

The Semiannual Debt Report includes the following:

1. Key Takeaways
2. Look Ahead – Five Year Capital Financing Plan
3. Existing Debt
4. Debt Service Coverage
5. Refinancing

Pursuant to leases that became effective on January 1, 2016, the Great Lakes Water Authority (GLWA) assumed possession and control of the regional assets of both the water supply and sewage disposal systems owned by the City of Detroit (City), which were previously operated by the Detroit Water and Sewerage Department (DWSD). GLWA assumed certain liabilities including State Revolving Fund loans and 100% of the revenue bond debt issued by DWSD prior to January 1, 2016.

The bonds are repaid by the revenues of the water and sewage disposal systems including the DWSD retail system (local system) revenues which are the exclusive property of GLWA in accordance with Section 5.7 of each lease agreement. The DWSD is GLWA's agent for purposes of billing and collection of the retail system revenues for both the water and sewer system, as set forth in a water and sewer services agreement between the City and GLWA. All revenue receipts are deposited into a trust and administered in compliance with the Master Bond Ordinance, applicable to each system (referred to herein collectively as the "MBO").

The leases also provide that GLWA will finance local system improvements of DWSD. GLWA is the obligor of 100% of the debt payable which is recorded in GLWA's books. An "obligation receivable" is recorded by GLWA which represents the amount related to the DWSD local system improvements. Accordingly, DWSD records a corresponding "obligation payable" for a like amount.

GLWA maintains detailed records of all debt issuances and how the responsibility for payment of debt is allocated between the regional system and local system, as well as between the water and sewer systems. GLWA and DWSD regularly reconcile interrelated accounts between the entities.

The lease agreements, water and sewer services agreement, and MBO noted above are available on GLWA's website at [www.glwater.org](http://www.glwater.org). The above explanation is a synopsis of key points and is not intended to fully represent the agreements or any sub-sections thereof.

## Key Takeaways

- ✓ The purpose of this report is to provide a resource for stakeholders and to support management decisions as capital financing needs evolve.
- ✓ GLWA continues to enhance transparency by including the Debt Summary Report in the Audit Committee Binder semiannually.
- ✓ GLWA has nineteen active State Revolving Fund (SRF) loans, eleven for water and eight for sewer. On behalf of DWSD, GLWA is administering four projects for water and two for sewer.
- ✓ GLWA seeks to issue revenue bond and sell revenue refunding bond for water and sewer by the end of calendar year 2023 dependent upon market conditions.
- ✓ Other key items of interest include the following balances as of September 30, 2023.

As of September 30, 2023 (\$ Millions)		
	Water	Sewer
FY 2025 Approved SRF Projects - <b>Table 5</b>	\$34.1	\$270.9
DWSD Obligation Receivable - <b>Table 6</b>	\$547.4	\$358.7
GLWA Outstanding Debt - <b>Table 8</b>	\$2,460.8	\$2,844.8

## Look Ahead - Five Year Capital Financing Plan

The following tables summarize the projected Capital Improvement Program (CIP) funding to be provided by proceeds received from the issuance of new revenue bonds and draws on committed SRF loans. *The financing plan is dynamic and changes with the pace of capital spending and alignment with refunding opportunities.*

GLWA closed on revenue bond transactions in September 2022 to support capital needs in accordance with the approved capital improvement plan. These transactions provided \$417 million in additional funding with \$207 million supporting the water system and \$210 million supporting the sewer system.

Looking ahead, GLWA is working on revenue bond transactions for both the water supply system and sewage disposal system. These transactions are expected to be completed in 2023 but are ultimately dependent on market conditions. GLWA has received prior authorization to issue water supply system bonds in a principal amount not to exceed \$925,000,000, and sewage disposal system bonds in a principal amount not to exceed \$1,600,000,000. Within these authorized amounts, the majority is expected to be issued to refinance existing obligations of GLWA and provide debt service savings. A portion of the authorized amounts are expected to be issued to provide additional capital, in accordance with the approved capital improvement plan. Ultimately, the size of the transactions will be based on market conditions at the time of sale.

**Table 1 - GLWA Projected Financing FY 2024 – FY 2028** provides a breakdown of projected financing based on the FY 2024 and FY 2025 Biennial Budget adopted by the GLWA Board of Directors and the related Five-Year Financial Plan.

Projected Funding Needs for Regional System					
	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028
<b>Water</b>					
Revenue Bonds	\$ -	\$ 353,000,000	\$ -	\$ 318,000,000	\$ -
SRF loan draws	\$ 97,102,000	\$ 44,230,000	\$ 20,000,000	\$ 4,000,000	\$ -
Total projected funding Water	\$ 97,102,000	\$ 397,230,000	\$ 20,000,000	\$ 322,000,000	\$ -
<b>Sewer</b>					
Revenue Bonds	\$ -	\$ 298,000,000	\$ -	\$ 327,000,000	\$ -
SRF loan draws	\$ 47,253,000	\$ 31,104,000	\$ 15,004,000	\$ -	\$ -
Total projected funding Sewer	\$ 47,253,000	\$ 329,104,000	\$ 15,004,000	\$ 327,000,000	\$ -

**Table 2 - DWSD Projected Financing FY 2024 – FY 2028** provides a breakdown of projected financing based on the current, local system CIP presented to the DWSD Capital Improvement Plan Committee at its April 5, 2023 meeting. It is important to note the amounts represented in revenue bonds reflect the funding needs by year and not a revenue bond transaction for each year. GLWA and DWSD coordinate the timing for additional revenue bonds to ensure efficiency in the debt management process.

Projected Funding Needs for Local System					
	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028
<b>Water</b>					
Revenue Bonds	\$ 9,460,000	\$ 21,000,000	\$ 22,000,000	\$ 19,500,000	\$ 12,000,000
SRF loan draws	\$ 26,500,000	\$ 49,770,000	\$ 14,720,000	\$ 5,000,000	\$ -
Total projected funding Water	\$ 35,960,000	\$ 70,770,000	\$ 36,720,000	\$ 24,500,000	\$ 12,000,000
<b>Sewer</b>					
Revenue Bonds	\$ 6,219,000	\$ 25,500,000	\$ 39,000,000	\$ 17,000,000	\$ 7,000,000
SRF loans draws	\$ 3,195,000	\$ 4,146,000	\$ 1,204,000	\$ -	\$ -
Total projected funding Sewer	\$ 9,414,000	\$ 29,646,000	\$ 40,204,000	\$ 17,000,000	\$ 7,000,000

## Existing Debt

**Current Debt Ratings:** Bond ratings are a key measure of an organization's financial strength. Ratings are established by independent agencies that conduct detailed reviews of an organization's operational and financial performance to assist those seeking to invest in an organization through the purchase of bonds. GLWA actively monitors its debt ratings and continually seeks to make operational and financial improvements to improve its bond ratings. Achieving higher ratings will allow GLWA to finance its capital needs at lower interest rates.

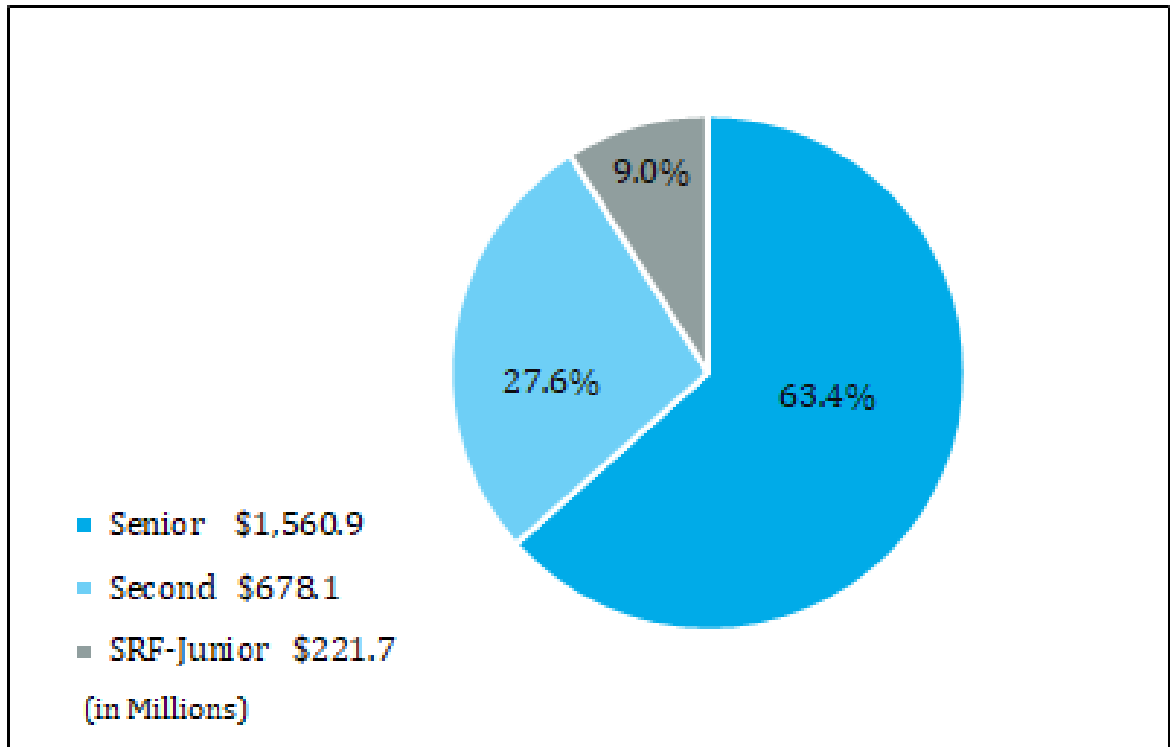
The last round of rating agency reviews was in August 2022. S&P Global Ratings affirmed the Authority's senior lien water and sewage disposal systems rating of AA- and its second lien water system rating of A+. The outlook remained stable. Moody's Investors Service affirmed the Authority's water system and sewer disposal system senior lien ratings of A1, and its second lien ratings of A2. The outlook was moved to positive from stable for both. Fitch affirmed the Authority's ratings for its water system and sewer disposal system senior lien bonds at an A+, and its second lien bonds at an A. The outlook was moved to positive from stable for the sewage disposal system. The water system outlook remained stable.

**Table 3 – Debt Ratings by System** provides a summary of the debt ratings.

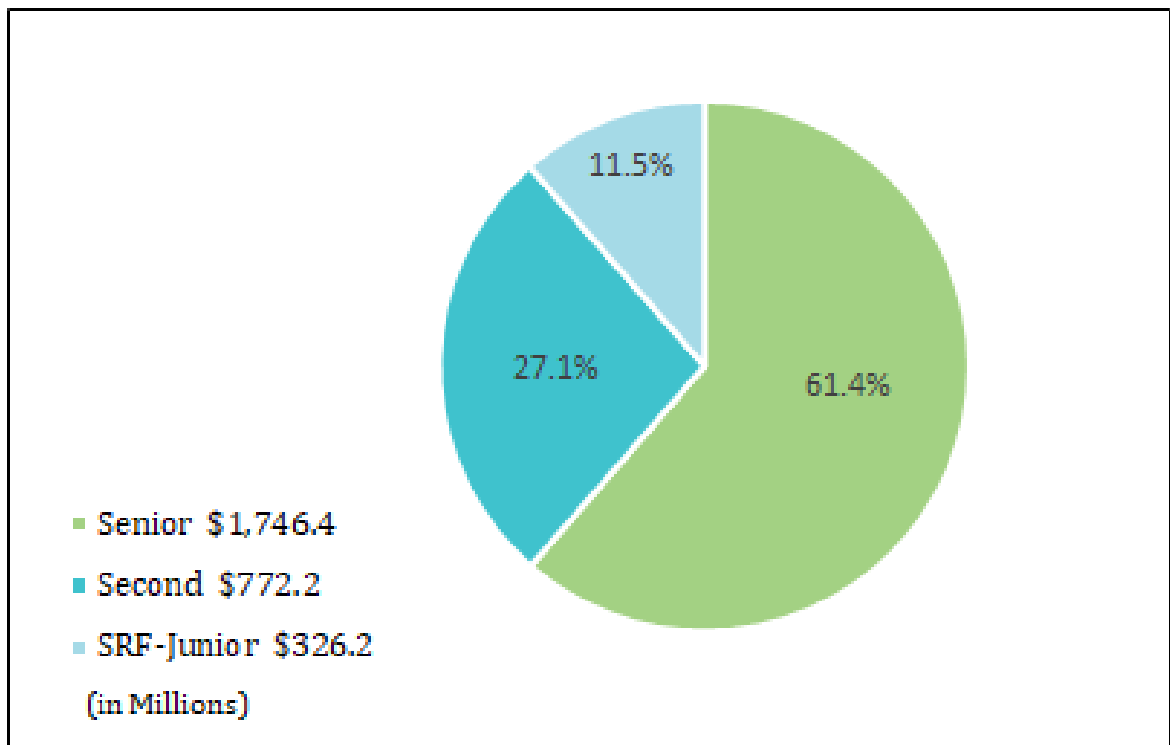
Current Debt Ratings			
	S&P Global Ratings	Moody's Investors Service	Fitch Ratings
<b>Water Supply System Revenue Bonds</b>			
Senior lien	AA-	A1	A+
Second lien	A+	A2	A
Junior lien	A+	N/A	N/A
Outlook	Stable	Positive	Stable
<b>Sewage Disposal System Revenue Bonds</b>			
Senior lien	AA-	A1	A+
Second lien	A+	A2	A
Junior lien	A+	N/A	N/A
Outlook	Stable	Positive	Postive

**Debt Allocation:** GLWA has nearly \$2.5 billion in water system debt and nearly \$2.8 billion in sewer system debt for a combined total of over \$5.3 billion. Debt within each system is prioritized according to its security interest, or lien category, with senior lien debt having the highest security interest, followed by second lien and finally junior lien.

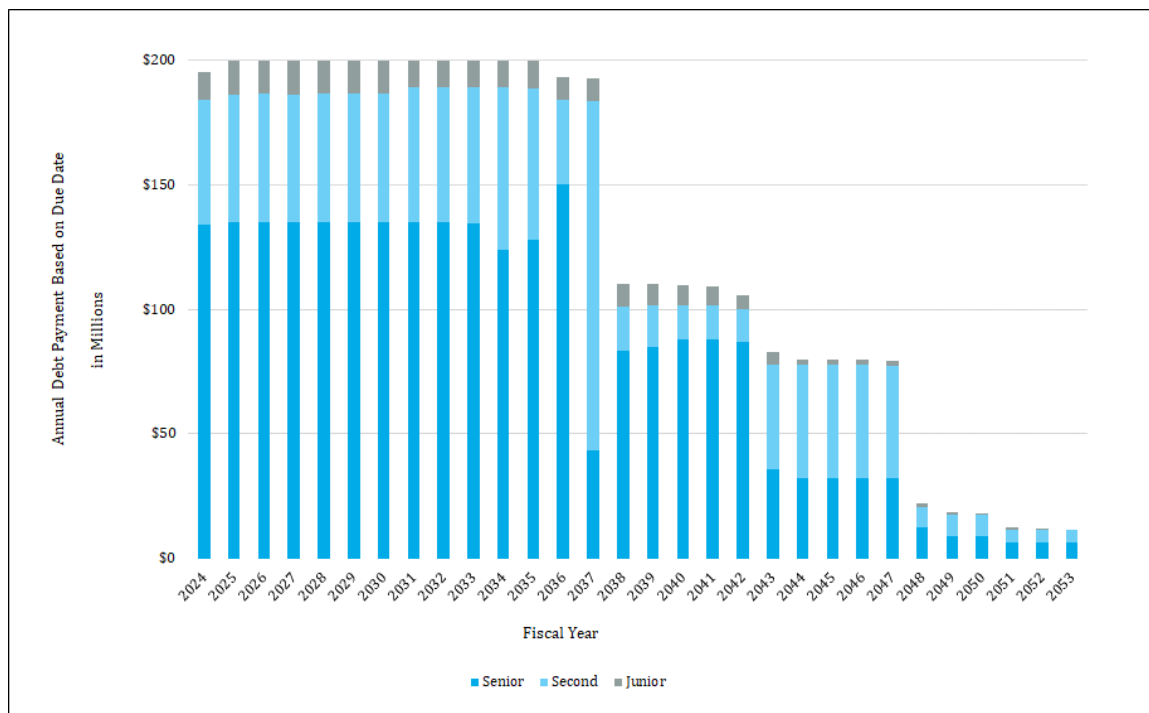
**Chart 1 - Debt Type by Lien – Water** provides a breakdown of the total water system debt for both the regional and local systems by lien type.



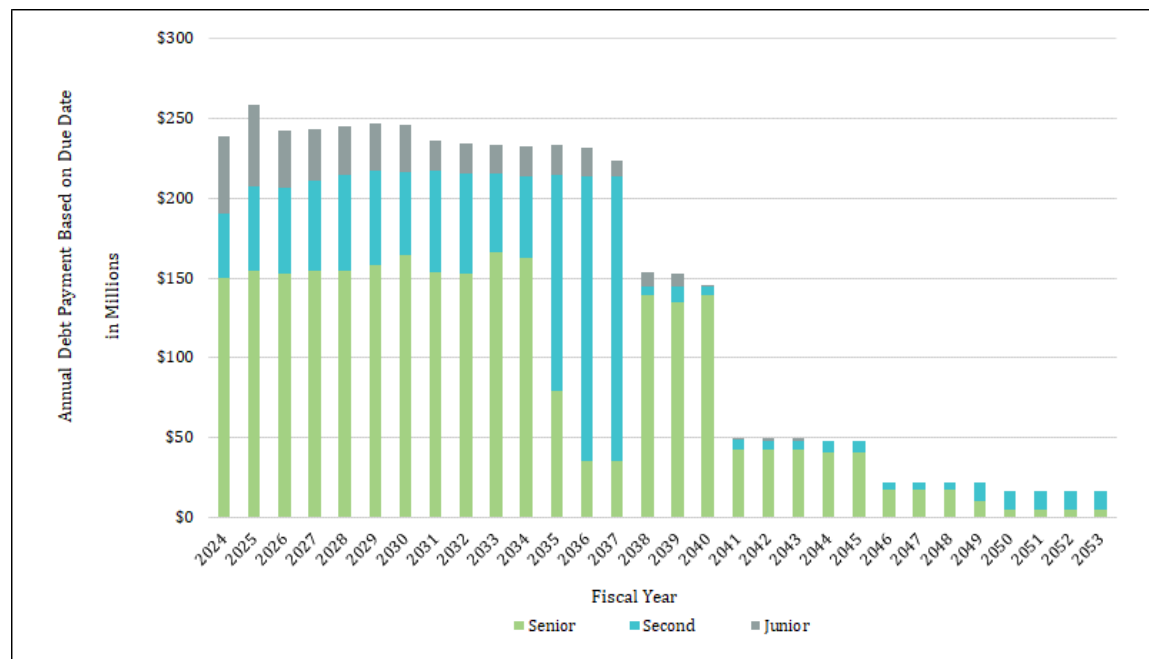
**Chart 2 - Debt Type by Lien – Sewer** provides a breakdown of the total sewer system debt for both the regional and local systems by lien type.



**Chart 3 – Annual Debt Service Payments by Lien – Water** provides the annual debt service installment requirements for each fiscal year.



**Chart 4 – Annual Debt Service Payments by Lien – Sewer** provides the annual debt service installment requirements for each fiscal year.



**Note:** The figures in these charts reflect the debt service installment requirements for each fiscal year, which are required by the MBO to be set aside monthly in advance of actual payment dates. This information will differ from the Annual Comprehensive Financial Report which reflects when the actual payments are made to the bond paying agent.

**State of Michigan's State Revolving Fund (SRF) Programs:** GLWA participates in the State's Clean Water Revolving Fund (CWSRF) to finance qualified sewage disposal system projects and the State's Drinking Water Revolving Fund (DWSRF) to finance qualified water supply system projects. For the purposes of this report, both water and sewer projects financed through these programs will be referred to as either water or sewer SRF loans.

These loan programs have interest rates that are well below open market interest rates (current estimate between 3.5% and 4.0%) and are repaid over 20-30 years. For the state's FY 2024, the DWSRF and CWSRF program rates are 2.5% for 20-year loans and 2.75% for 30-year loans. Overburdened applicant's rates are 2.0% and significantly overburdened applicant's rates are 1.0% for 20- and 30-year loans.

Funds are disbursed as construction payments are made. Interest on each loan is based on the amount of funds drawn and not the full loan amount. GLWA must submit project plans to the Michigan Department of Environment, Great Lakes, and Energy ("EGLE", and formerly known as the Michigan Department of Environmental Quality or MDEQ) for each project by the annual submission date (June 1 for DWSRF and May 1 for CWSRF) to be considered for the State's funding pool for the following fiscal year.

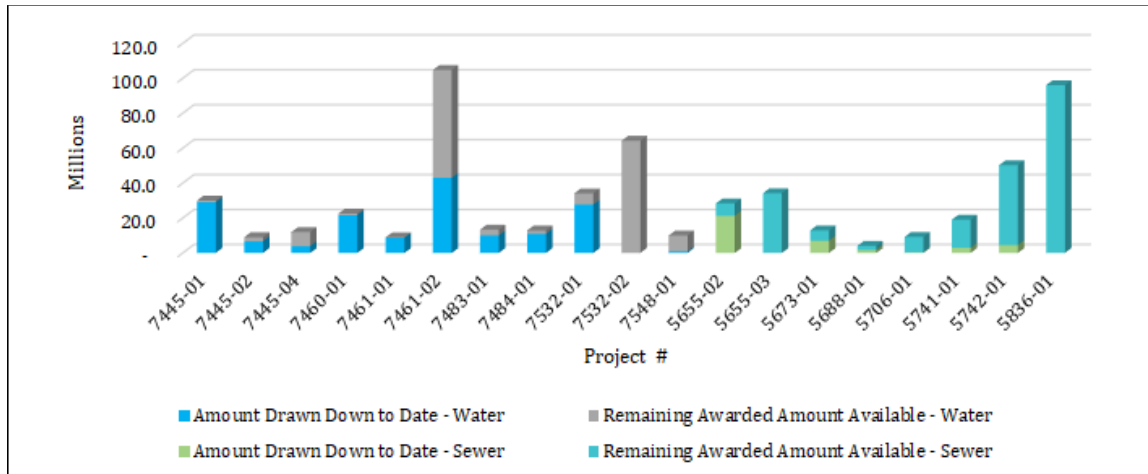
**State Revolving Fund Loans:** GLWA's strategy is to maximize its use of SRF loans to finance qualified capital projects. GLWA currently has \$221.7 million in outstanding water SRF loans and \$326.2 million in outstanding sewer SRF loans.

**Table 4 - Active SRF Project Summary** provides information regarding each loan currently being drawn down including the loan award date which is also referred to as the Order of Approval date by the State of Michigan.

State Loan #	CIP Reference	Description	Order of Approval	Project Total (\$ Millions)
<b>SRF Water - DWSD Projects</b>				
7460-01	WS-710 & 711	Water Main Replacement	7/15/2020	\$22.6
7483-01	WS-715 & 718	Water Main Replacement	9/9/2020	\$13.4
7484-01	WS-713	Water Main Replacement - Jefferson Chalmers	8/6/2021	\$12.8
7548-01	WS-721	Lead Service Line Water Main Replacement	4/8/2022	\$10.0
<b>SRF Water - GLWA Projects</b>				
7445-01	122003	Northeast Transmission Phase 1	8/9/2019	\$30.0
7445-02	122003	Northeast Transmission Main - Phase 2a	8/7/2020	\$9.0
7445-04	122003	Northeast Transmission Main - Phase 3a	5/28/2021	\$11.9
7461-01	122013	14 Mile Transmission Main Loop - Phase 1	8/7/2020	\$9.0
7461-02	122013	14 Mile Transmission Main Loop - Phase 2	8/6/2021	\$104.7
7532-01	122004	96-inch Water Transmission Main Relocation Project - Phase 1	8/29/2022	\$34.1
7532-02	122004	96-inch Water Transmission Main Relocation Project - Phase 2	6/26/2023	\$64.2
			<b>Total Water</b>	<b>\$321.7</b>
<b>SRF Sewer - DWSD Projects</b>				
5688-01	DWS-916	Sewer Main Rehab/Rplcmt - Project A	9/9/2020	\$4.0
5706-01	DWS-917 & 918	Sewer Main Replacements - Project B	9/9/2021	\$9.2
<b>SRF Sewer - GLWA Projects</b>				
5655-02	222002	Detroit River Interceptor Segment 2	3/27/2020	\$28.4
5655-03	222002	Detroit River Interceptor Segment 3	5/16/2020	\$34.2
5673-01	211008	PS-1 Ferric Chloride System Rehabilitation	2/26/2021	\$12.9
5741-01	260701	In-System Storage Device & Dam & Valve Remote Evaluation & Rehabilitation	8/29/2022	\$19.0
5742-01	260204	Connor Creek Sewer System Rehabilitation	8/8/2022	\$50.2
5836-01	211006	Pump Station #1 Rehabilitation	5/15/2023	\$96.0
			<b>Total Sewer</b>	<b>\$254.0</b>



**Chart 5 - Open State Revolving Fund Loans** summarizes all current SRF loans held by GLWA (including financings on behalf of DWSD) that are active (reference Table 4 above for project descriptions). It summarizes the original award amount remaining and the amount drawn down as of September 30, 2023 for each loan. On September 30, 2023, the amount of SRF loans authorized and unissued is \$159.5 million for the Water fund and \$216.3 million for the Sewage Disposal Fund.



**Table 5 - Project Plan Approved by EGLE** identifies projects approved by the EGLE but for which final applications had not yet been submitted for funding as of September 30, 2023.

Project Owner	CIP Number	Description	Estimated Loan Amount	Anticipated Funding Date
<b>Water SRF</b>				
DWSD	WS-725	Water Main Replacement/Rehabilitation in the Midtown, Cultural Center, Medical Center, and Barton-McFarland Neighborhoods of Detroit	\$ 16,550,000	TBD
DWSD	WS-738	Water Main Replacement/Rehabilitation in the Dexter – Linwood and Davison neighborhoods of Detroit	\$ 17,510,000	TBD
<b>Total Water SRF</b>			<b>\$ 34,060,000</b>	
<b>Sewer SRF</b>				
DWSD		CSO West Chicago South	\$ 19,100,000	TBD
GLWA	232002	Freud Pump Station	\$ 86,800,000	TBD
GLWA	212008	WRRF Aeration Improvements 1 and 2	\$ 90,000,000	TBD
GLWA	222001	Oakwood District Intercommunity Relief Sewer Modification	\$ 75,000,000	TBD
<b>Total Sewer SRF</b>			<b>\$ 270,900,000</b>	



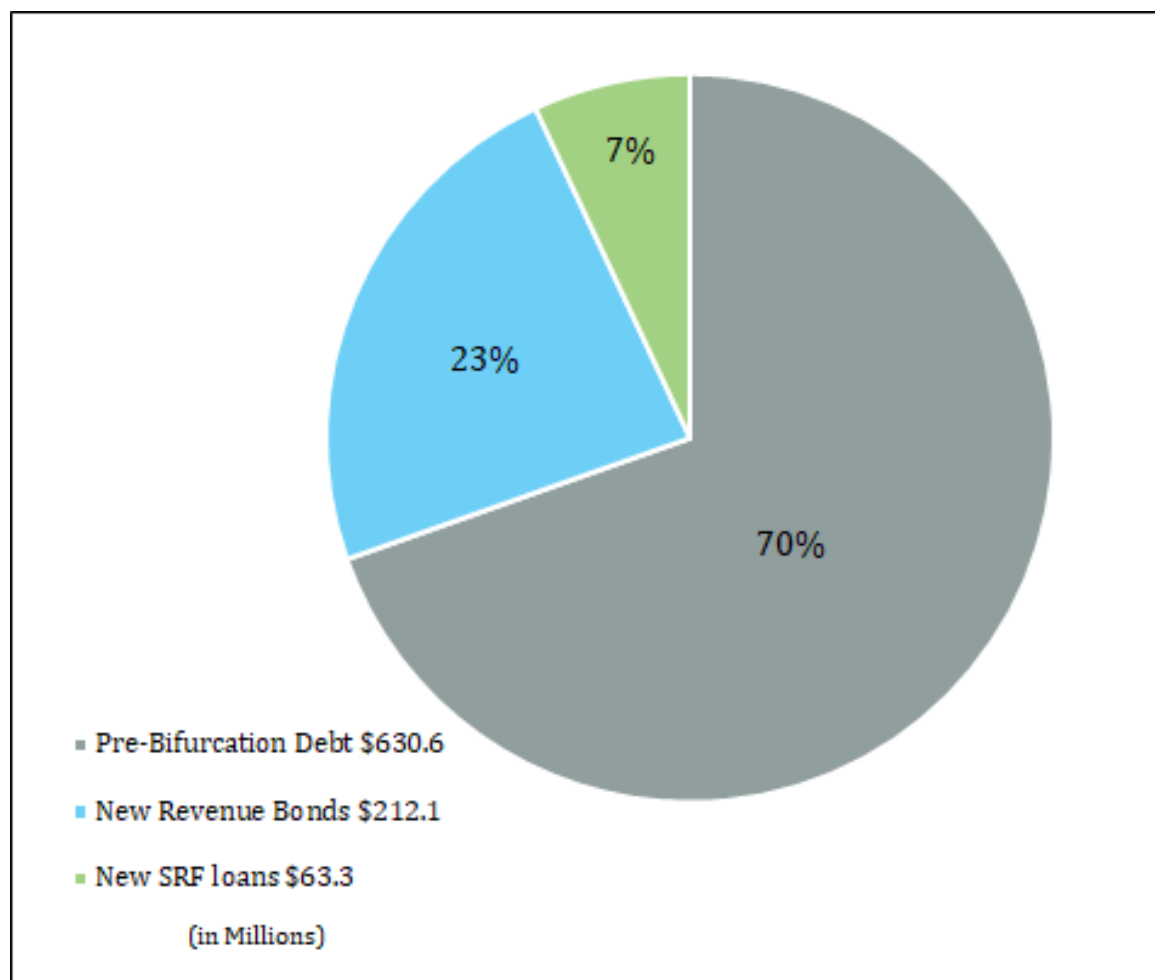
**DWSD Obligation Receivable:** GLWA holds an obligation receivable from DWSD as an asset to account for the amount due for financing local system capital projects. DWSD carries a like amount of this as an obligation payable on its statement of net assets.

There are three components to the calculation of the DWSD obligation receivable. These are:

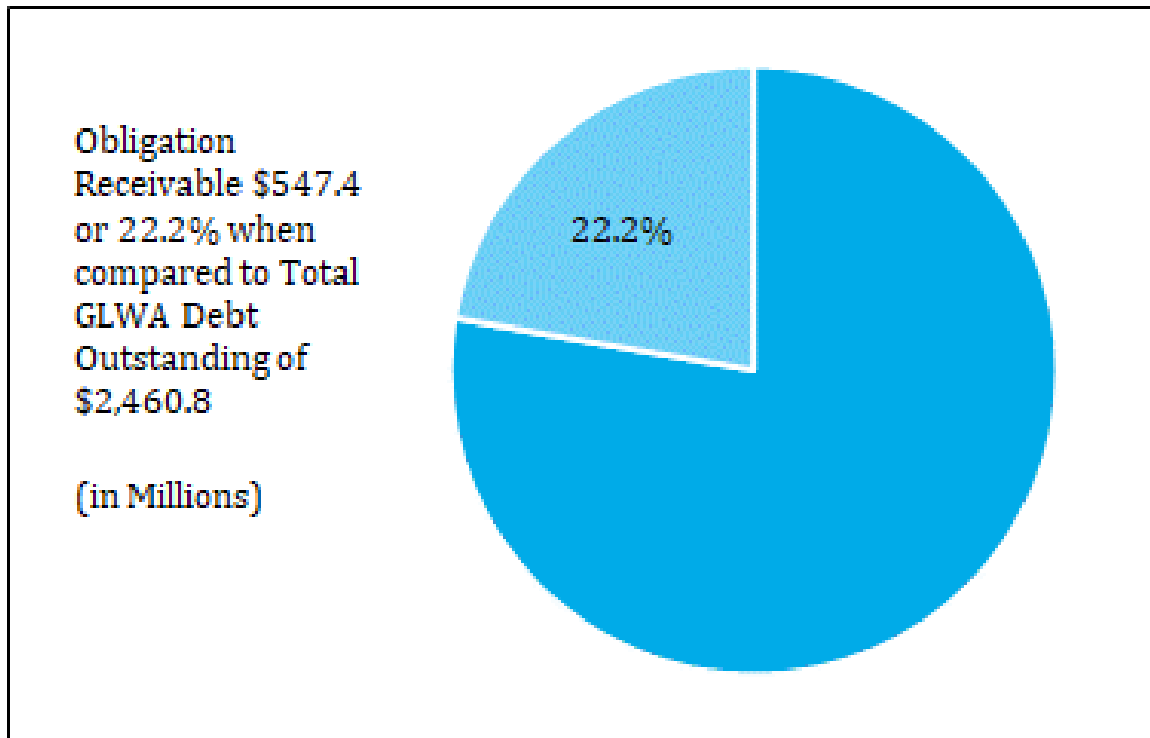
- an agreed upon amount for pre-January 1, 2016 (i.e. “pre-bifurcation”) debt as documented in a 2018 Memorandum of Understanding (\$455 million for water system and \$370 million for sewer per agreed-upon amortization schedules),
- new revenue bonds issued after January 1, 2016 to specifically fund the DWSD local system capital improvement projects which are payable based on the allocable share of the actual bonds debt service schedule, and
- SRF loans issued after January 1, 2016 for specific DWSD capital projects which are payable based on the allocable share of the actual loan payment schedule.

All retail customer revenues are deposited into a trust to fund these financial obligations in accordance with the MBO flow of funds.

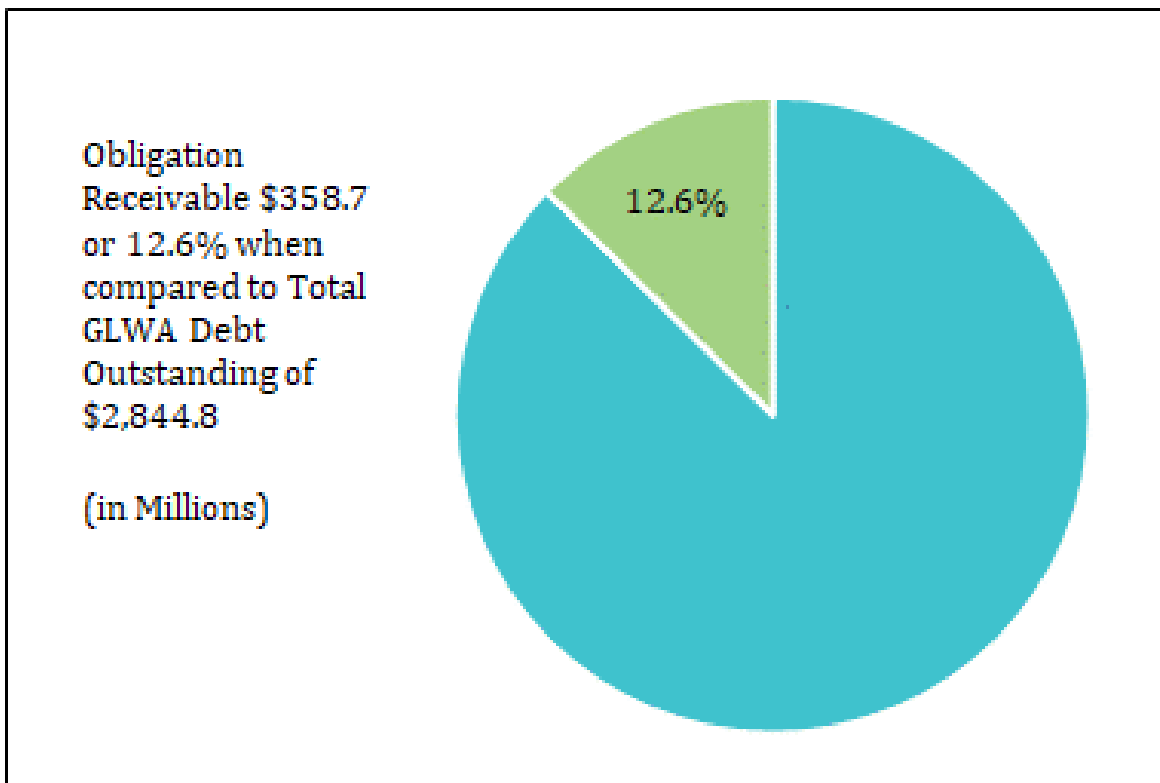
**Chart 6 - DWSD Obligation Receivable by Type** summarizes the total DWSD obligation receivable balance for both Water and Sewer as of September 30, 2023 by pre-bifurcation, revenue bond and SRF component.



**Chart 7 – Obligation Receivable Compared to Total Debt - Water** provides context by comparing the Water System Obligation Receivable to the Total Water Debt (excludes unamortized premiums).



**Chart 8 – Obligation Receivable Compared to Total Debt - Sewer** provides context by comparing the Sewer System Obligation Receivable to the Total Sewer Debt (excludes unamortized premiums).



**Table 6 - DWSD Obligation Receivable** provides obligation receivable detail including fiscal year 2024 beginning balances by debt type and loan issue (for revenue bonds and SRF loans), year-to-date activity and ending balances as of September 30, 2023. Total DWSD debt totals \$932 million. This differs slightly from the total in Chart 6 due to the inclusion of unamortized premiums.

<i>(In Thousands)</i>					
Debt Type	July 1, 2023 Beg Balance	Increase	Decrease	SRF Debt Forgiveness	September 30, 2023 End Balance
<b>DWSD Water</b>					
Pre-Bifurcation Debt	\$ 352,783	\$ -	\$ (4,162)		\$ 348,621
Revenue Bond - 2016A	17,725	-	-	-	17,725
Revenue Bond - 2016B	33,015	-	-	-	33,015
Revenue Bond - 2020A	42,445	-	-	-	42,445
Revenue Bond - 2020B	43,135	-	-	-	43,135
SRF 7412-01	4,591	-	-	-	4,591
SRF 7413-01	2,969	-	-	-	2,969
SRF 7414-01	5,193	-	-	-	5,193
SRF 7447-01	7,448	3,087	-	-	10,535
SRF 7460-01	19,515	-	-	-	19,515
SRF 7483-01	8,833	1,124	-	-	9,957
SRF 7484-01	9,678	-	-	-	9,678
SRF 7548-01	-	2,733	-	(2,733)	-
Total DWSD Obligation	547,329	6,944	(4,162)	(2,733)	547,379
Unamortized Premiums	18,100	-	(197)	-	17,902
<b>Subtotal: Water</b>	<b>565,429</b>	<b>6,944</b>	<b>(4,359)</b>	<b>(2,733)</b>	<b>565,281</b>
<b>DWSD Sewer</b>					
Pre-Bifurcation Debt	285,471	-	(3,478)	-	281,993
Revenue Bond - 2018A	75,815	-	-	-	75,815
SRF 5688-01	843	-	-	-	843
SRF 5706-01	-	-	-	-	-
Total DWSD Obligation	362,129	-	(3,478)	-	358,651
Unamortized Premiums	8,161	-	(105)	-	8,056
<b>Subtotal: Sewer</b>	<b>370,290</b>	<b>-</b>	<b>(3,583)</b>	<b>-</b>	<b>366,707</b>
<b>Total DWSD Debt</b>	<b>\$ 935,719</b>	<b>\$ 6,944</b>	<b>\$ (7,942)</b>	<b>\$ (2,733)</b>	<b>\$ 931,988</b>

**Table 7 – Loan Forgiveness** provides a summary of loan principal forgiven on DWSD SRF loans closed after January 1, 2016. EGLE grants principal loan forgiveness on qualified planning costs for disadvantaged communities. Through September 30, 2023, \$26.4 million or 23% of approved, DWSD SRF loans have been forgiven as a disadvantaged community.

State Loan #	Approved Amount	Loan Forgiveness
<b>DWSD Water SRF</b>		
SRF 7412-01	10,605,000	1,000,000
SRF 7413-01	5,180,000	1,000,000
SRF 7414-01	8,675,000	2,000,000
SRF 7447-01	16,500,000	4,711,944
SRF 7460-01	22,570,000	2,031,300
SRF 7483-01	13,355,000	1,201,950
SRF 7484-01	12,845,000	1,316,050
SRF 7548-01	10,000,000	10,000,000
<b>Subtotal: Water</b>	<b>99,730,000</b>	<b>23,261,244</b>
<b>DWSD Sewer SRF</b>		
SRF 5688-01	4,040,000	808,000
SRF 5706-01	9,175,000	2,293,750
<b>Subtotal: Sewer</b>	<b>13,215,000</b>	<b>3,101,750</b>
<b>Total DWSD Debt</b>	<b>\$ 112,945,000</b>	<b>\$ 26,362,994</b>

**Annual Change in Outstanding Debt:** It is the goal of GLWA to ensure the long-term sustainability of the water and sewer systems. One of the best ways to accomplish this is by reducing the debt service payments on existing bonds as well as reducing the amounts of future bond issues by using revenue financed capital.

**Table 8 - Long-Term Debt Summary** provides a detail of GLWA's fiscal year 2024 beginning balances by debt type and loan issues, year-to-date activity, and ending balances as of September 30, 2023. GLWA debt includes financing for both the regional and local share.

Debt Type	June 30, 2023			Debt		September 30, 2023	
	Beg Balance	Increase	Decrease	Refunding	Forgiveness	End Balance	
<b>Water Fund</b>							
Revenue Bonds	\$ 2,279,260	\$ -	\$ (40,250)	\$ -	\$ -	\$ 2,239,010	
State Revolving Loans	207,357	19,932	(2,810)	-	(2,733)	221,746	
Total Installment Debt	2,486,617	19,932	(43,060)	-	(2,733)	2,460,756	
Unamortized Premiums / Discounts	167,921	-	(3,774)	-	-	164,147	
<b>Subtotal: Water</b>	<b>2,654,538</b>	<b>19,932</b>	<b>(46,834)</b>	<b>-</b>	<b>(2,733)</b>	<b>2,624,903</b>	
<b>Sewer Fund</b>							
Revenue Bonds	2,561,135	-	(42,565)	-	-	2,518,570	
State Revolving Loans	349,919	5,891	(29,595)	-	-	326,216	
Total Installment Debt	2,911,054	5,891	(72,160)	-	-	2,844,786	
Unamortized Premiums / Discounts	75,627	-	(1,117)	-	-	74,510	
<b>Subtotal: Sewer</b>	<b>2,986,681</b>	<b>5,891</b>	<b>(73,277)</b>	<b>-</b>	<b>-</b>	<b>2,919,295</b>	
<b>Total Combined, Long Term Debt</b>	<b>\$ 5,641,219</b>	<b>\$ 25,823</b>	<b>\$ (120,111)</b>	<b>\$ -</b>	<b>\$ (2,733)</b>	<b>\$ 5,544,198</b>	

## Debt Service Coverage

GLWA is committed to ensuring the long-term sustainability of the water and sewer systems and has pledged specific revenue streams to secure the repayment of the revenue bonds and SRF loans associated with them. The MBO establishes minimum debt coverage levels at 1.20 for senior lien bonds, 1.10 for second lien bonds and 1.00 for any junior lien bonds, other than second lien bonds. Debt service coverage ratios are inclusive of all debt held on behalf of both GLWA and DWSD.

GLWA computes the debt service coverage ratio using two different methodologies. The Rate Covenant Method uses the cash basis in computing pledged revenue and the GAAP Method uses the accrual basis in computing pledged revenue. Pledged revenue is divided by the debt service requirements of each lien on a set aside basis to compute the debt service coverage ratio. The set aside basis is defined as the cash available to make the debt service payments on the due dates. The following table details the components of the pledged revenue for each methodology.

Components of Pledged Revenue	Pledged Revenue Calculation	Rate Covenant Basis	GAAP Basis
Revenues	Addition	Cash basis	Accrual basis
GLWA O&M expenses	Subtraction	Cash basis	Accrual basis
GLWA O&M pension	Subtraction	Cash basis	Cash basis
DWSD O&M expenses & O&M pension	Subtraction	Cash transfers to DWSD	Cash transfers to DWSD

**Table 9: Debt Service Coverage Ratios - Water** provides a summary of the MBO required minimum, historical, and budgeted debt service coverage ratios for the Water fund.

Debt Service Coverage Water System							
	MBO Required Minimum	Actual 2020	Actual 2021	Actual 2022	Adopted Budget 2023	Adopted Budget 2024	Adopted Budget 2025
<b>Rate Covenant Basis</b>							
Senior Lien Bonds	1.20	1.94	1.99	1.88	1.80	1.95	1.80
Senior and second lien bonds	1.10	1.39	1.40	1.37	1.33	1.42	1.34
All bonds, including SRF junior lien	1.00	1.37	1.38	1.33	1.27	1.30	1.23
<b>GAAP Basis</b>							
Senior Lien Bonds		1.98	1.95	2.00			
Senior and second lien bonds		1.42	1.38	1.45			
All bonds, including SRF junior lien		1.40	1.35	1.41			

**Table 10: Debt Service Coverage Ratios - Sewer** provides a summary of the MBO required minimum, historical, and budgeted debt service coverage ratios for the Sewer fund.

Debt Service Coverage Sewage Disposal System							
	MBO Required Minimum	Actual 2020	Actual 2021	Actual 2022	Adopted Budget 2023	Adopted Budget 2024	Adopted Budget 2025
<b>Rate Covenant Basis</b>							
Senior Lien Bonds	1.20	2.15	2.92	2.35	2.17	2.13	2.08
Senior and second lien bonds	1.10	1.64	1.97	1.68	1.74	1.59	1.57
All bonds, including SRF junior lien	1.00	1.29	1.51	1.30	1.37	1.27	1.30
<b>GAAP Basis</b>							
Senior Lien Bonds		2.15	2.50	2.64			
Senior and second lien bonds		1.64	1.68	1.89			
All bonds, including SRF junior lien		1.29	1.29	1.46			

## Refinancing

To reduce the annual water and sewer debt service payments, GLWA monitors its outstanding water and sewer debt portfolios to determine if it can refund existing bond issues with new, lower interest rate bonds. At least once per year, GLWA's registered municipal advisor, PFM Financial Advisors, LLC (PFM) prepares an analysis of GLWA's bond refunding opportunities based on the current municipal interest rate environment and the existing debt service on GLWA's callable bonds.

On September 13, 2022, \$12.49 million of sewage disposal system refunding bonds were issued. The net present value savings from the refunding transaction for the sewage disposal fund was \$211,718. The 2012 sewage disposal system revenue bonds of \$17.985 million were called on September 16, 2022 as part of this transaction.

**Table 11: History of Debt Service Savings Achieved** since 2014 through the leadership of the Authority's management team, the financing team has been able to achieve over \$1 billion of debt service savings for the Systems since the tender and refunding transaction in 2014.

Savings by Issuance		
Series 2014	\$	245,500,000
Series 2015		38,300,000
Series 2016		309,100,000
Series 2018		84,900,000
Series 2020		324,100,000
Series 2022		1,960,000
	\$	<b>1,003,860,000</b>

The next available refunding opportunity will be for bonds with a call date of July 1, 2024, for both the water fund and sewage disposal fund. Approximately \$434.2 million in water bonds and \$436.5 million in sewer bonds will be callable at that time. GLWA continues to work with its registered municipal advisor to monitor the potential for refunding these bonds.

GLWA does not have any defeased debt as of September 30, 2023.