern biosolids processing facility at the Morris Forman WQTC that utilizes a thermal hydrolysis process (THP) to create a useable biogas. Benefits of the new facility include improved effluent quality; production of 4 MW of power; decreased consumption of natural gas; and reduced landfill utilization capacity.

- **Drying of Morris Forman WQTC Biosolids ($48M):** The dryers at the Morris Forman WQTC have been systematically failing over the past few years. In 2019, the last dryer failed and significantly impaired MSD's ability to process biosolids. Under an emergency certification, MSD is demolishing the outdated drying systems and replacing them with two state-of-the art dryers. This investment will ensure continuous biosolids processing during construction of the new Biosolids Facility and will provide added future system reliability. Additionally, the dryers will remain part of the biosolids management strategy going forward. Construction began in 2019 and will be fully completed in 2022.

- **Dewatering of Regional Biosolids ($50M):** Under an emergency certification, MSD is constructing a dewatering facility at the Derek R. Guthrie WQTC to process biosolids from all the regional WQTCs. The project includes an interim and permanent solution so regional biosolids could be immediately off-loaded from the Morris Forman WQTC. The dewatered biosolids are being landfilled in lieu of being pumped/hauled to the Morris Forman WQTC. Construction began in 2019 and will be fully completed in 2022. Regional biosolids were offloaded from the Morris Forman WQTC in February 2020.

6.4.2 WQTC Expansions

The only facility currently undergoing a plant expansion is the Hite Creek WQTC. The Hite Creek WQTC Expansion Project will increase the plant capacity from 6.0 to 9.0 mgd average daily flow. The increase in capacity will reduce sanitary sewer overflows upstream of the facility and allow for future growth demands. Rehabilitation at the facility will include the replacement of bar screens, existing ultraviolet system, and sludge holding tank blowers. The addition of aeration capacity/nutrient removal, aeration tank blower expansion and new tertiary disc filtration will increase treatment capacity. This project will provide the ability to dewater sludge on-site, thus eliminating over 400 truckloads of sludge per month being trucked to the Morris Forman WQTC.

6.4.3 Planning Initiatives

The 5-year CIP includes the following planning initiatives related to the WQTCs. These plans will be utilized to implement a comprehensive asset management program, prioritize capital needs, and update the CRRP.

- Bells Lane Asset Management Plan, $330,000
- CCWQTC Asset Management Plan, $330,000
- Comprehensive Facility Plan – Five Year Update, $450,000
- DRGWQTC Asset Management Plan, $530,000
- FFWQTC Asset Management Plan, $320,000
- Floyds Fork Regional Facilities Plan Update, $300,000
- HCWQTC Asset Management Plan, $500,000
- High Strength Waste Market Evaluation, $260,000
- MFWQTC Asset Management Plan, $1.5 million
- Odor Management Plan, $250,000
- SCADA Master Plan, $796,000

6.5 Wastewater Treatment Capital Projects

MSD continues to fund wastewater treatment projects with its annual CIP. Projects are generally a combination of discrete local improvements and appropriations for as-needed asset replacements.

6.5.1 Projects Funded from Program Notes

The two largest wastewater treatment projects completed since the last bond issuance are 1) the Bells Lane Wet Weather Treatment Facility and 2) expansion of the Hite Creek WQTC. A list of representative projects is provided in Table 6-7.

Table 6-7: WQTC Projects Completing Design/Construction Since 2017

Facility	Budget ID	Project	Task Name	Finish	Lifetime Actuals
Bells Lane WWTF	D20222	Bells Lane Grit Classifier Drain Line	Design Finish	12/5/2019	$3,871
	H09124	Bells Lane Wet Weather Treatment Facility	Construction Finish	7/31/2018	$51,760,788
	H18333	Bells Lane WWTF EQ Basin Modifications	Construction Finish	11/28/2018	$3,448,992
Cedar Creek WQTC	D19038	CCWQTC Hydraulics Study	Study Finish	2/22/2019	$54,590
	D16272	CCWQTC Influent PS MCC Upgrades	Design Finish	2/20/2020	$180,028
	D19268	CCWQTC Safety Items	Construction Finish	12/5/2018	$16,451
	D19248	CCWQTC Solids Study	Study Finish	2/28/2019	$34,711
Derek R. Guthrie WQTC	D18292	DRGWQTC Clarifier Grout Repair and RAS Gate Replacement	Design Finish	8/14/2019	$318,113
	F14156	DRGWQTC RAS 1 and 4 Pump Replacement	Construction Finish	3/6/2019	$1,502,673
	D18225	DRGWQTC WWPS Finite Element Analysis	Study Finish	7/27/2018	$40,663
Floyds Fork	D20227	FFWQTC Filter Evaluation	Study Finish	3/13/2020	$19,350
Hite Creek	H14126	HCWQTC Expansion	Design Finish	6/11/2019	$6,540,474
Morris Forman WQTC	D15020	MFWQTC Cake Pump Phase II	Design Finish	8/1/2019	$296,471
	D20167	MFWQTC East Headworks HVAC	Design Finish	10/17/2019	$101,900
	F14182	MFWQTC FEPS Pump Repair and Motor	Construction Finish	9/30/2019	$148,077
	D19046	MFWQTC Ground Water Well 10 Replacement	Construction Finish	3/6/2020	$178,428
	D19227	MFWQTC Primary Sludge Line Replacement	Design Finish	4/30/2019	$663,835
	D19044	MFWQTC Primary Sludge Pump Compressor	Construction Finish	5/31/2019	$83,498
	D18129	MFWQTC Secondary Electrical MCC Replacement Study	Study Finish	1/31/2019	$54,920
	D18118	MFWQTC Truck Unloading Station Pavement Repair	Design Finish	10/10/2019	$59,714
				TOTAL WQTC PROJECTS	**$65,507,546**

6.5.2 5-Year CIP for Wastewater Treatment System

MSD will continue spending on the biosolids emergency certification projects started in 2019 and completing in 2022. The majority of the 5-Year CIP related to biosolids is for the New Biosolids Facility to be located at the Morris Forman WQTC. Additional placeholder projects have been added to incorporate dewatering processes at the Cedar Creek and Floyds Fork WQTCs.

Annual capital investments are required to mitigate operator safety risks; maintain reliable system operations; and upgrade to new more energy efficient technologies. During the 5-year CIP, the following WQTC projects totaling $104 million will be partially or wholly budgeted for the regional WQTCs.

Table 6-8: Overview of 5-Year Forecasted Spending for Regional WQTCs

Wastewater Treatment Priorities		5-Year CIP Forecasted Spending
Bells Lane Wet Weather Facility	Bells Lane Grit System Improvements	**Bells Lane $1.4 million**
	Bells Lane WWTF Chemical Feed System Improvements	
	Bells Lane WWTF General R&R	
Cedar Creek WQTC	CCWQTC Admin Building Expansion & Painting	**CCWQTC $17.4 million**
	CCWQTC Power & MCC Upgrades	
	CCWQTC Oxidation Ditch Mods	
	CCWQTC Chemical Feed System Improvements	
	CCWQTC Effluent Parshall Flume Upgrade	
	CCWQTC Tertiary Filtration	
	CCWQTC WAS Improvements & Dewatering Facility	
	CCWQTC Expansion Project	
	CCWQTC General R&R	
Derek R. Guthrie WQTC	DRGWQTC Artificial Intelligence Pilot	**DRGWQTC $47.5 million**
	DRGWQTC Clarifier Replacements & Grout Repair	
	DRGWQTC Disinfection Upgrades	
	DRGWQTC Substation U-13 Modifications	
	DRGWQTC Alternate Outfall	
	DRGWQTC Dewatering Facility	
	DRGWQTC General R&R	
Floyds Fork WQTC	FFWQTC Chemical Feed System Improvements	**FFWQTC $3.5 million**
	FFWQTC Dewatering Facility	
	FFWQTC General R&R	
	FFWQTC Enhanced Biological Phosphorous Removal Study	
Hite Creek WQTC	HCWQTC Chemical Feed System Improvements	**HCWQTC $21.9 million**
	HCWQTC General R&R	

Wastewater Treatment Priorities		5-Year CIP Forecasted Spending
	HCWQTC Expansion Project	
General WQTCs	WQTC Elevator Repairs	**$12.6 million**
	WQTC General R&R/	
	Total 5-Year CIP Forecast for Regional WQTCs	**$104.3 million**

The following projects totaling $245 million are forecasted for the Morris Forman WQTC in the 5-Year CIP. The largest project is replacement of the biosolids facility.

Table 6-9: Overview of 5-Year Forecasted Spending for Morris Forman WQTC

Treatment Process	Morris Forman WQTC Priorities	5-Year CIP Forecasted Spending
Primary Treatment	MFWQTC Sedimentation Basin Rehabilitation*	**$4.4 million**
	MFWQTC Primary Sludge Line Replacement*	
	MFWQTC Primary Sludge Line Replacement Phase 2*	
	MFWQTC Daft Rehab & TWAS Piping Replacement	
	MFWQTC Primary Sludge Pump Station Structural Repairs	
Secondary Treatment	MFWQTC Secondary Clarifiers Structural Repairs*	**$0.3 million**
	MFWQTC Clarifier Floor Repairs*	
Disinfection	MFWQTC HPO Tanks Structural Repairs*	**$0.5 million**
	MFWQTC Chlorine Contact Tanks Structural Repairs*	
Final Effluent Pump Station (FEPS)	MFWQTC FEPS MCC Replacement*	**$1.7 million**
	MFWQTC FEPS Structural Repairs*	
	MFWQTC FEPS VFD Replacement*	
	MFWQTC FEPS Pump and Motor Repair*	
Biosolids	MFWQTC Digester Control Building Structural Repairs*	**$206.3 million**
	MFWQTC Sodium Hypochlorite Building Relocation*	
	MFWQTC Centrifuge Replacement/Rehabilitation*	
	MFWQTC LG Dryer Replacements*	
	MFWQTC New Biosolids Facility	
	MFWQTC Cake Pump Phase 2	
Other	MFWQTC General R&R	**$30.9 million**
	MFWQTC Radio Repeater	
	MFWQTC Sewer and Manhole Rehabilitation	
	MFWQTC OGA PTO & Chlorine Rail Car Demolition	

Treatment Process	Morris Forman WQTC Priorities	5-Year CIP Forecasted Spending
	MFWQTC Process Water Pump & VFD	
	MFWQTC Facility Repairs	
	MFWQTC Service & Blower Building Structural Repairs*	
Electrical	MFWQTC Chiller Replacement	**$1.5 million**
	MFWQTC Upgrade PLCs	
	MFWQTC East Headworks HVAC*	
	Total 5-Year CIP Forecast for Morris Forman WQTC	**$245.6 million**

*project under consideration as part of the Agreed Order CAP.

7. Support Systems

MSD owns a large inventory of rolling stock, information technology systems, and above-ground facilities that support MSD's operation of wastewater, stormwater, and flood protection systems. This equipment is critical to MSD's ability to complete preventative and corrective maintenance activities required to provide sustainable and reliable wastewater, stormwater, and flood protection services.

MSD maintains an extensive inventory of IT hardware and software that is essential to overall agency operations. This includes the MSD intranet system that is the backbone of electronic communication and digital data generation, communication and storage, and regulatory reporting. This hardware and software are responsible for supplying the internet connection to MSD's Supervisory control and data acquisition (SCADA) system that controls more than 300 pump stations and control gates. This equipment is subject to periodic upgrade and replacement - like other MSD assets. The CRRP included projects and appropriations for upgrading MSD's facilities, fleet, and IT systems.

7.1 Support Systems Capital Projects

The CRRP recommended a series of corrective actions following comprehensive condition assessments of more than 200 buildings. MSD continues to address facility needs with each annual CIP. Projects are created as a need become known. MSD also includes as-needed appropriations into the annual CIP that address the following types of needs:

- HVAC Systems
- Roof Inspections, Repairs, and Replacement
- Paving Improvements
- Security Upgrades
- Information Technology (IT) Hardware & Software
- Fleet and Large Equipment

7.1.1 Projects Funded from Program Notes

A summary of the facility-type projects completed since the last bond issuance is presented in Table 7-1.

Table 7-1: Facilities Projects Completing Design/Construction Since 2017

Program	Budget ID	Project	Task Name	Finish	Lifetime Actuals
Building Improvements	N16071	Main Office Data Center Reconfiguration	Construction Finish	3/18/2020	$10,191
	G17027	CMF Roof	Construction Finish	11/27/2019	$3,321,990
	G18303	CMF Cooling Tower	Construction Finish	5/24/2019	$436,965
	G09535	CMF Parking Surface	Design Finish	12/11/2018	$157,209
				Total Facilities Projects	**$3,926,355**

7.1.2 5-Year CIP for Support Systems

During the 5-year CIP, improvements will continue to be phased for MSD's existing buildings including but not limited to: elevator upgrades, roof replacements, paving, and security enhancements. IT budgets will continue to be requested annually for assets related to system reconfiguration, cable management, network server upgrades, network switch replacements, desktop computers, and software programs needed to better manage MSD's assets and systems. Capital equipment budgets for updating MSD's fleet vehicles, heavy construction equipment, and portable equipment used by multiple working groups will be vetted annually. During the 5-year CIP, the following facilities improvement projects will be partially or wholly budgeted.

Table 7-2: Overview of 5-Year Forecasted Spending for Facilities

Facilities Priorities		5-Year CIP Forecasted Spending
Facilities Improvements	Building Improvements	**$17.1 million**
	Paving Improvements	
	Security Enhancements	
	Roof Inspections, Repairs and Replacements	
Information Technology	Hardware Related Projects	**$16.7 million**
	Software Related Projects	
Equipment	Fleet Vehicles	**$14.1 million**
	Large Equipment	
	Total 5-Year CIP Forecast for Facilities	**$47.9 million**

7.2 Support Services

Implementing a capital program of this size and complexity requires support services. Support services are generally contracted resources that provide specialized expertise; address program specific deliverables; supplement field staff; or support MSD staff as-needed. The following types capital support appropriations are included in the 5-year CIP.

- CIP Task Assistance
- Construction Inspection
- Emergency Preparedness Plan
- FOG Program Support
- Hydraulic Modeling
- WQTC Engineering Support

8. Regionalization & Economic Development

Economic development and expanding the area MSD provides utility services are opportunities for 1) generating additional revenue, 2) optimizing regional resources, and 3) further improving local water quality.

8.1 Jefferson County Development

Portions of Jefferson County remain unsewered. Over the past ten years, MSD has extended sewer service to many areas and eliminated hundreds of small package treatment plants and more than 40,000 septic tanks. The primary driver for eliminating these systems is to improve water quality of local rivers, creeks, and streams.

8.1.1 5-Year CIP for Development Program

Current development patterns suggest private investment is picking up in the Floyds Fork sewershed. MSD continues to coordinate with developers to streamline how to incorporate new assets and additional flows into its existing sewer network. It is important to coordinate these new developments to ensure consistency of construction and reliable service.

The CRRP recommended projects to ensure adequate conveyance and treatment capacity is available in advance of development and population growth. This program is particularly important for preventing a situation in which community development initiatives face moratoriums due to capacity constraints at the WQTCs. The development program includes a combination of phased WQTC capacity upgrades and under capacity sewers and pump stations. The following development related projects have been partially or fully budgeted in MSD's 5-year CIP.

- Cedar Creek Collection Systems
- Floyds Fork Collection Systems
- Floyds Fork Interceptor
- Fairmount Road Force Main Pump Station Improvements
- As-Needed Development Coordination

8.2 Regionalization to Adjacent Counties

The CRRP also identified potential regionalization corridors where MSD can further extend sewers to improve surface water quality and add new sewer customers. The CRRP recommended projects that included new interceptors, new gravity sewer collection systems, and a new treatment plant for accommodating future regionalization and/or growth.

In 2016, high profile failures of "package" treatment plants led to the passage of Kentucky House Joint Resolution 56, to initiate a study of regionalization opportunities to limit the risk of future failures. As a result of this Joint Resolution, a study was performed in 2017 to provide an inventory of small "package" facilities and emergency risk mitigation.

During the 2018 Legislative Session in Kentucky, Senate Bill 151 (SB151) was filed to enable utility ownership of sewer assets outside of jurisdictional boundaries through inter-local agreements. House Bill 513 (HB513) was filed to require additional insurance, as well as regulatory and financial accountability for small "package" treatment facility operators/builders. These two bills were combined and passed under HB513 and signed by the Governor on April 25, 2018.

This legislation has facilitated extending MSD's programmatic approach for eliminating package treatment plants beyond Jefferson County. During FY21 MSD will complete the Floyds Fork WQTC Regional Facilities Plan Update. This project will assist MSD with addressing how regionalization initiatives with Bullitt and Oldham Counties will interconnect with MSD's assets. Depending on the timing of system improvements needed in these areas for public health protection, capital projects required to interconnect with MSD's wastewater system may need to be accelerated to the 5-year CIP.

- **Bullitt County**: In 2019, Bullitt County Sanitation District and Bullitt County Fiscal Court requested a proposal from MSD for acquisition and regional solutions. This proposal is currently in the due diligence phase.

- **Oldham County**: The City of Crestwood lobbied for enabling legislation, to allow MSD to acquire their system. This was accomplished in early 2019. Subsequent to the Crestwood acquisition, Oldham County Environmental Authority and Oldham County Fiscal Court requested MSD to submit a proposal to acquire this system. This acquisition is scheduled to close on June 30, 2020.

8.2.1 Oldham County

MSD has worked with Oldham County staff to develop a preliminary 5-year CIP to address known and immediate system capital needs. The FY21 CIP includes $3.64 million for the following needs:

- Facility Plan Update
- Collection System Inspection, Cleaning, Rehab, Modeling
- Gravity Sewer & Pump Station Rehab/Repair
- Pump Station Eliminations & Interceptor Projects
- WQTC R&R & Eliminations
- SCADA System & Rain Gauge Expansion

During the 5-year CIP, the following Oldham County projects will be partially or wholly budgeted.

Table 8-1: Overview of 5-Year Forecasted Spending for Oldham County

Oldham County Capital Priorities		5-Year CIP Forecasted Spending
Collection System Sewer Improvements	Sewer Inspection & Cleaning	**$5.9 million**
	Gravity Sewer Rehabilitation	
	Ash Avenue Interceptor	
	Collection System Modeling	
Collection System Pump Station Improvements	Pump Station R&R	**$4.5 million**
	Pump Elimination Project	
	SCADA System, Rain Gauge Expansion	
WQTC Improvements	WWTP Elimination Project	**$1.4 million**
	WQTC R&R	
System-Wide	Unplanned R&R	**$1.5 million**
	Facility Plan Update	
	Total 5-Year CIP Forecast for Oldham County	**$13.3 million**

9. Conclusions

The Engineer provides the following conclusions related to MSD's sewer and drainage system.

9.1.1 Wastewater Systems

- MSD is currently working to comply with mandates from Consent Orders issued by USEPA and KDEP related to unauthorized discharges from its wastewater system. MSD has met all required deadlines to-date and remains on schedule to complete the remaining Amended Consent Order requirements. To-date, MSD has spent $1.01 billion on Consent Decree projects of the total $1.5 billion estimate. MSD, USEPA, and KDEP are discussing a reprioritization schedule to complete the remaining work while addressing other higher system priorities.

- MSD certified completion of 38 CSO LTCP projects to date, 4 remain. Overflows to local waterways have been reduced by approximately 5 billion gallons per typical year. MSD certified completion of 48 SSO SSDP projects to date, 18 remain. SSOs have been reduced approximately 61% by location and approximately 70% by volume. MSD's wet weather storage systems are preventing nearly 2 billion gallons of sewer overflows from occurring by storing flow then sending it to treatment after storm events have passed.

- On May 3, 2018, MSD entered into an Agreed Order with KDEP addressing improvements necessary to recover from a mechanical failure due to a lightning strike resulting with a power outage at Morris Forman WQTC that occurred April 8, 2015. Extensive damage was experienced to the primary treatment, secondary treatment, and electrical systems causing the plant to be out of compliance with effluent discharge limits established in Permit KY0022411. MSD is working diligently to restore the Morris Forman WQTC to its full operational capacity. MSD invested $37 million in this facility since 2016 and developed a draft Corrective Action Plan (CAP) for additional improvement.

- MSD has operated the wastewater system for decades and is sufficiently organized and staffed to continue to operate, maintain, administer, and plan the wastewater infrastructure. In FY21 MSD will conduct a staffing evaluation to confirm sufficient positions and skill sets are in place or developed to operate and maintain the new assets being constructed under the Amended Consent Order.

- MSD is advancing multiple projects to improve District-wide biosolids management including constructing dewatering facilities at the regional WQTCs and building a new biosolids facility at the Morris Forman WQTC. These investments, while costly will enable MSD to meet KPDES permit requirements, improve efficiencies, and generate power.

- MSD is advancing some of the projects identified in the CRRP. Due to the Consent Decree mandates, many projects continue to be deferred. As such, emergencies are increasing in frequency and severity. MSD's annual CIP includes appropriations to address as-needed improvements related to repair, rehabilitation, or replacement of aging assets and emergencies.

9.1.2 Stormwater System

- The District through ILAs with the City of Louisville and Jefferson County assumed responsibility for stormwater management in 1987 for all of Jefferson County, except for the Cities of Anchorage, Jeffersontown, Shively, and St. Matthews. Those cities provide most of those services within their borders, and partner with MSD on other aspects including review of new development plans and water quality reporting.

- The District bills for stormwater services using equivalent service units (ESUs). The District currently has approximately 6,956,000 ESUs, in total, from residential, commercial, industrial, and city-owned properties.

- MSD maintains and operates its stormwater collection and transmission system in accordance with industry-standard best management practices. MSD has operated the stormwater system for decades and is sufficiently organized and staffed to continue to operate, maintain, administer, and plan the stormwater infrastructure.

- MSD is working on a comprehensive update to the Stormwater Drainage Master Plan which, after public participation and approvals by local governments, will be used by the District for implementing improvements and extensions to the existing drainage facilities. It is currently anticipated the first working draft of the Stormwater Drainage Master Plan will be published in 2025. Over the next few years, a significant effort will continue to inventory and document the condition of existing drainage system assets.

- MSD collects over 3 million individual water quality records each year. This monitoring program provides a detailed picture of the health of streams in Jefferson County. Monitoring results are summarized on an annual basis in the Stormwater MS4 Annual Report.

- MSD's Urban Reforestation Program plants 1,000 trees annually by working with local businesses, municipal organizations and neighborhood associations. The program replenishes and expands the tree canopy throughout Jefferson County. These trees redirect an average of 1.35 million gallons of stormwater away from the sewer system every year, which decreases sewer overflows into waterways.

- In 1988, MSD and the United States Geological Survey (USGS) began monitoring water quality and stream flow throughout the Jefferson County area. The Long-Term Monitoring Network has changed over the years and currently includes 27 monitoring sites. The monitoring sites were selected to represent streams in each of eleven watersheds. Each monitoring site is sampled four times per year and is analyzed for a variety of parameters including fertilizers, sediment, and metals.

9.1.3 Flood Protection System

- MSD maintains and operates the flood protection system in accordance with industry-standard best management practices. MSD has operated the flood protection system for decades and is sufficiently organized and staffed to continue to operate, maintain, administer, and plan the Ohio River Flood Protection System infrastructure.

- MSD maintains a proactive maintenance program to assure the integrity of the levee and floodwall system. Worked performed using these funds includes: repair and/or replacement of trusses, sheeting, and closure walkways; corrugated metal pipe replacement; toe drain access repairs; trail repairs and unwanted vegetation removal; level gate repair or automation; painting; floodwall joint repair; and floodwall concrete sealing and surface crack repairs.

- MSD is actively engaged with the USACE to advance $167 million of improvements to improve the reliability of the flood protection system. These improvements will replace and update original equipment that was installed in the 1950s and 1970s. These projects were included in the CRRP. This partnership represents a significant investment with improving flood protection.

- The Paddy’s Run Flood Protection Station Capacity Improvements Project is MSD’s highest ranked capital priority to mitigate flood pump station public health protection risk. MSD completed an Alternatives Analysis for increasing the capacity of the station to 975 mgd. The CRRP recommended two equally important project phases for the Paddy’s Run FPS. The first phase will improve the reliability of the existing Paddy’s Run FPS (originally constructed in 1953) by removing, inspecting, and rehabilitating or replacing the station’s existing pumps and motors to maintain the station’s current total pumping capacity of 925 mgd. The reliability improvements will be implemented through the USACE Program. MSD must construct the capacity improvements project independent of the USACE project.

END OF REPORT

APPENDIX J
CONSULTING ENGINEER'S FY 2023 SUPPLEMENT

FY2023

Capital Improvement Plan Overview Report

Safe, clean waterways

June 27, 2022

DISCLAIMER: This document was prepared to provide a perspective of MSD's FY 23-27 CIP. The overview is based upon the best available information as of June 2022. The projects included in this overview may shift among fiscal years; change in scope; or be replaced with higher priority needs. This document presents a reasonable representation of MSD's CIP. It adequately demonstrates the level of investment warranted for MSD's wastewater, stormwater, flood protection, and support systems assets. The costs presented in this document have been escalated to future dollars when appropriate.

Document history and status

Revision	Date	Description	Author	Checked	Reviewed	Approved
0	6/14/22	Draft report	LLP	SLY	YM, DS, BG	
Final	6/27/22	Final Report	Reviewer Comments	LLP		DWJ

Distribution of copies

Revision	Issue approved	Date issued	Issued to	Comments
Final	LLP	6/27/22	CIP Mgmt Team, Variance Team, PMs	

Executive Summary

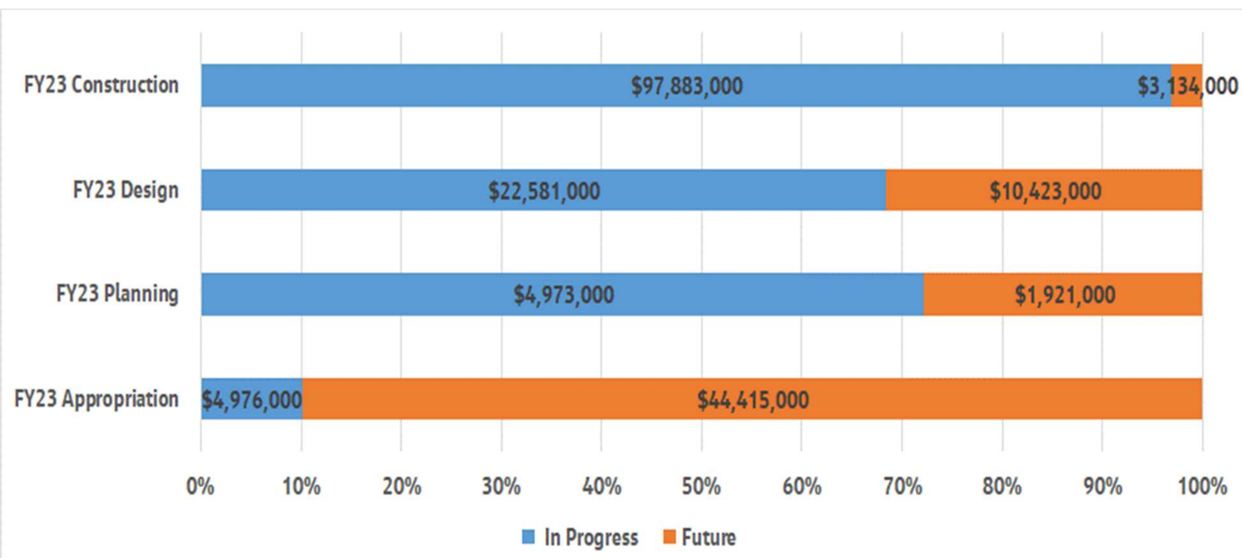
On May 23, 2022, the MSD Board approved the FY23 CIP as presented and recommended by MSD's Chief Engineer and the Board's Infrastructure Committee. The FY23 projects fit into a 5-Year CIP forecast totaling more than $1 billion. A summary of the 5-Year CIP by service type is provided in Table 1.

Table 1 – Summary of 5-Year CIP by Service Type

Service Type	FY23	FY24	FY25	FY26	FY27	5-Year
Wastewater	$ 126,842,459	$ 173,786,672	$ 147,813,706	$ 160,519,885	$ 156,288,953	$ 765,251,676
Stormwater	$ 28,677,723	$ 31,602,287	$ 52,193,509	$ 60,803,346	$ 41,958,723	$ 215,235,586
Support Systems	$ 34,785,966	$ 13,705,984	$ 5,092,353	$ 4,871,900	$ 4,135,475	$ 62,591,678
MGT RES	$ 5,000,000	$ -	$ -	$ -	$ -	$ 5,000,000
Total	**$ 195,306,148**	**$ 219,094,943**	**$ 205,099,568**	**$ 226,195,131**	**$ 202,383,150**	**$ 1,048,078,941**

The FY23 CIP includes 189 projects totaling $190.3 million and $5 million in Management Reserve. Nearly 70-percent of the FY23 budget ($135.4 million) is required to continue advancing 84 existing projects (refer to blue bars in Figure 1). The FY23 CIP includes $59.9 million to fund 105 new projects. A breakdown of the FY23 CIP funding by activity is shown in Figure 1.

Figure 1 – Summary of FY23 CIP by Activity



This report documents the process used to develop the FY23 and 5-Year CIP. The level of funding included in the CIP is broken down into the specific programs including: Regulatory Compliance, Wastewater, Stormwater and Flood Protection, and Support Systems. Progress with implementing the FY23 CIP will be reported in the Monthly Executive Reports.

Contents

Executive Summary iii

Acronyms and Abbreviations v

Section 1 Process for Development of the FY23 CIP 1

1.1 Confirming Asset Priorities for FY23 1

1.2 Accounting for Uncertainty 2

Section 2 Approved & Forecasted CIP Programs 4

2.1 Regulatory Compliance Projects 5

2.2 Wastewater Non-Regulatory Projects 12

2.3 Stormwater & Flood Protection Programs 13

2.4 Support System Programs 16

2.5 Management Reserve 18

Appendix A – Detailed Listing of Projects in the 5-Year CIP 19

Tables

Table 1 – Summary of 5-Year CIP by Service Type iii
Table 2 – Key Activities during CIP Budget Development Cycle 1
Table 3 – Summary of 5-Year CIP by Program Type 4
Table 4 – Summary of Regulatory Compliance Projects in 5-Year CIP 5
Table 5 – Consent Decree Projects in 5-Year CIP 6
Table 6 – Consent Decree Critical Sewer Projects in 5-Year CIP 7
Table 7 – Consent Decree LTCP Projects in 5-Year CIP 8
Table 8 – Consent Decree SSDP Projects in 5-Year CIP 8
Table 9 – Consent Decree Specific Remedy Projects in 5-Year CIP 9
Table 10 – Consent Decree Support Projects in 5-Year CIP 9
Table 11 – Agreed Order Projects in 5-Year CIP 10
Table 12 – NMC Program in 5-Year CIP 10
Table 13 – CMOM Program in 5-Year CIP 11
Table 14 – MS4 Program in 5-Year CIP 12
Table 15 – Wastewater Development Projects in 5-Year CIP 13
Table 16- Emergency Funding for 5-Year CIP 13
Table 17 – Stormwater Drainage Projects in 5-Year CIP 15
Table 18 – Flood Protection Projects in 5-Year CIP 16
Table 19 – Facility Improvements in 5-Year CIP 17
Table 20 - IT and Capital Equipment in 5-Year CIP 18

Figures

Figure 1 – Summary of FY23 CIP by Activity iii
Figure 2- Workflow For CIP Development Process 3

Acronyms and Abbreviations

AI	Artificial Intelligence
BC	Bullitt County
CAP	Corrective Action Plan
CCWQTC	Cedar Creek Water Quality Treatment Center
CD	Consent Decree
CIP	Capital Improvement Plan
CMF	Centralized Maintenance Facility
CMOM	Capacity, Management, Operation, & Maintenance
CRRP	Critical Repair and Reinvestment Plan
DRGWQTC	Derrik R Guthrie Water Quality Treatment Center
DRI	Drainage Response Initiative
EAC	Estimate at Complete
FEMA	Federal Emergency Management Agency
FEPS	Final Effluent Pump Station
FFWQTC	Floyds Fork Water Quality Treatment Center
FM	Force Main
FOG	Fats, Oils, and Grease
FPS	Flood Pump Stations
FY	Fiscal Year
GIS	Geographical Information System
HCWQTC	Hite Creek Water Quality Treatment Center
IOAP	Integrated Overflow Abatement Plan
IT	Information Technology
KDEP	Kentucky Department of Environmental Protection
LG	Louisville Green
LOJIC	Louisville-Jefferson County Information Center
LTCP	Long Term Control Plan
LTMN	Long Term Monitoring Network
MCC	Motor Control Center
MFWQTC	Morris Forman Water Quality Treatment Center
MS4	Municipal Separate Storm Sewer System Program
MSD	Louisville and Jefferson County Metropolitan Sewer District
NMC	Nine Minimum Controls
OC	Oldham County
PMIS	Project Management Information System
PS	Pump Station
PSE	Pump Station Elimination
RR	Repair and Replacement
RTC	Real Time Control
SCADA	Supervisory Controls and Data Acquisition
SSDP	Sanitary Sewer Discharge Plan
SSES	Sanitary Sewer Evaluation Survey
SWPS	Southwest Pump Station
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
WAS	Waste Activated Sludge
WQTC	Water Quality Treatment Center

Section 1 Process for Development of the FY23 CIP

MSD staff began developing the FY23 and updated 5-Year CIP in January 2022. A schematic of the overall process used to prepare the draft CIP is presented in Figure 2. A list of key activities performed by month is provided in Table 2.

Table 2 – Key Activities during CIP Budget Development Cycle

Month	CIP Development Activities
January	• Guardrail meeting with Executive Manager & Chiefs to set expectations • Budget Summit with Directors (risks, lessons learned, packaging, priorities) • Review current forecasted FY23 CIP in cashflow tool & identify unknowns • Determine FY23 financial targets • Discuss grant and low-interest loan strategies (SRF, BRIC, other) with Planning
February	• Conduct a series of staff meetings to vet projects and confirm current priorities • Assess CIP impacts from regional planning efforts & asset management plans • Allowances requests submitted by staff • Forecast FY22 carryforward cost impacts to FY23 and 5-Year CIP
March	• Cashflow forecast built with collected information • Allowances set by Chiefs • Draft CIP budget reviewed at CIP Mgmt Team Meeting with comments
April	• CIP Management Team Meeting review and approval • Review FY23 CIP staffing and resource plan • Develop FY23 performance metrics (identify qualifying projects)
May	• Finance & Infrastructure Committee Meeting – May 12th • MSD Board Approval – May 23rd • Start procuring FY23 professional services (use budget pending language)
June	• Issue budget IDs for new projects • Set FY23 Baseline and upload approved FY23 CIP into financial system • Issue FY23 CIP Overview Report

1.1 Confirming Asset Priorities for FY23

To determine the CIP needs beyond the in-progress work, the projects in the forecast were discussed with asset owners to confirm they remain of highest priority. Additional needs not previously considered were also identified and discussed.

A Working Group comprised of the Chief Engineer, Chief of Operations, Chief Financial Officer, Enterprise Program Manager, Project Controls, Planning, Operations, and Engineering staff, held a series of workshops to discuss capital priorities for FY23. The following CIP development meetings were held:

- Executive Leadership "Guardrail" Meeting – January 24, 2022
- Planning Group Coordination – January 28, 2022
- Morris Forman WQTC CIP Workshop – February 7, 2022

- Regional WQTCs CIP Workshop – February 7, 2022
- Wastewater Collection System CIP Workshop – February 8, 2022
- Flood Protection System CIP Workshop – February 14, 2022
- Development & Regionalization CIP Workshop – February 9, 2022
- Stormwater & MS4 Program CIP Workshop – February 14, 2022
- Meetings to confirm level of investment for Bullitt and Oldham Counties
- Additional one-on-one Meetings with Project and Appropriation Owners
- Additional Coordination Meetings with MSD's Chiefs
- Review and discussion of pertinent topics at multiple CIP Management Team Meetings

1.2 Accounting for Uncertainty

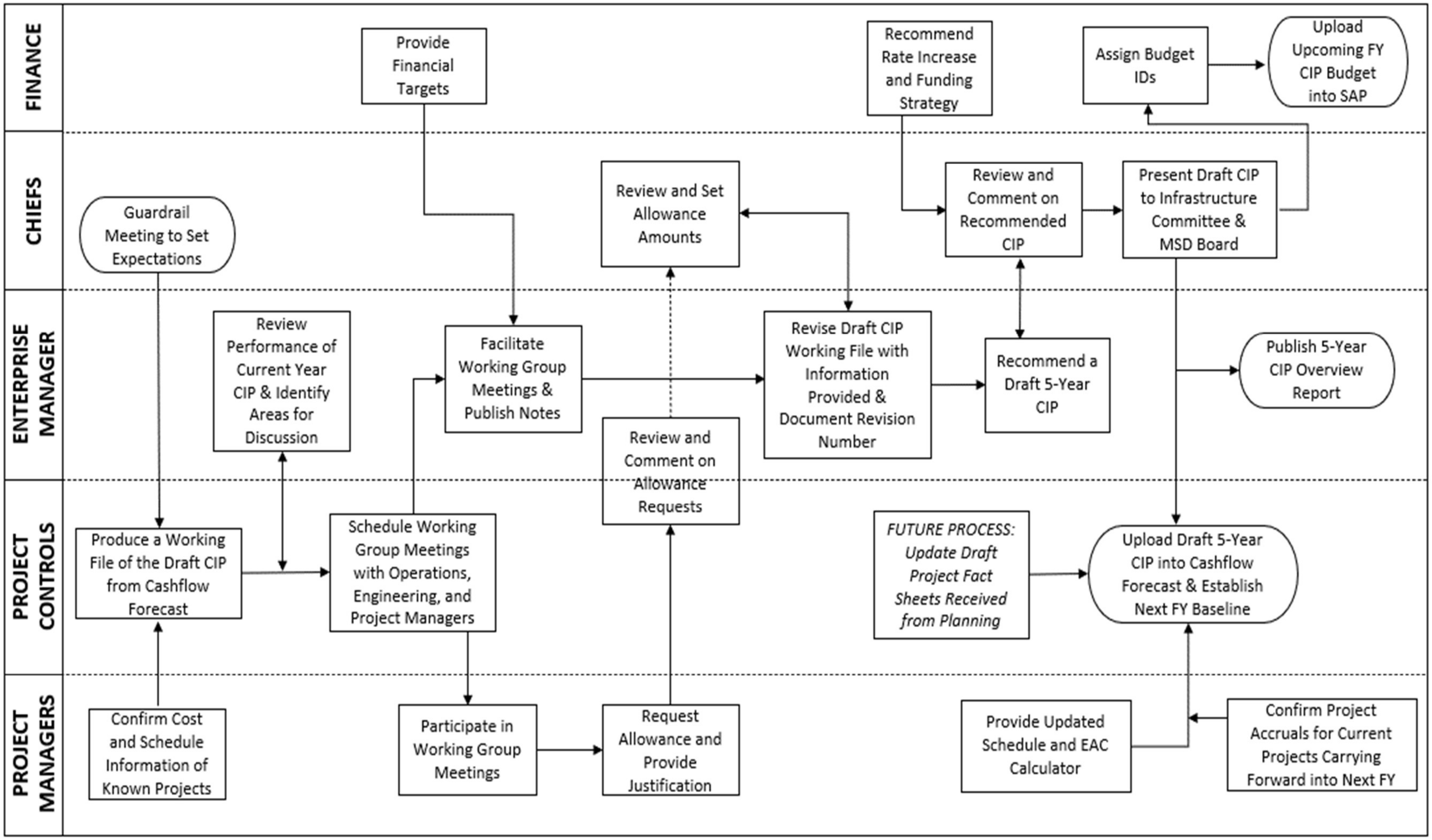
During FY22, MSD experienced unprecedented challenges related to supply-chain delivery delays; unavailability of materials and equipment; and local, national, and global labor shortages. These challenges have created multiple areas of uncertainty.

- Uncertainty with ability to fully implement the FY23 CIP due to external influences
- Uncertainty with receiving competitive solicitations due to limited resources
- Uncertainty with the level of risk that contractors are assuming which results with higher and unpredictable construction bids
- Uncertainty with project schedules and spending curves and forecasts for active contracts

During FY22, these challenges impacted project schedules resulting with spending only approximately $150 million of the $200.7 million FY22 budget. The challenges are continuing to occur and the impact on the FY23 CIP is uncertain. To account for the uncertainty, a "delivery factor" was applied to the FY23 projection for projects likely to be impacted. This was applied to forecast a CIP that more realistically reflects the actual spending to occur during FY23. If the factor was not applied, the FY23 CIP forecast would have been more than $220 million – which does not seem to be realistic. It is important to use a realistic CIP budget to coordinate with financial metrics and retain a positive financial perspective. Note: The amount reduced in calculating a "delivery factor" was not redistributed in future years. Therefore, total 5-Year forecast at the project level may not reflect the total EAC (Estimate at Complete) for all projects.

MSD also included $5 million in Management Reserve to provide additional flexibility related to the uncertainty. If project costs are higher than estimates; new priorities arise during the fiscal year; or emergencies exceed their budget, then MSD staff can request to use of a portion of the Management Reserve. The CIP Management Team must approve use of Management Reserve funds.

Figure 2- Workflow For CIP Development Process



Section 2 Approved & Forecasted CIP Programs

MSD has several programs requiring capital investment during FY23 and throughout the 5-Year CIP (FY23 – FY27). A summary of each program is provided herein and presented in Table 3.

- **Regulatory Compliance Programs**: Mandates per a federal, state, or local regulation, rule, code, permit, Consent Decree, Agreed Order, or Administrative Order. This includes the provision included in the Second Amendment to the Consent Decree to spend an average of $25 million per year through the Year 2035 for maintaining MSD's existing wastewater assets. This program represents 83-percent of the 5-Year CIP.

- **Wastewater Programs (non-regulatory):** Through 2035 this program excludes asset management needs and includes development coordination and funding set aside to address infrastructure emergencies. It is envisioned after 2035 this program category will include asset management based work. This program represents 2-percent of the 5-Year CIP.

- **Stormwater & Flood Protection Programs (non-regulatory):** This program includes infrastructure improvements related to drainage and the Ohio River Flood Protection System that are not mandated by regulatory requirements. This program represents 8-percent of the 5-Year CIP.

- **Support Systems Programs**: This program includes improvements needed to keep MSD's infrastructure operating as intended including vehicles and large equipment; buildings and structures, information technology hardware and software, and general facility improvements. This program represents 6-percent of the 5-Year CIP.

- **Management Reserve**: Funding set aside to assess unforeseen circumstances, bids over engineer's estate, and changing/new infrastructure priorities for FY23.

Table 3 – Summary of 5-Year CIP by Program Type

CIP Program	FY23	FY24	FY25	FY26	FY27	5-Year
Regulatory Compliance Programs	$ 134,923,071	$ 182,546,608	$ 183,735,663	$ 199,483,293	$ 171,767,829	$ 872,456,464
Wastewater Programs (non-regulatory)	$ 3,457,122	$ 4,974,513	$ 4,595,930	$ 6,032,636	$ 6,508,934	$ 25,569,135
Stormwater & Flood Protection Programs	$ 19,074,369	$ 19,558,614	$ 11,959,384	$ 15,807,302	$ 19,970,914	$ 86,370,581
Support Systems Programs	$ 32,851,586	$ 12,015,208	$ 4,808,591	$ 4,871,900	$ 4,135,475	$ 58,682,761
Management Reserve	$ 5,000,000	$ -	$ -	$ -	$ -	$ 5,000,000
Total	**$195,306,148**	**$ 219,094,943**	**$205,099,568**	**$226,195,131**	**$202,383,150**	**$ 1,048,078,941**

Given the fluctuating nature of the current economy and post-pandemic supply chain challenges, MSD recognizes the importance of building flexibility into the 5-Year CIP. Projects may not be fully implemented as anticipated and will need to carry-over into the next fiscal year CIP.

However, MSD needs to maintain a cap on the 5-year CIP to remain compliant with financial metrics.

Each of the programs is detailed in this section including the spending forecasted in FY23 and the 5-Year CIP.

2.1 Regulatory Compliance Projects

MSD is faced with many regulations comprised of mandated programs, consent decree mandates, and agreed orders with the state or local jurisdictions. Nearly 70-percent of the FY23 CIP is required for regulatory compliance and more than 80-percent of the 5-Year CIP addresses mandated infrastructure improvements. A summary of the Regulatory Compliance Projects in the 5-Year CIP is presented in Table 4. Each regulatory program is summarized herein.

Table 4 – Summary of Regulatory Compliance Projects in 5-Year CIP

Regulatory Program	FY23	FY24	FY25	FY26	FY27	5-Year
Consent Decree	$ 95,918,892	$ 146,388,517	$171,177,751	$185,137,392	$159,255,974	$ 757,878,525
State Agreed Orders	$ 26,200,132	$ 21,065,062	$ 1,574,217	$ 408,432	$ -	$ 49,247,843
CMOM Program	$ 10,331,504	$ 11,586,914	$ 9,049,599	$ 11,862,878	$ 10,497,577	$ 53,328,472
NMC Program	$ 510,000	$ 400,000	$ 300,000	$ 300,000	$ 280,000	$ 1,790,000
MS4 Program	$ 1,962,543	$ 3,106,116	$ 1,634,096	$ 1,774,591	$ 1,734,278	$ 10,211,624
Total	**$134,923,071**	**$ 182,546,608**	**$183,735,663**	**$199,483,293**	**$171,767,829**	**$ 872,456,464**

2.1.1 Consent Decree Spending

The second amendment to the Consent Decree continues to undergo public review and comment by USEPA. MSD is continuing to advance projects to comply with all aspects of the Consent Decree as noted below in Table 5. MSD funds seven categories of projects that fall under the umbrella of the Consent Decree. The Integrated Overflow Abatement Plan (IOAP) outlined in the First Amendment to the Consent Decree included projects to reduce/eliminate sewer overflows through the Long-Term Control Plan (LTCP); Sanitary Sewer Discharge Plan (SSDP); and Green Infrastructure Program. The Second Amendment to the Consent Decree added projects related to Asset Management, Critical Sewers, and Specific Remedy projects. MSD utilizes consultant support for program management and modeling to deliver the CIP and Consent Decree requirements.

Table 5 – Consent Decree Projects in 5-Year CIP

Consent Decree Projects	FY23	FY24	FY25	FY26	FY27	5-Year
Asset Management	$ 52,798,050	$ 94,045,276	$ 74,216,164	$ 39,657,438	$ 46,999,027	$ 307,715,955
Critical Sewers	$ 15,651,621	$ 13,686,331	$ 15,113,904	$ 1,660,138	$ -	$ 46,111,995
Green Infrastructure	$ 134,462	$ -	$ -	$ -	$ -	$ 134,462
Long-Term Control Plan	$ 1,510,298	$ -	$ -	$ -	$ -	$ 1,510,298
Sanitary Sewer Discharge Plan	$ 6,708,649	$ 8,492,195	$ 8,816,273	$ 17,894,973	$ 33,551,043	$ 75,463,133
Specific Remedy Projects	$ 16,140,811	$ 26,964,715	$ 70,631,409	$ 123,524,843	$ 76,465,904	$ 313,727,682
CD Support	$ 2,975,000	$ 3,200,000	$ 2,400,000	$ 2,400,000	$ 2,240,000	$ 13,215,000
Total	**$ 95,918,892**	**$ 146,388,517**	**$ 171,177,751**	**$ 185,137,392**	**$ 159,255,974**	**$ 757,878,525**

2.1.1.1 Consent Decree Asset Management Projects

The Second Amendment to the Consent Decree requires MSD to invest an average of $25 million per year for asset management improvements for the wastewater system – a total of at least $375 million through 2035. MSD is required to report progress with this annual spending metric in the annual Consent Decree Progress Report. Given the level of investment needed throughout the District for aging assets, there is no reason to believe MSD will not meet the $25 million per year.

- **Costs eligible to be counted toward the asset management spend requirement** include work or services performed by MSD, its consultants, vendors, and contractors associated with facility plans, master plans, asset management plans, hydraulic and process modeling, asset inspection, condition assessment, risk assessment, field testing, design services, bidding services, asset performance evaluations, construction, construction inspection, commissioning (asset start-up), asset rehabilitation, asset replacement or upgrade, infiltration/inflow mitigation projects, and projects related to existing sewers, pump stations, storage facilities, treatment facilities, large equipment, utility vehicles, emergency repairs, and power/electrical systems.

- **Costs not eligible include work or services associated with** basin/watershed studies, permit renewal applications, financing, grant/loan applications, website updates or upgrades, facility remodeling, property acquisitions and land purchases, urban forestation or tree planting, landscaping, wetlands restoration, river/stream bank erosion or protection projects, aesthetic improvements not related to asset performance, Drainage Response Initiative (DRI) projects, construction of new sewers in unsewered areas, litigation, and annual operating budget line items such power, chemicals, labor, crane rental, or services associated with preventative or minor corrective maintenance costing less than $5,000 (not capitalized).

- **FY23 CIP:** Although the annual totals listed in Table 5 for "Asset Management" are greater than $25 million, MSD is required to spend an average of $25 million per year. Given several high priority asset management projects will span multiple years, MSD prefers to front-load the CIP to accommodate long project durations. Some years will be higher than

$25M, other years may be lower than $25 million. The Consent Decree mandate is for an annual average of $25 million that is evaluated every five years. The first Consent Decree asset management reconciliation will occur in FY26 for years FY21 through FY25.

MSD anticipates spending on more than 60 eligible Consent Decree defined asset management projects during FY23. Given the uncertainty with supply chain economics and the condition of many existing assets, delays are expected for several equipment types, large equipment, and traditionally long-lead time items. To protect the integrity of MSD's system, the number of projects advanced under this asset management program has been maximized.

2.1.1.2 Consent Decree Critical Sewer Projects

Nine (9) critical sewer projects were added to the Consent Decree via the Second Amendment. Two of the projects are complete; six are currently underway; and one project (Buechel Trunk Sewer Repair) scheduled to begin in FY24 as shown in Table 6.

Table 6 – Consent Decree Critical Sewer Projects in 5-Year CIP

Consent Decree Critical Sewer Projects	FY23	FY24	FY25	FY26	FY27	5 Year CIP
Buechel Trunk Sewer Repair	$ -	$ 478,011	$ 1,583,851	$ 1,660,138	$ -	$ 3,722,000
Harrods Creek Force Main Repair	$ 24,058	$ -	$ -	$ -	$ -	$ 24,058
I-64 and Grinstead Infrastructure Rehabilitation	$ 4,300,000	$ 6,143,091	$ -	$ -	$ -	$ 10,443,091
Large Diameter Sewer Rehabilitation - Stage 1 and 2	$ 1,234,770	$ -	$ -	$ -	$ -	$ 1,234,770
Prospect Phase II Rehab	$ 1,484,511	$ -	$ -	$ -	$ -	$ 1,484,511
Rudd Ave Sewer Infrastructure Rehabilitation	$ 8,183,282	$ -	$ -	$ -	$ -	$ 8,183,282
Western Outfall Infrastructure Rehabilitation	$ 425,000	$ 7,065,229	$ 13,530,054	$ -	$ -	$ 21,020,283
Total	**$ 15,651,621**	**$ 13,686,331**	**$ 15,113,904**	**$ 1,660,138**	**$ -**	**$ 46,111,995**

Note: These critical sewer projects are required to be completed by December 31, 2026, per the Second Amendment to the Consent Decree.

2.1.1.3 Green Infrastructure Projects

MSD has completed all Consent Decree obligations associated with green infrastructure projects. The FY23 CIP includes $134,462 for additional green infrastructure projects that remain in progress or under discussion with private property owners.

2.1.1.4 Long-Term Control Plan Projects

MSD has completed construction of the projects included in the LTCP including the Ohio River Waterway Protection Tunnel Project. The FY23 CIP includes budget for final invoicing related to finishing the connection of the I-64 and Grinstead Interceptor to the Tunnel.

Table 7 – Consent Decree LTCP Projects in 5-Year CIP

Consent Decree LTCP Projects	FY23	FY24	FY25	FY26	FY27	5 Year CIP
Downtown CSO Interceptor Construction Services	$ 279,785	$ -	$ -	$ -	$ -	$ 279,785
I-64 and Grinstead CSO Interceptor	$ 1,230,513	$ -	$ -	$ -	$ -	$ 1,230,513
Total	**$ 1,510,298**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 1,510,298**

2.1.1.5 Sanitary Sewer Discharge Plan (SSDP) Projects

MSD has 16 remaining SSDP projects to complete. The 5-Year CIP includes the projects required to be completed by 2025 (Cinderella PS Elimination, Gunpowder PS, Idlewood Storage, Kavanaugh PS, Leven PS Elimination, Little Cedar Creek Interceptor, and Monticello PS Elimination) and those required to be completed by 2030 (Bardstown Road PS, Dell Road Interceptor, Mellwood System, Raintree & Marian Phase 2, and the Upper Middle Fork projects). The forecasted spending for these projects is shown in Table 8. Two other SSDP projects are slated to begin after FY27 and be complete by 2035.

Table 8 – Consent Decree SSDP Projects in 5-Year CIP

Consent Decree SSDP Projects	FY23	FY24	FY25	FY26	FY27	5 Year CIP
Bardstown Road PS Improvements	$ -	$ -	$ 381,779	$ 2,647,558	$ 687,564	$ 3,716,900
Cinderella Pump Station Elimination	$ 209,472	$ 1,253,563	$ -	$ -	$ -	$ 1,463,034
Dell Road & Charlane Pkwy Interceptor Improvements	$ -	$ -	$ 555,293	$ 4,814,522	$ 4,323,585	$ 9,693,400
Gunpowder Pump Station	$ 474,271	$ 242,034	$ -	$ -	$ -	$ 716,305
Idlewood Inline Storage	$ 3,651,264	$ -	$ -	$ -	$ -	$ 3,651,264
Kavanaugh Road Pump Station Improvements	$ 600,486	$ 3,593,546	$ -	$ -	$ -	$ 4,194,032
Leven Pump Station Elimination	$ 846,147	$ 606,533	$ -	$ -	$ -	$ 1,452,680
Little Cedar Creek Interceptor Improvements	$ 575,110	$ 1,394,798	$ 296,055	$ -	$ -	$ 2,265,962
Mellwood System Improvements & PSEs	$ -	$ -	$ -	$ 229,368	$ 1,236,120	$ 1,465,488
Monticello Pump Station Elimination	$ 351,900	$ -	$ -	$ -	$ -	$ 351,900
Raintree & Marian Ct 2 - Pipe Upgrades	$ -	$ 245,838	$ 814,564	$ 853,798	$ -	$ 1,914,200
Upper Middle Fork #2 PS Replacements	$ -	$ 392,092	$ 2,296,000	$ 3,171,561	$ 9,261,829	$ 15,121,481
Upper Middle Fork Forcemain	$ -	$ 312,181	$ 1,828,061	$ 2,525,178	$ 7,374,214	$ 12,039,634
Upper Middle Fork Relief Interceptor	$ -	$ 451,610	$ 2,644,522	$ 3,652,989	$ 10,667,731	$ 17,416,851
Total	**$ 6,708,649**	**$ 8,492,195**	**$ 8,816,273**	**$ 17,894,973**	**$ 33,551,043**	**$ 75,463,133**

2.1.1.6 Specific Remedy Projects

The Second Amendment to the Consent Decree added the two projects shown in Table 9. The Paddy's Run Pump Station Improvements are required to be completed by 12/31/2026. The Morris Forman WQTC New Biosolids Facility is required to be completed by 12/31/2030. Both projects are under contract with design-build teams. The 30-percent design submittals will be submitted in early FY23 and will better inform the spending forecast for both projects.

Table 9 – Consent Decree Specific Remedy Projects in 5-Year CIP

Consent Decree Specific Remedy Projects	FY23	FY24	FY25	FY26	FY27	5 Year CIP
MFWQTC New Biosolids Facilities	$ 8,500,000	$ 17,252,857	$ 32,031,380	$ 80,303,390	$ 56,212,373	$ 194,300,000
Paddys Run FPS Capacity Upgrade	$ 7,640,811	$ 9,711,857	$ 38,600,029	$ 43,221,453	$ 20,253,531	$ 119,427,682
Total	**$ 16,140,811**	**$ 26,964,715**	**$ 70,631,409**	**$123,524,843**	**$ 76,465,904**	**$ 313,727,682**

2.1.1.7 Consent Decree Support Projects

The support services forecasted for implementation of the Consent Decree work are shown in Table 10.

Table 10 – Consent Decree Support Projects in 5-Year CIP

Consent Decree Support Projects	FY23	FY24	FY25	FY26	FY27	5 Year CIP
CIP Task Assistance	$ 1,700,000	$ 2,000,000	$ 1,500,000	$ 1,500,000	$ 1,400,000	$ 8,100,000
Modeling	$ 1,275,000	$ 1,200,000	$ 900,000	$ 900,000	$ 840,000	$ 5,115,000
Total	**$ 2,975,000**	**$ 3,200,000**	**$ 2,400,000**	**$ 2,400,000**	**$ 2,240,000**	**$ 13,215,000**

2.1.2 State Agreed Orders

MSD entered into an Agreed Order with the Kentucky Department of Environmental Protection's Energy and Environment Cabinet (KDEP) to complete the $175 million Corrective Action Plan (CAP) for mitigating permit non-compliance at the Morris Forman WQTC. MSD has been working on the CAP projects since 2015. The last four projects totaling $41 million are underway. The spending forecast is shown in Table 11.

MSD also entered into an Agreed Order with the Louisville Metro Air Pollution Control Board related to odors from its collection system. An Odor Management Plan continues to be developed and specific improvements are underway for the West Louisville Community (refer to Table 11).

Finally, MSD entered into an Agreed Order with KDEP to address deficiencies in the recently acquired Oldham County collection system. A new interceptor will be constructed along Ash Avenue to improve the connectivity of service throughout Oldham County (refer to Table 11).

Table 11 – Agreed Order Projects in 5-Year CIP

Agreed Order	Regulatory Agreed Order Projects	FY23	FY24	FY25	FY26	5 Year CIP
Morris Forman WQTC Corrective Action Plan	MFWQTC FEPS Loadcenter and MCC Replacement	$ 136,064	$ -	$ -	$ -	$ 136,064
	MFWQTC LG Dryer Replacements	$ 7,034,294	$ -	$ -	$ -	$ 7,034,294
	MFWQTC Sedimentation Basin RR	$15,000,000	$18,025,081	$ 707,059	$ -	$33,732,140
	MFWQTC Sodium Hypochlorite Building Relocation	$ 688,287	$ -	$ -	$ -	$ 688,287
Louisville Metro Air Pollution Control	Odor Management Plan	$ 241,131	$ 283,683	$ 283,683	$ -	$ 808,498
	West Louisville Community Odor Control Improvements	$ 125,357	$ 232,736	$ 583,475	$ 408,432	$ 1,350,000
Oldham County	OC Ash Avenue Interceptor	$ 2,975,000	$ 2,523,561	$ -	$ -	$ 5,498,561
	Total	**$26,200,132**	**$21,065,062**	**$1,574,217**	**$ 408,432**	**$49,247,843**

Note: All work associated with these Agreed Orders is forecasted to be complete as shown above and no spending is forecasted for FY27.

2.1.3 Nine Minimum Controls (NMC) Program

USEPA requires utilities to implement technology-based actions or measures designed to reduce the number of sewer overflow events and to mitigate the effects on water quality. MSD continues to advance its NMC Program and operate real time control systems. The projects included in the 5-Year CIP for this program are listed in Table 12.

Table 12 – NMC Program in 5-Year CIP

NMC Program Projects	FY23	FY24	FY25	FY26	FY27	5 Year CIP
NMC RTC	$ 425,000	$ 300,000	$ 225,000	$ 225,000	$ 210,000	$ 1,385,000
NMC Support	$ 85,000	$ 100,000	$ 75,000	$ 75,000	$ 70,000	$ 405,000
Total	**$ 510,000**	**$ 400,000**	**$ 300,000**	**$ 300,000**	**$ 280,000**	**$ 1,790,000**

2.1.4 CMOM Program

The original Consent Decree required MSD to develop and implement a Capacity, Maintenance, Operations, and Management (CMOM) Program. The intent of the Program as established by USEPA is to continuously incorporate new information to help MSD better manage, operate, and maintain its infrastructure. The CMOM-related investments for each of MSD's three service areas (Jefferson County, Bullitt County, and Oldham County) are listed in Table 13.

Table 13 – CMOM Program in 5-Year CIP

Collection System	CMOM Program Projects	FY23	FY24	FY25	FY26	FY27	5 Year CIP
Jefferson County System	AI Aquasight Software at CCWQTC	$ 25,000	$ -	$ -	$ -	$ -	$ 25,000
	AI Aquasight Software at HCWQTC	$ -	$ 200,000	$ -	$ -	$ -	$ 200,000
	CCWQTC WAS Cycle Automation	$ -	$ -	$ 187,200	$ -	$ -	$ 187,200
	Cedar Creek SSES	$ 139,648	$ 835,708	$ -	$ -	$ -	$ 975,356
	Comprehensive Facility Plan Update	$ -	$ -	$ 465,500	$ 465,500	$ -	$ 931,000
	Cypress Springs PS Elimination	$ -	$ 330,188	$ 914,612	$ -	$ -	$ 1,244,800
	CMOM SCAP, AAM, FOG	$ 127,500	$ 150,000	$ 112,500	$ 112,500	$ 105,000	$ 607,500
	Construction Inspection	$ 1,000,000	$ 500,000	$ 375,000	$ 375,000	$ 350,000	$ 2,600,000
	CRRP Emergency Access Evaluation	$ -	$ -	$ -	$ 667,000	$ 667,000	$ 1,334,000
	Plumbing Modification Program	$ 212,500	$ 500,000	$ 375,000	$ 375,000	$ 350,000	$ 1,812,500
	Lea Ann Way Pump Station Elimination	$ -	$ -	$ 1,472,316	$5,372,878	$ 6,334,106	$ 13,179,300
	MFWQTC Sludge Disposal	$ 4,500,000	$ -	$ -	$ -	$ -	$ 4,500,000
	Ohio River Area Facilities Plan	$ 243,145	$ -	$ -	$ -	$ -	$ 243,145
	Private Property I/I Program	$ -	$ 523,900	$ 523,900	$ -	$ -	$ 1,047,800
	Total - Jefferson County System	**$ 6,247,793**	**$3,039,797**	**$ 4,426,028**	**$7,367,878**	**$ 7,806,106**	**$ 28,887,601**
Bullitt County System	Bullitt Hills and Hillview #1 WWTP Elimination	$ 750,000	$1,821,429	$ 2,428,571	$ -	$ -	$ 5,000,000
	BC CMOM Infrastructure Rehab	$ 500,000	$ 500,000	$ 500,000	$ 500,000	$ 350,000	$ 2,350,000
	BC PS RR	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ -	$ 400,000
	BC WQTC RR	$ 500,000	$ -	$ -	$ -	$ -	$ 500,000
	Collection System Modeling	$ 63,750	$ 25,000	$ 25,000	$ 25,000	$ 35,000	$ 173,750
	Long-Term Monitoring Network (LTMN)	$ 63,750	$ 75,000	$ 75,000	$ 75,000	$ -	$ 288,750
	SCADA System and Rain Gauge Network	$ 297,500	$ -	$ -	$ -	$ -	$ 297,500
	System Flow Monitoring	$ 85,000	$ 20,000	$ 20,000	$ 20,000	$ -	$ 145,000
	System Planning and Reg. Support	$ 127,500	$ 150,000	$ 100,000	$ 100,000	$ -	$ 477,500
	Sewer System Evaluation Surveys	$ -	$ 500,000	$ -	$ -	$ -	$ 500,000
	Collection Sys Gravity Sewer Rehab.	$ -	$ -	$ 500,000	$ 500,000	$ 70,000	$ 1,070,000
	Hillview #2 WWTP Elimination	$ -	$ -	$ -	$ -	$ 600,000	$ 600,000
	Hillview PS#2 Elimination	$ -	$ 100,000	$ -	$ -	$ -	$ 100,000
	Hunters Hollow PS & FM	$ 380,499	$3,025,501	$ -	$ -	$ -	$ 3,406,000
	Material Handling PS Elimination	$ -	$ -	$ 500,000	$1,000,000	$ -	$ 1,500,000
	South System Improvements	$ -	$ -	$ -	$ -	$ 1,391,471	$ 1,391,471
	Total - Bullitt County System	**$ 2,867,999**	**$6,316,930**	**$ 4,248,571**	**$2,320,000**	**$ 2,446,471**	**$ 18,199,971**
Oldham County System	OC CMOM Linear Infrastructure Rehab	$ 85,000	$ 100,000	$ 75,000	$ 75,000	$ 49,000	$ 384,000
	OC CMOM Vertical Infrastructure Rehab	$ 255,000	$ 300,000	$ 225,000	$ 225,000	$ 147,000	$ 1,152,000
	OC Modeling	$ 85,000	$ 100,000	$ 75,000	$ 75,000	$ 49,000	$ 384,000
	OC WQTC Eliminations	$ -	$ -	$ -	$1,800,000	$ -	$ 1,800,000
	Ohio River Service Area Lift Station Rehab	$ 790,713	$ 697,688	$ -	$ -	$ -	$ 1,488,400
	Mockingbird Valley WWTP Elimination	$ -	$1,032,500	$ -	$ -	$ -	$ 1,032,500
	Total - Oldham County System	**$ 1,215,713**	**$2,230,188**	**$ 375,000**	**$2,175,000**	**$ 245,000**	**$ 6,240,900**

Note: All projects forecasted for the 5-Year CIP for Bullitt and Oldham Counties are included in Table 13, excluding the Oldham County Ash Avenue Interceptor that is listed in Table 11.

2.1.5 MS4 Program

The Municipal Separate Storm Sewer System Program (MS4) Program is a drainage-related program to improve the quality of surface waters through controls on stormwater runoff quality in Jefferson County and to protect the public health, safety, and welfare by reducing the introduction of harmful materials into the MS4s that discharge into community streams. The FY23 CIP includes MS4 projects totaling approximately $1.9 million with a total of $10.2 million forecasted for the 5-Year CIP as presented in Table 14.

Table 14 – MS4 Program in 5-Year CIP

MS4 Program Projects	FY23	FY24	FY25	FY26	FY27	5 Year CIP
Env'L Data Collection – MS4 & IOAP	$ 340,000	$ 875,000	$ 656,250	$ 656,250	$ 612,500	$ 3,140,000
MS4 Program	$ 510,000	$ 600,000	$ 450,000	$ 450,000	$ 420,000	$ 2,430,000
Urban Reforestation	$ 240,000	$ 76,101	$ 216,596	$ 357,091	$ 411,278	$ 1,301,067
USGS Stream Monitoring	$ 690,400	$ 410,000	$ 311,250	$ 311,250	$ 290,500	$ 2,013,400
MS4 Basin Retrofits	$ -	$ 85,000	$ -	$ -	$ -	$ 85,000
Maple Street Land Use project	$ 182,143	$ 285,714	$ -	$ -	$ -	$ 467,857
SCADA Master Plan	$ -	$ 774,300	$ -	$ -	$ -	$ 774,300
Total	**$ 1,962,543**	**$ 3,106,116**	**$ 1,634,096**	**$ 1,774,591**	**$ 1,734,278**	**$ 10,211,624**

2.2 Wastewater Non-Regulatory Projects

The 5-Year CIP includes funding for development coordination and emergency projects. Most of the wastewater system funding is included in the asset management annual Consent Decree spend mandate. The projects listed herein do not have a regulatory component.

2.2.1 Development Coordination

The Critical Repair and Reinvestment Plan (CRRP) identified potential regionalization corridors where MSD can further extend sewers to improve surface water quality. Economic development and regionalization are opportunities for optimizing resources across watersheds, improving water quality and facilitating economic growth.

Three (3) facility plan projects (Ohio River, Lower Floyds Fork, and Upper Floyds Fork) in the FY23 CIP will better inform the future needs in the Floyds Fork Area. In order to ensure growth correlates with the conveyance and treatment capacity of MSD's infrastructure and healthy waterways, long term planning is needed to identify economical and environmentally sensitive solutions for future growth and development in the communities not currently served by public sewers. The facility plans will include analysis for the following topics: sewershed development potential, growth patterns, projections of future flows, and potential projects to accommodate sustainable growth. Costs and benefits of project alternatives will be completed in accordance with the State of Kentucky's regional facility plan requirements. MSD anticipates the three facility plans will inform the CIP starting in FY24.

The projects intended to establish place-holder budgets for anticipated projects are listed in Table 15. The only two projects having funding in FY23 are the Hite Creek WQTC Expansion Project and the annual budget for coordinating with developers on an as-needed basis. The Hite Creek WQTC began expansion several years ago and will be complete in FY23.

Table 15 – Wastewater Development Projects in 5-Year CIP

Development Projects	FY23	FY24	FY25	FY26	FY27	5-Year
CC Zone F Collection System	$ -	$ 389,081	$ 722,361	$ 1,810,975	$ 1,267,683	$ 4,190,100
CC Zone G Collection System	$ -	$ 200,432	$ 372,119	$ 932,911	$ 653,038	$ 2,158,500
HCWQTC Expansion	$ 834,872	$ -	$ -	$ -	$ -	$ 834,872
KTC Greenwood Rd Assmt	$ -	$ -	$ 212,700	$ -	$ -	$ 212,700
Lower Floyds Fork Zone H Collection System -	$ -	$ -	$ -	$ -	$ 1,518,713	$ 1,518,713
Development Infrastructure Support	$ 72,250	$ 85,000	$ 63,750	$ 63,750	$ 59,500	$ 344,250
Total	**$ 907,122**	**$ 674,513**	**$ 1,370,930**	**$ 2,807,636**	**$ 3,498,934**	**$ 9,259,135**

2.2.2 Emergencies

Given the age of MSD's system, it is prudent to set aside funds for emergency line breaks and other situations where the Operations Division's operating budget is insufficient to expedite repair. MSD funds two projects for emergency use as deemed appropriate by the Director of Engineering, Chief Engineer, or Chief of Operations. The Operations Renewal & Replacement Project is used to address equipment failures at MSD's facilities. The Renewal and Replacement Project is used to address line breaks and field conditions requiring immediate attention. In the event these funds are not sufficient for a FY, staff can request use of Management Reserve funds from the CIP Management Team.

Table 16- Emergency Funding for 5-Year CIP

Emergency CIP Projects	FY23	FY24	FY25	FY26	FY27	5 Year CIP
Operations Renewal & Replacement	$ 850,000	$ 2,300,000	$ 1,725,000	$ 1,725,000	$ 1,610,000	$ 8,210,000
Renewal & Replacement	$ 1,700,000	$ 2,000,000	$ 1,500,000	$ 1,500,000	$ 1,400,000	$ 8,100,000
Total	**$ 2,550,000**	**$ 4,300,000**	**$ 3,225,000**	**$ 3,225,000**	**$ 3,010,000**	**$ 16,310,000**

2.3 Stormwater & Flood Protection Programs

In addition to managing wastewater, MSD is responsible for stormwater management and flood protection. MSD's strategy has been to prioritize wet weather issues contributing to sewer overflows followed by maintaining operation of the 16 flood pump stations followed by addressing localized problems identified through the DRI Program. The combined sewer system improvements were constructed over the past several years (and continuing through FY23) in accordance with Consent Decree mandates. The Flood Pump Stations have continued to be improved to ensure reliable pumping capacity is available as needed. Drainage-based projects continue to be advanced throughout the District. MSD is in the process of collecting data to support development of a Stormwater Master Plan to determine the best options for managing stormwater throughout Jefferson County. The Master Plan projects will be subsequently prioritized to fit within MSD's long-term CIP.

2.3.1 Drainage Projects

Stormwater management is a vital component of MSD's system, because it directly impacts the health and safety of all Louisville and Jefferson County residents. The CRRP included a number of programs related to drainage and floodplain management. The level of spending forecasted for drainage projects over the next five years is presented in Table 17.

- **Drainage Response Initiative Program (DRI)**: Since 2003, MSD has been implementing an aggressive program to address a wide variety of drainage issues that were pointed out by customers to address problems ranging from structural flooding to alleviating minor standing water problems. The FY23 CIP includes DRI projects totaling approximately $5.7 million as noted in Table 17.

- **Floodplain Management Program**: Since 1997, MSD has purchased homes located in flood prone areas through federal grant programs (particularly FEMA). Following a number of spring flooding events in 2015, the Mayor formed a multiagency Flood Mitigation Workgroup to address impacted residents who were unable, for a variety of reasons, to get back in their homes after the floodwaters receded. The Flood Mitigation Workgroup recommended several mitigation approaches, including establishment of a "quick-buy" program to allow property owners to sell flood-impacted property in a much shorter time than would typically be possible. The Workgroup recommended an annual fund be established to provide timely relief to property owners impacted by future extreme storm events. The projects continue to be advanced but are not specifically included as part of the CIP due to the FEMA reimbursement portion of the program.

- **Stormwater Master Plan Implementation Program**: MSD is developing an extensive stormwater asset inventory. The FY23 work will continue collecting field inventory data and pilot monitoring activities. The FY23 CIP includes $311,000 to support this effort. The information collected during FY23 will support drafting the Stormwater Master Plan in the future. The 5-Year CIP includes approximately $4.5 million for development of the Stormwater Master Plan. Placeholder funds have been set-aside for the FY27 CIP to begin $3.2 million of the projects to be recommended from the Master Plan.

Table 17 – Stormwater Drainage Projects in 5-Year CIP

Stormwater Projects	FY23	FY24	FY25	FY26	FY27	5 Year CIP
2695 Pennacook Road Bank Repair	$ 175,000	$ -	$ -	$ -	$ -	$ 175,000
Floodplain Mapping	$ 102,000	$ -	$ -	$ -	$ -	$ 102,000
Drainage Response Initiative (DRI) Program	$ 2,380,000	$ 2,800,000	$ 2,100,000	$ 2,100,000	$ 1,960,000	$ 11,340,000
DRI Program Hydraulic Analysis Support	$ 25,500	$ -	$ -	$ -	$ -	$ 25,500
Stormwater Asset Inventory & Analysis	$ 136,000	$ -	$ -	$ -	$ -	$ 136,000
Logan St. Basin and Main Office Rain Garden	$ 127,500	$ -	$ -	$ -	$ -	$ 127,500
Melco Basin Improvement	$ 1,314,286	$ -	$ -	$ -	$ -	$ 1,314,286
Oak Valley Drainage Remedies	$ 85,000	$ -	$ -	$ -	$ -	$ 85,000
Pencook Drainage Improvements	$ 680,000	$ -	$ -	$ -	$ -	$ 680,000
Southfork Dry Bed Access	$ 255,000	$ -	$ -	$ -	$ -	$ 255,000
Stormwater Data Mgmt & Asset Knowledge Pr	$ 272,000	$ -	$ -	$ -	$ -	$ 272,000
Stormwater Implementation	$ -	$ -	$ -	$ -	$ 3,232,891	$ 3,232,891
Stormwater Master Plan	$ -	$ -	$ 2,158,650	$ 2,158,650	$ -	$ 4,317,300
Stormwater Pilot Monitoring	$ 175,000	$ -	$ -	$ -	$ -	$ 175,000
Total	**$ 5,727,286**	**$ 2,800,000**	**$ 4,258,650**	**$ 4,258,650**	**$ 5,192,891**	**$ 22,237,476**

2.3.2 Flood Protection Projects

Flood protection is a critical public health service that MSD provides. As the FY22 CIP was being developed, it was anticipated the majority of MSD's flood protection system improvements for the next five years would be addressed through the United States Army Corps of Engineers (USACE) Reliability Improvements Program. Unfortunately, the USACE was not successful in receiving sufficient congressional appropriation funds for the system needs. Discussions remain planned for FY23 with MSD and the USACE.

In the meantime, as the FY23 CIP was being developed, MSD identified the high risk components of the Flood Protection Program. Given the fact that most of the Flood Pump Stations (FPS) have original electrical and switchgear systems and original gates dating back to the 1950s or 1960s, MSD is advancing several projects to replace outdated parts and systems (refer to Table 18).

Table 18 – Flood Protection Projects in 5-Year CIP

	Ohio River Flood Protection Projects	FY23	FY24	FY25	FY26	FY27	5 Year CIP
Flood Pump Stations	27th Street FPS - Capacity and Generator Impv	$ -	$ -	$ -	$ -	$ 1,026,007	$ 1,026,007
	4th Street FPS - Capacity and Electrical Service Impv	$ -	$ -	$ -	$ -	$ 1,104,664	$ 1,104,664
	5th Street FPS - Generator Improvements	$ 335,155	$ 2,005,700	$ -	$ -	$ -	$ 2,340,855
	Beargrass Creek FPS Electrical Improvements	$ 372,415	$ 561,864	$ -	$ -	$ -	$ 934,280
	Bingham Way FPS - Capacity and Generator Impv	$ -	$ 515,614	$ 567,176	$ 2,079,936	$ 2,495,923	$ 5,658,648
	Bingham Way FPS - Electrical Improvements	$ -	$ 256,857	$ 851,075	$ 892,068	$ -	$ 2,000,000
	Lower Mill Creek FPS - Electrical Improvements	$ -	$ 295,386	$ 978,736	$ 1,025,878	$ -	$ 2,300,000
	Pond Creek FPS - Electrical Service Improvements	$ -	$ -	$ -	$ -	$ 3,332,057	$ 3,332,057
	Pond Creek FPS - Electrical/Breaker Replacement	$ 279,296	$ 1,671,417	$ -	$ -	$ -	$ 1,950,713
	Riverport FPS - Electrical Improvements	$ -	$ -	$ 295,386	$ 978,736	$ 1,025,878	$ 2,300,000
	Riverport FPS - Generator Improvements	$ -	$ -	$ -	$ -	$ 668,070	$ 668,070
	Shawnee Park FPS - Electrical Improvements	$ 474,803	$ 2,841,409	$ -	$ -	$ -	$ 3,316,211
	Starkey FPS Electrical Service Improvements	$ 196,906	$ 983,431	$ 784,915	$ -	$ -	$ 1,965,252
	Upper Mill Creek FPS Transformer Replacement	$ 108,640	$ 372,714	$ 249,475	$ -	$ -	$ 730,828
	FPS Equipment RR	$ 3,700,000	$ 1,000,000	$ 750,000	$ 750,000	$ 700,000	$ 6,900,000
	Total - Flood Pump Stations	**$ 5,467,213**	**$10,504,393**	**$ 4,476,763**	**$ 5,726,618**	**$10,352,599**	**$ 36,527,586**
Gates & Floodwalls	Canal Street Floodwall	$ 5,665,248	$ 261,444	$ -	$ -	$ -	$ 5,926,692
	Flood Gate 114 Replacement	$ 327,493	$ 2,614,714	$ -	$ -	$ -	$ 2,942,207
	Flood Protection System Outfall Assessment	$ 425,000	$ -	$ -	$ -	$ -	$ 425,000
	Gate 102 Replacement	$ 144,196	$ -	$ -	$ -	$ -	$ 144,196
	Sluice Gate Repair Program	$ -	$ 928,571	$ 1,723,971	$ 4,322,034	$ 3,025,424	$ 10,000,000
	Water Stop Repair	$ 297,932	$ 449,492	$ -	$ -	$ -	$ 747,424
	Flood Structures RR	$ 1,020,000	$ 2,000,000	$ 1,500,000	$ 1,500,000	$ 1,400,000	$ 7,420,000
	Total - Gates and Floodwalls	**$ 7,879,870**	**$ 6,254,221**	**$ 3,223,971**	**$ 5,822,034**	**$ 4,425,424**	**$ 27,605,519**

2.4 Support System Programs

The Support Systems projects reflect the non-process related investments that must be made to keep the MSD businesses running. Facility improvements, computer systems (IT implementations), and vehicle acquisitions are some of the project types that fall under the Support System Program.

2.4.1 Facility Improvement Projects

MSD maintains more than 200 buildings as part of its infrastructure. The 5-Year CIP includes $19.7 million related to buildings and site improvements and repairs as noted in Table 19.

Table 19 – Facility Improvements in 5-Year CIP

Facility Improvement Projects		FY23	FY24	FY25	FY26	FY27	5 Year CIP
Structural Repairs	Admiral Pump Station Foundation Repairs	$ 209,865	$ -	$ -	$ -	$ -	$ 209,865
	CMF Floor Replacement	$ 46,750	$ -	$ -	$ -	$ -	$ 46,750
	CMF Structural Investigation	$ 29,750	$ -	$ -	$ -	$ -	$ 29,750
	CMF Structural Repairs	$ -	$ -	$ -	$ -	$ 880,000	$ 880,000
	Facility Lead Paint Abatement	$ -	$ 407,800			$ -	$ 407,800
	Facility Mold Abatement	$ -	$ 191,000			$ -	$ 191,000
	Facility Structural Investigations	$ -	$ 33,667	$ 33,667	$ 33,667	$ -	$ 101,000
	Total - Structural	**$ 286,365**	**$ 632,467**	**$ 33,667**	**$ 33,667**	**$ 880,000**	**$ 1,866,165**
Site Improvements	CMF Garage Fluid Delivery System	$ 140,250	$ -	$ -	$ -	$ -	$ 140,250
	CMF Automated Vehicle Wash Facility (design)	$ 60,139	$ -	$ -	$ -	$ -	$ 60,139
	CMF Guard Building Entrance Enhancements (design)	$ 5,100,000	$ -	$ -	$ -	$ -	$ 5,100,000
	CMF Loading Dock Improvements	$ 42,500	$ -	$ -	$ -	$ -	$ 42,500
	SWPS Site Security	$ 975,372	$ -	$ -	$ -	$ -	$ 975,372
	Miscellaneous Facility Repairs	$ 170,000	$ 200,000	$ 150,000	$ 150,000	$ 140,000	$ 810,000
	Security Upgrades	$ 212,500	$ -	$ -	$ 375,000	$ -	$ 587,500
	Total - Site	**$ 6,700,761**	**$ 200,000**	**$ 150,000**	**$ 525,000**	**$ 140,000**	**$ 7,715,761**
Roof Replacement	CMF Roof A, C and D Replacement	$ 2,136,657	$ -	$ -	$ -	$ -	$ 2,136,657
	DRGWQTC WWPS WWSB HVAC, Roof, Transformers	$ 1,829,243	$ 2,261,341	$ -	$ -	$ -	$ 4,090,584
	FFWQTC Tertiary Trtmnt Bldgs Roof Replacement	$ 355,850	$ 11,795	$ -	$ -	$ -	$ 367,645
	MSD Owned Building Roof Replacements	$ 340,000	$ 400,000	$ 300,000	$ 300,000	$ 280,000	$ 1,620,000
	Total - Roof Replacements	**$ 4,661,750**	**$ 2,673,136**	**$ 300,000**	**$ 300,000**	**$ 280,000**	**$ 8,214,886**
Building Interiors & Equipment	Conference Room Upgrades	$ 297,500	$ -	$ -	$ -	$ -	$ 297,500
	Carpet Replacement	$ 340,000	$ -	$ -	$ -	$ -	$ 340,000
	Main Office HVAC Chillers	$ 170,000	$ -	$ -	$ -	$ -	$ 170,000
	MFWQTC Computer Room Upgrades	$ 445,380	$ 614,738	$ -	$ -	$ -	$ 1,060,119
	MFWQTC Admin. Bldg. Computer Room Renovation	$ 8,500	$ -	$ -	$ -	$ -	$ 8,500
	Studio Office Build	$ 34,000	$ -	$ -	$ -	$ -	$ 34,000
	Total - Bldg Interior & Equipment	**$ 1,295,380**	**$ 614,738**	**$ -**	**$ -**	**$ -**	**$ 1,910,119**

2.4.2 IT & Capital Equipment Projects

MSD owns more than 600 vehicles and portable equipment ranging from passenger vehicles and pick-up trucks to large excavators and sewer-cleaning trucks. Most of these vehicles are in need replacement. MSD began an extensive vehicle replacement program in FY22, but the program was stalled due to supply-chain challenges and the lack of vehicle chips. As such, some of the costs included in the FY22 CIP need to carry-over into FY23. The 5-Year CIP for these projects is provided in Table 20.

Table 20 - IT and Capital Equipment in 5-Year CIP

IT & Equipment Support Projects		FY23	FY24	FY25	FY26	FY27	5 Year CIP
Capital Equipment	Catch Basin Retrofits Phase 2	$ 212,500	$ 333,333	$ 333,333	$ 333,333	$ -	$ 1,212,500
	Vehicles & Equipment	$16,800,000	$ 4,000,000	$ 3,000,000	$ 3,000,000	$ 2,100,000	$ 28,900,000
	Total - Capital Equipment	**$17,012,500**	**$ 4,333,333**	**$ 3,333,333**	**$ 3,333,333**	**$ 2,100,000**	**$ 30,112,500**
IT Hardware and Software	CMF Inventory Management System	$ 63,750	$ -	$ -	$ -	$ -	$ 63,750
	CMF Supplier Diversity CPIS Analysis	$ 42,500	$ -	$ -	$ -	$ -	$ 42,500
	Communications Message Boards	$ 42,500	$ -	$ -	$ -	$ -	$ 42,500
	Community Benefit Support	$ 42,500	$ -	$ -	$ -	$ -	$ 42,500
	Bi-Annual Aerial Imagery & Map Updates	$ 316,391	$ 189,034	$ 310,966	$ 141,775	$ 233,225	$ 1,191,391
	Information Governance Architecture	$ 255,000	$ -	$ -	$ -	$ -	$ 255,000
	IPS Support	$ 221,000	$ 260,000	$ 195,000	$ 195,000	$ 182,000	$ 1,053,000
	IT Improvements	$ -	$ 200,000	$ 150,000	$ -	$ -	$ 350,000
	IT Infrastructure Initiatives	$ 735,250	$ 307,500	$ 230,625	$ 230,625	$ 215,250	$ 1,719,250
	LOJIC Hw Upgrades & Replacements	$ 85,000	$ 100,000	$ 75,000	$ 112,500	$ 105,000	$ 477,500
	LOJIC Survey Control Maintenance	$ 25,500	$ 30,000	$ 30,000	$ -	$ -	$ 85,500
	GIS Equipment Replacement	$ 51,000	$ -	$ -	$ -	$ -	$ 51,000
	HANA Phase 2 Enhancements	$ -	$ 500,000	$ -	$ -	$ -	$ 500,000
	MF Network Encasement	$ 51,000	$ -	$ -	$ -	$ -	$ 51,000
	MSD Radio Repeaters	$ 28,438	$ -	$ -	$ -	$ -	$ 28,438
	PMIS System Implementation	$ 318,750	$ 1,125,000	$ -	$ -	$ -	$ 1,443,750
	SAP Upgrade To HANA	$ 552,500	$ 850,000	$ -	$ -	$ -	$ 1,402,500
	Sharepoint Upgrade	$ 63,750	$ -	$ -	$ -	$ -	$ 63,750
	Total - IT	**$ 2,894,830**	**$ 3,561,534**	**$ 991,591**	**$ 679,900**	**$ 735,475**	**$ 8,863,330**

2.5 Management Reserve

MSD included a $5 million reserve in the FY23 CIP to account of unforeseen, unknown circumstances that result with higher project costs. Project Managers may request use of Management Reserve funds from the CIP Management Team.

Appendix A – Detailed Listing of Projects in the 5-Year CIP

		195,306,148	219,094,943	205,099,568	226,195,131	202,383,150	1,048,078,941
Budget ID	**Project Name**	**FY23**	**FY24**	**FY25**	**FY26**	**FY27**	**5 Year CIP**
C22031	2695 Pennacook Road Bank Repair	175,000					175,000
X_0090	27th Street FPS - Capacity and Generator Improvements					1,026,007	1,026,007
X_0088	4th Street FPS - Capacity and Electrical Service Improvements					1,104,664	1,104,664
F15012	5th Street FPS - Generator Improvements	335,155	2,005,700				2,340,855
G18147	Admiral Pump Station Foundation Repairs	209,865					209,865
H20021	Admiral Way/Fishpool Capacity Assurance	635,800	1,257,333	3,620,294	5,082,712	3,291,661	13,887,800
H22016	AI Aquasight Software at CCWQTC	25,000					25,000
23BD-041	AI Aquasight Software at HCWQTC		200,000				200,000
D21059	Asset Management Plan Development	1,325,199	1,325,199				2,650,398
H09165	Bardstown Road PS Improvements			381,779	2,647,558	687,564	3,716,900
23BD-053	Beargrass Creek FPS Electrical Improvements	372,415	561,864				934,280
BD-162	Beargrass Interceptor Relief Rehab	537,759	2,259,038	3,562,255	146,050		6,505,101
D20224	Bells Lane Disinfection System Upgrades	91,746					91,746
D20223	Bells Lane WWTF Polymer Feed System ImprovementS	115,534					115,534
F21083	Bingham Way FPS - Capacity and Generator Improvements		515,614	567,176	2,079,936	2,495,923	5,658,648
23BD-xxx	Bingham Way FPS - Electrical Improvements		256,857	851,075	892,068		2,000,000
SY-045	Brandywyne Ct. PS Elimination			593,519	477,881		1,071,400
E17053	Buechel Trunk Sewer Repair		478,011	1,583,851	1,660,138		3,722,000
Y22146	Bullitt Hills and Hillview #1 WWTP Elimination	750,000					750,000
Y22146 (FY24)	Bullitt Hills and Hillview #1 WWTP Elimination - Constr. '24		1,821,429	2,428,571			4,250,000
F16004 (FY23)	Canal Street Floodwall '23	5,665,248	261,444				5,926,692
G23014	Carpet Replacement	340,000					340,000
H23015	Carslaw Ct. PS Elimination	212,500					212,500
BD-005	Catch Basin Retrofits Phase 2	212,500	333,333	333,333	333,333		1,212,500
H22034 (FY23)	CC FF HC Sodium Aluminate Automation '23	447,919					447,919
H18083	CC Zone F Collection System		389,081	722,361	1,810,975	1,267,683	4,190,100
H18105	CC Zone G Collection System		200,432	372,119	932,911	653,038	2,158,500
D20149	CCWQTC Admin Building Expansion	534,905	3,025,436	1,245,264			4,805,605
23BD-012	CCWQTC Digester Tank Addition			858,867	2,379,033		3,237,900
D18103	CCWQTC Expansion To 11.25 Mgd		1,447,471	1,592,219	5,838,953	7,006,743	15,885,386
H23017	CCWQTC Preliminary Trtmnt Bldg Improvements	558,623	842,797				1,401,419
D22098 (FY23)	CCWQTC Re-rating to 9.0 MGD '23	763,119	3,928,031	972,318			5,663,469
D20009	CCWQTC Service Area - Enhanced Odor Control For Two Pump Stations					427,192	427,192
F18440	CCWQTC Service Area Pump Station Floodproof For 100 Yr Storm					204,000	204,000
BD-007	CCWQTC Sludge Storage Blower Upgrade			850,800			850,800
H22018 (FY23)	CCWQTC Sludge Storage Tank Improvements '23	1,300,822	1,885,103				3,185,925
D18090	CCWQTC Solids Handling (Centrifuge Relocation) Dewatering Improvements		1,002,179	1,860,630	4,664,642	3,265,249	10,792,700
D17032 (FY23)	CCWQTC Tertiary Filtration '23	831,983	4,282,498	1,060,060			6,174,541
23BD-014	CCWQTC UV Improvements		1,325,309	1,067,091			2,392,400
D16275	CCWQTC WAS Cycle Automation			187,200			187,200
BD-008	Cedar Creek Main Interceptor	593,689	2,704,078	3,397,464			6,695,231
H23019	Cedar Creek SSES	139,648	835,708				975,356
H09192	Cinderella Pump Station Elimination	209,472	1,253,563				1,463,034
G22078 (FY23)	CMF Automated Vehicle Wash Facility '23 (Design)	60,139					60,139
G21102	CMF Floor Replacement	46,750					46,750
G23020	CMF Garage Fluid Delivery System	140,250					140,250
G23021	CMF Inventory Management System	63,750					63,750
G23022	CMF Loading Dock Improvements	42,500					42,500
G21139	CMF Roof A, C and D Replacement	2,136,657					2,136,657

		195,306,148	219,094,943	205,099,568	226,195,131	202,383,150	1,048,078,941
Budget ID	**Project Name**	**FY23**	**FY24**	**FY25**	**FY26**	**FY27**	**5 Year CIP**
G18155	CMF Structural Investigation	29,750					29,750
G18154	CMF Structural Repairs					880,000	880,000
G23023	CMF Supplier Diversity CPIS Analysis	42,500					42,500
N23024	Communications Message Boards	42,500					42,500
G23025	Community Benefit Support	42,500					42,500
H18168	Comprehensive Facility Plan - Five Year Update			465,500	465,500		931,000
N23026	Conference Room Upgrades	297,500					297,500
BD-009	CRRP Emergency Access Evaluation				667,000	667,000	1,334,000
23BD-015	Cypress Springs PS Elimination		330,188	914,612			1,244,800
SY-044	Deep Trail PS Elimination		321,200				321,200
H09179	Dell Road & Charlane Pkwy Interceptor Improvements			555,293	4,814,522	4,323,585	9,693,400
H18176 (FY23)	DOWNTOWN CSO INTERCEPTOR RPR & CA SVCS '23	279,785					279,785
D22080	DRGWQTC Clarifier 4-6 Mechanism Update	11,460	14,980				26,440
D21222	DRGWQTC Grit Building Roof Replacement	32,931					32,931
D21230 (FY23)	DRGWQTC RAS Pumps 2&3 Replacement '23	1,205,338	1,418,045	118,170			2,741,553
D21242 (FY23)	DRGWQTC Regional Lab Upgrades '23	626,865					626,865
D21078	DRGWQTC Replace Clarifiers 4, 5, & 6			1,291,100			1,291,100
X_0164	DRGWQTC Service Area Inventory For Critical Pump Stations					628,700	628,700
F18455	DRGWQTC Service Area Pump Station Floodproof For 100 Yr Storm					408,100	408,100
H22032	DRGWQTC Sodium Bisulfite Bldg. Improvements	90,000	17,647				107,647
H22032 (FY23)	DRGWQTC Sodium Bisulfite Bldg. Improvements '23	1,177,082	461,601				1,638,683
D21224 (FY23)	DRGWQTC Sodium Hypochlorite and Process Water Buildings Roo	13,356					13,356
D18132	DRGWQTC WWPS WWSB HVAC & Roof and U3 & U4 Transformer	1,829,243	2,261,341				4,090,584
G18146	Facility Lead Paint Abatement		407,800				407,800
G18150	Facility Mold Abatement		191,000				191,000
G18151	Facility Structural Investigations		33,667	33,667	33,667		101,000
D21079	Fairmont Road Pump Station Force Main Extension - Phase 2 and 3	2,191,261					2,191,261
D21079 (FY24)	Fairmont Road Pump Station Force Main Extension - Phase 2 and 3 '24		4,342,018	1,196,989			5,539,007
BD-010	FFWQTC Influent Pump VFDs		774,300				774,300
D20148	FFWQTC Regional Facilities Plan Update	263,728					263,728
A18068	FFWQTC Service Area Back-Up Power For Critical Pump Stations					669,500	669,500
23BD-045	FFWQTC Sludge Storage Tank Improvements		833,827	2,309,673			3,143,500
23BD-042	FFWQTC Sodium Aluminate System Improvements		516,200				516,200
D22187	FFWQTC Tertiary Trtmnt Bldgs Roof Replacement	355,850	11,795				367,645
23BD-043	FFWQTC UV Gates		258,100				258,100
23BD-054	Flood Gate 114 Replacement	327,493	2,614,714				2,942,207
23BD-061	Flood Protection System Outfall Assessment	425,000					425,000
C22002	Floodplain Mapping	102,000					102,000
H22086	Floyds Fork & Ohio River Condition Assessment	597,128					597,128
D20351_FY23	Floyds Fork Interceptor (FY23)	2,550,000					2,550,000
D20351_FY24	Floyds Fork Interceptor (FY24)		25,219,085	32,340,915			57,560,000
H17057	Floydsburg Road I&I Investigation and Rehabilitation			57,400			57,400
23BD-016	Fox Harbor #1 PS Elimination		403,500				403,500
23BD-017	Fox Harbor #2 PS Elimination		462,200				462,200
J17037	FY21/22 Aerial Imagery & Map Updates	316,391					316,391
Y22148	FY23 BC CMOM Infrastructure Rehab	500,000					500,000
Y23005	FY23 BC PS RR	100,000					100,000
Y23006	FY23 BC WQTC RR	500,000					500,000
H20043	FY23 CIP Task Assistance	1,700,000					1,700,000

Budget ID	Project Name	FY23	FY24	FY25	FY26	FY27	5 Year CIP
		195,306,148	219,094,943	205,099,568	226,195,131	202,383,150	1,048,078,941
E18470	FY23 CMOM Collection System PS RR	425,000					425,000
H20064	FY23 CMOM Gravity Line Cleaning & Inspection	2,550,000					2,550,000
H20058	FY23 CMOM I&C Implementation	170,000					170,000
E18094	FY23 CMOM Infrastructure Rehabilitation Program	1,700,000					1,700,000
H19018	FY23 CMOM Program Management Assistance	127,500					127,500
H19019	FY23 CMOM SCAP, AAM, FOG	127,500					127,500
Y23008	FY23 Collection System Modeling	63,750					63,750
A19122	FY23 Construction Inspection	1,000,000					1,000,000
H19009	FY23 Development Infrastructure Support	72,250					72,250
BD-011	FY23 DRI	2,380,000					2,380,000
BD23-XXX	FY23 DRI Program Hydraulic Analysis Support	25,500					25,500
H19003	FY23 Env'L Data Collection – MS4 & IOAP	340,000					340,000
F21096	FY23 Flood Structures RR	1,020,000					1,020,000
F19126	FY23 FPS Equipment RR	3,700,000					3,700,000
23BD-062	FY23 Green Infrastructure	134,462					134,462
H19035	FY23 Information Governance Architecture	255,000					255,000
N23028	FY23 IPS Support	221,000					221,000
N20077	FY23 IT Infrastructure Initiatives	735,250					735,250
J20071	FY23 LOJIC Hw Upgrades & Replacements	85,000					85,000
J20025	FY23 LOJIC Survey Control Maintenance	25,500					25,500
Y22143	FY23 LTMN	63,750					63,750
G23029	FY23 Management Reserve	5,000,000					5,000,000
D19130	FY23 MFWQTC Equipment RR	850,000					850,000
G19037	FY23 Miscellaneous Facility Repairs	170,000					170,000
H19023	FY23 Modeling	1,275,000					1,275,000
H19004	FY23 MS4 Program	510,000					510,000
G19062	FY23 MSD Owned Building Roof Replacements	340,000					340,000
H20050	FY23 NMC CSO Inspection Cameras	85,000					85,000
H19132	FY23 NMC RTC	425,000					425,000
H19005	FY23 NMC Support	85,000					85,000
W23003	FY23 OC CMOM Linear Infrastructure Rehab	85,000					85,000
W23004	FY23 OC CMOM Vertical Infrastructure Rehab	255,000					255,000
BD-012	FY23 OC Modeling	85,000					85,000
G19033	FY23 Operations Renewal & Replacement	850,000					850,000
H19002	FY23 Plumbing Modification Program	212,500					212,500
D21097	FY23 Regional WQTC Equipment RR	850,000					850,000
G23001	FY23 Renewal & Replacement	1,700,000					1,700,000
Y23009	FY23 SCADA System and Rain Gauge	297,500					297,500
G23030	FY23 Security Upgrades	212,500					212,500
BD-013	FY23 Stormwater Asset Inventory & Analysis	136,000					136,000
Y23010	FY23 System Flow Monitoring	85,000					85,000
Y23011	FY23 System Planning and Reg. Support	127,500					127,500
H23032	FY23 Urban Reforestation	240,000					240,000
H19007	FY23 USGS Stream Monitoring	690,400					690,400
K19012	FY23 Vehicles & Equipment	16,800,000					16,800,000
BD-336	FY23 WQTC Engineering Support	85,000					85,000
23BDY-033	FY24 BC CMOM Infrastructure Rehab		500,000				500,000
23BDY-029	FY24 BC PS RR		100,000				100,000
H20044	FY24 CIP Task Assistance		2,000,000				2,000,000

Budget ID	Project Name	FY23	FY24	FY25	FY26	FY27	5 Year CIP
		195,306,148	219,094,943	205,099,568	226,195,131	202,383,150	1,048,078,941
H20060	FY24 CMOM Collection System PS RR		500,000				500,000
H20065	FY24 CMOM Gravity Line Cleaning & Inspection		1,500,000				1,500,000
H20059	FY24 CMOM I&C Implementation		292,500				292,500
H20053	FY24 CMOM Infrastructure Rehabilitation Program		2,000,000				2,000,000
H20115	FY24 CMOM Program Management Assistance		150,000				150,000
H20113	FY24 CMOM SCAP, AAM, FOG		150,000				150,000
23BDY-013	FY24 Collection System Modeling		25,000				25,000
A20081	FY24 Construction Inspection		500,000				500,000
H20097	FY24 Development Infrastructure Support		85,000				85,000
BD-163	FY24 DRI		2,800,000				2,800,000
H20082	FY24 Env’L Data Collection – MS4 & IOAP		875,000				875,000
F21098	FY24 Flood Structures RR		2,000,000				2,000,000
F20102	FY24 FPS Equipment RR		1,000,000				1,000,000
23BD-009	FY24 IPS Support		260,000				260,000
N20132	FY24 IT Improvements		200,000				200,000
N20074	FY24 IT Infrastructure Initiatives		307,500				307,500
J20072	FY24 LOJIC Hw Upgrades & Replacements		100,000				100,000
J20026	FY24 LOJIC Survey Control Maintenance		30,000				30,000
23BDY-001	FY24 LTMN		75,000				75,000
D21021	FY24 MFWQTC Equipment RR		2,500,000				2,500,000
D20143	FY24 MFWQTC Other Facilities Repairs		500,000				500,000
G20131	FY24 Miscellaneous Facility Repairs		200,000				200,000
H20038	FY24 Modeling		1,200,000				1,200,000
H20121	FY24 MS4 Basin Retrofit		85,000				85,000
H20083	FY24 MS4 Program		600,000				600,000
G20130	FY24 MSD Owned Building Roof Replacements		400,000				400,000
H20051	FY24 NMC CSO Inspection Cameras		100,000				100,000
H20039	FY24 NMC RTC		300,000				300,000
H20027	FY24 NMC Support		100,000				100,000
23BDW-012	FY24 OC CMOM Linear Infrastructure Rehab		100,000				100,000
23BDW-001	FY24 OC CMOM Vertical Infrastructure Rehab		300,000				300,000
BD-014	FY24 OC Modeling		100,000				100,000
E20112	FY24 Operations Renewal & Replacement		2,300,000				2,300,000
H20080	FY24 Plumbing Modification Program		500,000				500,000
E21022	FY24 PS Replacement, Overhaul or Elimination		1,000,000				1,000,000
D21099	FY24 Regional WQTC Equipment RR		1,500,000				1,500,000
G24001	FY24 Renewal & Replacement		2,000,000				2,000,000
23BDY-004	FY24 Sewer System Evaluation Surveys		500,000				500,000
23BDY-025	FY24 System Flow Monitoring		20,000				20,000
23BDY-014	FY24 System Planning and Reg. Support		150,000				150,000
H20084	FY24 USGS Stream Monitoring		410,000				410,000
K20079	FY24 Vehicles & Equipment		4,000,000				4,000,000
BD-337	FY24 WQTC Engineering Support		100,000				100,000
J18107	FY24/25 Aerial Imagery & Map Updates		189,034	310,966			500,000
23BD-032	FY24-FY28 Urban Reforestation		76,101	216,596	357,091	411,278	1,061,067
23BDY-034	FY25 BC CMOM Infrastructure Rehab			500,000			500,000
23BDY-030	FY25 BC PS RR			100,000			100,000
H21025	FY25 CIP Task Assistance			1,500,000			1,500,000
E21026	FY25 CMOM Collection System PS RR			375,000			375,000

		195,306,148	219,094,943	205,099,568	226,195,131	202,383,150	1,048,078,941
Budget ID	Project Name	FY23	FY24	FY25	FY26	FY27	5 Year CIP
E21027	FY25 CMOM Gravity Line Cleaning & Inspection			1,125,000			1,125,000
E21028	FY25 CMOM I&C Implementation			219,375			219,375
E21029	FY25 CMOM Infrastructure Rehabilitation Program			1,500,000			1,500,000
E21030	FY25 CMOM Program Management Assistance			112,500			112,500
E21031	FY25 CMOM SCAP, AAM, FOG			112,500			112,500
23BDY-015	FY25 Collection Sys Gravity Sewer Rehab.			500,000			500,000
23BDY-016	FY25 Collection System Modeling			25,000			25,000
A21032	FY25 Construction Inspections			375,000			375,000
H20134	FY25 Development Infrastructure Support			63,750			63,750
C21035	FY25 DRI			2,100,000			2,100,000
H21036	FY25 Env’L Data Collection – MS4 & IOAP			656,250			656,250
F21037	FY25 Flood Structures RR			1,500,000			1,500,000
F21038	FY25 FPS Equipment RR			750,000			750,000
23BD-011	FY25 IPS Support			195,000			195,000
N21023	FY25 IT Improvements			150,000			150,000
N20073	FY25 IT Infrastructure Initiatives			230,625			230,625
J21039	FY25 LOJIC HW Upgrades & Replacements			75,000			75,000
J21040	FY25 LOJIC Survey Control Maintenance			30,000			30,000
23BDY-002	FY25 LTMN			75,000			75,000
D21041	FY25 MFWQTC Equipment RR			1,875,000			1,875,000
D21042	FY25 MFWQTC Other Facilities Repairs			375,000			375,000
G21043	FY25 Miscellaneous Facility Repairs			150,000			150,000
H21044	FY25 Modeling			900,000			900,000
H21045	FY25 MS4 Program			450,000			450,000
G21046	FY25 MSD Owned Building Roof Replacements			300,000			300,000
E21048	FY25 NMC CSO Inspection Cameras			75,000			75,000
E21049	FY25 NMC RTC			225,000			225,000
E21047	FY25 NMC Support			75,000			75,000
23BDW-013	FY25 OC CMOM Linear Infrastructure Rehab			75,000			75,000
23BDW-003	FY25 OC CMOM Vertical Infrastructure Rehab			225,000			225,000
23BDW-004	FY25 OC Modeling			75,000			75,000
E21050	FY25 Operations Renewal & Replacement			1,725,000			1,725,000
H21051	FY25 Plumbing Modification Program			375,000			375,000
E21052	FY25 PS Replacement, Overhaul or Elimination			750,000			750,000
D21109	FY25 Regional WQTC Equipment RR			1,125,000			1,125,000
G25001	FY25 Renewal & Replacement			1,500,000			1,500,000
23BDY-026	FY25 System Flow Monitoring			20,000			20,000
23BDY-017	FY25 System Planning and Reg. Support			100,000			100,000
H21054	FY25 USGS Stream Monitoring			311,250			311,250
K21055	FY25 Vehicles & Equipment			3,000,000			3,000,000
BD-338	FY25 WQTC Engineering Support			75,000			75,000
23BDY-035	FY26 BC CMOM Infrastructure Rehab				500,000		500,000
23BDY-031	FY26 BC PS RR				100,000		100,000
BD-165	FY26 CIP Task Assistance				1,500,000		1,500,000
BD-166	FY26 CMOM Collection System PS RR				450,000		450,000
BD-167	FY26 CMOM Gravity Line Cleaning & Inspection				1,125,000		1,125,000
BD-168	FY26 CMOM I&C Implementation				219,375		219,375
BD-169	FY26 CMOM Infrastructure Rehabilitation Program				1,500,000		1,500,000
BD-170	FY26 CMOM Program Management Assistance				112,500		112,500

Budget ID	Project Name	FY23	FY24	FY25	FY26	FY27	5 Year CIP
		195,306,148	219,094,943	205,099,568	226,195,131	202,383,150	1,048,078,941
BD-171	FY26 CMOM SCAP, AAM, FOG				112,500		112,500
23BDY-018	FY26 Collection Sys Gravity Sewer Rehab.				500,000		500,000
23BDY-019	FY26 Collection System Modeling				25,000		25,000
BD-172	FY26 Construction Inspection				375,000		375,000
BD-174	FY26 Development Infrastructure Support				63,750		63,750
BD-175	FY26 DRI				2,100,000		2,100,000
BD-176	FY26 Env'l Data Collection – MS4 & IOAP				656,250		656,250
BD-177	FY26 Facility Security Upgrades				375,000		375,000
BD-178	FY26 Flood Structures RR				1,500,000		1,500,000
BD-179	FY26 FPS Equipment RR				750,000		750,000
23BD-022	FY26 IPS Support				195,000		195,000
BD-180	FY26 IT Infrastructure Initiatives				230,625		230,625
BD-181	FY26 LOJIC Support				112,500		112,500
23BDY-003	FY26 LTMN				75,000		75,000
BD-182	FY26 MFWQTC Equipment RR				1,875,000		1,875,000
BD-183	FY26 MFWQTC Other Facilities Repairs				375,000		375,000
BD-184	FY26 Miscellaneous Facility Repairs				150,000		150,000
BD-185	FY26 Modeling				900,000		900,000
BD-186	FY26 MS4 Program				450,000		450,000
BD-187	FY26 MSD Owned Building Roof Replacements				300,000		300,000
BD-188	FY26 NMC CSO Inspection Cameras				75,000		75,000
BD-189	FY26 NMC RTC				225,000		225,000
BD-190	FY26 NMC Support				75,000		75,000
23BDW-014	FY26 OC CMOM Linear Infrastructure Rehab				75,000		75,000
23BDW-005	FY26 OC CMOM Vertical Infrastructure Rehab				225,000		225,000
23BDW-006	FY26 OC Modeling				75,000		75,000
23BDW-017	FY26 OC WQTC Eliminations				1,800,000		1,800,000
BD-191	FY26 Operations Renewal & Replacement				1,725,000		1,725,000
BD-192	FY26 Plumbing Modification Program				375,000		375,000
BD-193	FY26 PS Replacement, Overhaul or Elimination				750,000		750,000
BD-194	FY26 Regional WQTC Equipment RR				1,125,000		1,125,000
BD-195	FY26 Renewal & Replacement				1,500,000		1,500,000
23BDY-027	FY26 System Flow Monitoring				20,000		20,000
23BDY-020	FY26 System Planning and Reg. Support				100,000		100,000
BD-196	FY26 USGS Stream Monitoring				311,250		311,250
BD-197	FY26 Vehicles & Equipment				3,000,000		3,000,000
BD-339	FY26 WQTC Engineering Support				75,000		75,000
J20070	FY26/27 Aerial Imagery & Map Updates				141,775	233,225	375,000
23BDY-036	FY27 BC CMOM Infrastructure Rehab					350,000	350,000
BD-017	FY27 CIP Task Assistance					1,400,000	1,400,000
BD-018	FY27 CMOM Collection System PS RR					420,000	420,000
BD-019	FY27 CMOM Gravity Line Cleaning & Inspection					1,050,000	1,050,000
BD-020	FY27 CMOM I&C Implementation					204,750	204,750
BD-021	FY27 CMOM Infrastructure Rehabilitation Program					1,400,000	1,400,000
BD-022	FY27 CMOM Program Management Assistance					105,000	105,000
BD-023	FY27 CMOM SCAP, AAM, FOG					105,000	105,000
23BDY-021	FY27 Collection Sys Gravity Sewer Rehab.					70,000	70,000
23BDY-022	FY27 Collection System Modeling					35,000	35,000
BD-024	FY27 Construction Inspection					350,000	350,000

		195,306,148	219,094,943	205,099,568	226,195,131	202,383,150	1,048,078,941
Budget ID	**Project Name**	**FY23**	**FY24**	**FY25**	**FY26**	**FY27**	**5 Year CIP**
BD-026	FY27 Development Infrastructure Support					59,500	59,500
BD-027	FY27 DRI					1,960,000	1,960,000
BD-028	FY27 Env'l Data Collection – MS4 & IOAP					612,500	612,500
BD-029	FY27 Flood Structures RR					1,400,000	1,400,000
BD-030	FY27 FPS Equipment RR					700,000	700,000
23BD-023	FY27 IPS Support					182,000	182,000
BD-031	FY27 IT Infrastructure Initiatives					215,250	215,250
BD-032	FY27 LOJIC Support					105,000	105,000
BD-033	FY27 MFWQTC Equipment RR					1,750,000	1,750,000
BD-034	FY27 MFWQTC Other Facilities Repairs					350,000	350,000
BD-035	FY27 Miscellaneous Facility Repairs					140,000	140,000
BD-036	FY27 Modeling					840,000	840,000
BD-037	FY27 MS4 Program					420,000	420,000
BD-038	FY27 MSD Owned Building Roof Replacements					280,000	280,000
BD-039	FY27 NMC CSO Inspection Cameras					70,000	70,000
BD-040	FY27 NMC RTC					210,000	210,000
BD-041	FY27 NMC Support					70,000	70,000
23BDW-015	FY27 OC CMOM Linear Infrastructure Rehab					49,000	49,000
23BDW-007	FY27 OC CMOM Vertical Infrastructure Rehab					147,000	147,000
23BDW-008	FY27 OC Modeling					49,000	49,000
BD-042	FY27 Operations Renewal & Replacement					1,610,000	1,610,000
BD-043	FY27 Plumbing Modification Program					350,000	350,000
BD-044	FY27 PS Replacement, Overhaul or Elimination					700,000	700,000
BD-045	FY27 Regional WQTC Equipment RR					1,050,000	1,050,000
BD-046	FY27 Renewal & Replacement					1,400,000	1,400,000
BD-047	FY27 USGS Stream Monitoring					290,500	290,500
BD-048	FY27 Vehicles & Equipment					2,100,000	2,100,000
F15010	Gate 102 Replacement	144,196					144,196
N23034	GIS Equipment Replacement	51,000					51,000
H09242	Gunpowder Pump Station	474,271	242,034				716,305
23BD-036	HANA Phase 2 Enhancements		500,000				500,000
A20280	Harrods Creek Force Main Repair	24,058					24,058
H14126	HCWQTC Expansion	834,872					834,872
A18077	HCWQTC Service Area Back-Up Power For Critical Pump Stations					1,785,300	1,785,300
Y22147	Hillview #2 WWTP Elimination					600,000	600,000
Y22155	Hillview PS#2 Elimination (Construction)		100,000				100,000
Y22124 (FY23)	Hunters Hollow PS & FM '23	380,499	3,025,501				3,406,000
H19247 (FY23)	I-64 and Grinstead CSO Interceptor '23	1,230,513					1,230,513
H18503 (FY23)	I-64 and Grinstead Infrastructure Rehabilitation '23	4,300,000					4,300,000
H18503 (FY24)	I-64 and Grinstead Infrastructure Rehabilitation '24		6,143,091				6,143,091
H09164 (FY23)	Idlewood Inline Storage '23	3,651,264					3,651,264
H09171	Kavanaugh Road Pump Station Improvements	600,486	3,593,546				4,194,032
D20008	Kirby Lane Pump Station Elimination	62,677	720,362				783,039
A14135	KTC Greenwood Rd Assmt			212,700			212,700
E15035 (FY23)	Lake Forest Pump Station Eliminations '23	1,458,227	472,939				1,931,166
A20244 (FY23)	Large Diameter Sewer Rehabilitation - Stage 1 and 2 '23	1,234,770					1,234,770
A20006	Lea Ann Way Pump Station Elimination			1,472,316	5,372,878	6,334,106	13,179,300
H09196 (FY23)	Leven Pump Station Elimination '23	846,147	606,533				1,452,680
H09163	Little Cedar Creek Interceptor Improvements	575,110	1,394,798	296,055			2,265,962

		195,306,148	219,094,943	205,099,568	226,195,131	202,383,150	1,048,078,941
Budget ID	**Project Name**	**FY23**	**FY24**	**FY25**	**FY26**	**FY27**	**5 Year CIP**
H23035	Logan St. Basin and Main Office Rain Garden Rehab.	127,500					127,500
C22028	Lower Floyds Fork Facilities Plan	201,019					201,019
23BD-034	Lower Floyds Fork Zone H Collection System - Phase 1					1,518,713	1,518,713
23BD-060	Lower Mill Creek FPS - Electrical Improvements		295,386	978,736	1,025,878		2,300,000
G23036	Main Office HVAC Chillers	170,000					170,000
BD-149	Manning Rd/Cardinal Drive Sewer Rehab					3,280,399	3,280,399
BD-150	Manslick Ave Sewer Rehab					1,223,873	1,223,873
F23037	Maple Street Land Use project	182,143	285,714				467,857
Y22151	Material Handling PS Elimination			500,000	1,000,000		1,500,000
F22127	Melco Basin Improvement	1,314,286					1,314,286
H09188	Mellwood System Improvements and Pump Station Elimination - Winton And Mockingbird Valley Eliminations				229,368	1,236,120	1,465,488
H23038	MF Network Encasement	51,000					51,000
D20007	MF Peabody Gate Structure	42,500					42,500
G21225 (FY23)	MFWQTC & Central Maintenance Facility Guard Building Design - E	5,100,000					5,100,000
D18161	MFWQTC Chlorine Contact Tanks Structural Repairs	238,000					238,000
D22186	MFWQTC Computer Room Upgrades	445,380	614,738				1,060,119
G20028	MFWQTC Elevator Repairs	107,754					107,754
D18130	MFWQTC FEPS Loadcenter and MCC Replacement	136,064					136,064
D18162	MFWQTC Final Effluent Pump Station (FEPS) Structural Repairs	51,000					51,000
H22014 (FY23)	MFWQTC Groundwater Dewatering System Automation '23	1,028,726	302,567				1,331,293
D18159	MFWQTC HPO Tanks (Battery A, B, and C) Structural Repairs		2,494,400				2,494,400
D21247 (FY23)	MFWQTC HVAC Upgrades '23	1,447,185	1,702,571	283,762			3,433,518
D20285	MFWQTC LG Dryer Replacements	7,034,294					7,034,294
D22122 (FY23)	MFWQTC MEB Boiler Replacement '23	847,324	498,426				1,345,749
D21233 (FY23)	MFWQTC MEB Building Roof Replacement '23	972,443					972,443
F14181	MFWQTC Process Water Pump & VFD		96,800				96,800
D18160	MFWQTC Secondary Clarifiers Structural Repairs	212,500					212,500
D18160-FY24	MFWQTC Secondary Clarifiers Structural Repairs '24		1,767,857	1,944,643	7,131,356	8,557,627	19,401,483
D17042-FY23	MFWQTC Sedimentation Basin RR (FY23)	15,000,000					15,000,000
D17042-FY24	MFWQTC Sedimentation Basin RR (FY24)		18,025,081	707,059			18,732,140
23BD-063	MFWQTC Sludge Disposal	4,500,000					4,500,000
D19045 (FY23)	MFWQTC Sodium Hypochlorite Building Relocation '23	688,287					688,287
D22100_F23	MFWQTC Thermal Hydrolysis (23)	8,500,000					8,500,000
D22100_F24	MFWQTC Thermal Hydrolysis (24-27)		17,252,857	32,031,380	80,303,390	56,212,373	185,800,000
H22020 (FY23)	MFWTC Admin. Bldg. Renovation and Computer Room Expansion	8,500					8,500
H11306	Middle Fork Bg Crk SSR Ph 1			768,900			768,900
H23039	Middletown Station PS Elimination	125,683	752,138				877,821
23BDW-009	Mockingbird Valley WWTP Elimination		1,032,500				1,032,500
E21062	Modesto Pump Station Elimination	266,730					266,730
H09182 (FY23)	Monticello Pump Station Elimination '23	351,900					351,900
D19048	MSD Radio Repeaters	28,438					28,438
D20011	Northern Ditch Pump Station Replacement		1,292,352	2,172,349	6,254,937	8,781,619	18,501,256
C23040	Oak Valley Drainage Remedies	85,000					85,000
W21006 (FY23)	OC Ash Avenue Interceptor '23	2,975,000					2,975,000
W21006 (FY24)	OC Ash Avenue Interceptor '24		2,523,561				2,523,561
BD-156	OC Forcemain to HCWQTC		302,097	1,275,503			1,577,600
D21063	Odor Management Plan	241,131	283,683	283,683			808,498
C22029	Ohio River Area Facilities Plan	243,145					243,145
W21126	Ohio River Service Area Lift Station Rehabilitation	790,713	697,688				1,488,400

		195,306,148	219,094,943	205,099,568	226,195,131	202,383,150	1,048,078,941
Budget ID	**Project Name**	**FY23**	**FY24**	**FY25**	**FY26**	**FY27**	**5 Year CIP**
H23041	Olde Copper Ct. PS Elimination	78,203	467,997				546,200
F18515 (FY23)	Paddys Run FPS Capacity Upgrade '23	7,640,811	9,711,857	38,600,029	43,221,453	20,253,531	119,427,682
H23042	Padmount Transformer for Battery C	850,000					850,000
23BD-018	Park Ridge Woods PS Elimination		361,329	1,000,871			1,362,200
H23043	Parkwood PS Elimination	76,806	459,640				536,446
C21065	Pencook Drainage Improvements	680,000					680,000
E21066	Pirogue Pump Station Elimination	510,184	570,996				1,081,180
N21105	PMIS System Implementation	318,750	1,125,000				1,443,750
X_0095/X_0319	Pond Creek FPS - Electrical Service Improvements					3,332,057	3,332,057
H23044	Pond Creek FPS Electrical Improvements or Pond Creek FPS Breake	279,296	1,671,417				1,950,713
X_0287	Private Property I/I Program		523,900	523,900			1,047,800
H16075	Prospect Phase II Rehab	1,484,511					1,484,511
C22054	PSC Program Support	65,189					65,189
H10043	Raintree & Marian Ct 2 - Pipe Upgrades		245,838	814,564	853,798		1,914,200
BD-160	Reality Trail Interceptor		1,440,589	1,159,911			2,600,500
H22017	Regional Biosolids Management Study	1,076,364					1,076,364
23BD-044	Regional WQTC Controls Upgrades		516,200				516,200
C22052	Rehabilitation Project Management Support	238,781					238,781
23BD-064	Riverport FPS - Electrical Improvements			295,386	978,736	1,025,878	2,300,000
X_0091	Riverport FPS - Generator Improvements					668,070	668,070
E21070 (FY23)	Rosa Terrace PS Elimination '23	3,589,000					3,589,000
H21019 (FY23)	Rudd Ave Sewer Infrastructure Rehabilitation '23	8,183,282					8,183,282
E21091 (FY23)	Sanders Lane PS Rehabilitation '23	433,415					433,415
N20133-FY23	SAP Upgrade To HANA (FY23)	552,500					552,500
N20133-FY24	SAP Upgrade To HANA (FY24)		850,000				850,000
E21068	SCADA Master Plan		774,300				774,300
H22022 (FY23)	SGC Gate Replacements '23	5,911,325					5,911,325
D20012 (FY23)	SGC RTC Enhancements '23	2,175,364	5,879,099				8,054,462
A18485	Shady Villa Pump Station Elimination					369,313	369,313
N23045	Sharepoint Upgrade	63,750					63,750
23BD-059	Shawnee Park FPS - Electrical Improvements	474,803	2,841,409				3,316,211
23BD-058	Sluice Gate Repair Program		928,571	1,723,971	4,322,034	3,025,424	10,000,000
H22038 (FY23)	Sneads Branch Pump Replacement '23	960,399					960,399
E21090 (FY23)	Sonne Avenue PS Elimination '23	2,566,055	345,845				2,911,900
E22116	South Shelby Street Sanitary Sewer Improvements	75,056	187,750	8,321			271,128
Y22154	South System Improvements					1,391,471	1,391,471
H23046	Southfork Dry Bed Access	255,000					255,000
F20107	Starkey FPS Electrical Service Improvements	196,906	983,431	784,915			1,965,252
C22088	Stormwater Data Mgmt & Asset Knowledge Program	272,000					272,000
BD-161	Stormwater Implementation					3,232,891	3,232,891
H17030	Stormwater Master Plan			2,158,650	2,158,650		4,317,300
New	Stormwater Pilot Monitoring	175,000					175,000
G23047	Studio Office Build	34,000					34,000
D19286 (FY23)	SWPS Gas Monitoring and SP1 Odor Control '23	893,917	1,503,418				2,397,335
F21153	SWPS Influent Gate Seal Replacement	83,091					83,091
H23048	SWPS Screen Evaluation (and Replacement)	475,803	1,440,232				1,916,035
G20018 (FY23)	SWPS Site Security '23	975,372					975,372
H09186	Upper Middle Fork #2 PS Replacements		392,092	2,296,000	3,171,561	9,261,829	15,121,481
H18310	Upper Middle Fork Forcemain		312,181	1,828,061	2,525,178	7,374,214	12,039,634

		195,306,148	219,094,943	205,099,568	226,195,131	202,383,150	1,048,078,941
Budget ID	**Project Name**	**FY23**	**FY24**	**FY25**	**FY26**	**FY27**	**5 Year CIP**
H18311	Upper Middle Fork Relief Interceptor		451,610	2,644,522	3,652,989	10,667,731	17,416,851
F20110	Upper Mill Creek FPS Transformer Replacement	108,640	372,714	249,475			730,828
23BD-056	Water Stop Repair	297,932	449,492				747,424
E21071 (FY23)	Wathen Lane PS Rehabilitation '23	681,085					681,085
H22033 (FY23)	West Louisville Community Odor Control Improvements	125,357	232,736	583,475	408,432		1,350,000
H20147 (FY23)	Western Outfall Infrastructure Rehabilitation '23	425,000					425,000
H20147 (FY24)	Western Outfall Infrastructure Rehabilitation '24		7,065,229	13,530,054			20,595,283
H23049	WQTC Loadcenter Rehab	850,000					850,000
H23050	WQTC Regional Lab Upgrades	595,000					595,000