



Audit Committee

Friday, September 21, 2018 at 8:00 a.m.

5th Floor Board Room, Water Board Building
735 Randolph Street, Detroit, Michigan 48226
GLWater.org

AGENDA

1. CALL TO ORDER
2. ROLL CALL
3. APPROVAL OF AGENDA
4. APPROVAL OF MINUTES
 - A. July 20, 2018 (Page 1)
5. PUBLIC PARTICIPATION
6. OLD BUSINESS
7. NEW BUSINESS
 - A. 2018 Refunding and New Money Transaction Results (Page 6)
 - B. Impact of 2018 Bond Transaction Results on Feasibility Forecast (Page 19)
 - C. Proposed Change Order No. 2: Contract No. GLWA-CS-010 Water Residential Assistance Program (Page 26)
8. REPORTS
 - A. Quarterly Investment Report as of June 30, 2018 (Page 29)
 - B. Trust Receipt & Disbursement Report for Activity as of July 31, 2018 (Page 59) (Preliminary)
 - C. FY 2018 Construction Work-in-Progress Report through June 30, 2018 (Page 67)
 - D. Monthly Revenue & Collections Report (Page 133)
 - E. Master Bond Ordinance Monthly Cash Transfers through September 1, 2018 (Page 160)
 - F. 2018 Rating Agency Reports as of September 2018 (Page 163)
 - G. CFO Update (verbal)
9. LOOK AHEAD
 - Next Audit Committee Meeting – October 19, 2018 at 8 am (Regular Meeting)
10. INFORMATION
11. OTHER MATTERS
12. ADJOURNMENT



Great Lakes Water Authority

735 Randolph Street
 Detroit, Michigan 48226
 glwater.legistar.com

Meeting Minutes - Draft

Audit Committee

Friday, July 20, 2018

8:00 AM

Water Board Building 5th Floor

1. Call To Order

Chairman Baker called the meeting to order at 8:00 a.m.

2. Quorum Call

Present: 3 - Chairman Brian Baker, Director Gary Brown, and Director Robert Daddow

Note: Director Brown attendance via teleconference.

3. Approval of Agenda

Chairman Baker requested a Motion to approve the Agenda.

Motion By: Robert Daddow

Support By: Gary Brown

Action: Approved

The motion carried by a unanimous vote.

4. Approval of Minutes

A. [2018-826](#) Approval of Minutes June 15, 2018

Indexes: Finance

Attachments: [June 15 2018 Audit Committee Meeting Minutesrev7.18.18](#)

Chairman Baker requested a Motion to approve the June 15, 2018 Audit Committee Meeting Minutes, and asked if there were any changes.

Nicolette Bateson, Chief Financial Officer/Treasurer, stated that corrected Minutes have been distributed, as there were revisions to the Minutes in the Committee binder, and asked Rechanda Willis, Executive Board Assistant, to explain the revisions.

Ms. Willis stated that the action taken by the Committee for Resolutions 2018-799, 2018-804 and 2018-801 was corrected to show that the Committee's action for the referenced Resolutions was "Recommended for Approval to the Board of Directors, Agenda of June 20, 2018.

Motion By: Gary Brown

Support By: Robert Daddow

Action: Approved as Amended
The motion carried by a unanimous vote.

5. Public Comment

Jeff McKeen, General Manager of the Southeastern Oakland County Water Authority, came before the Committee to express his appreciation for having the Audit Committee Agenda and supporting documents available the Wednesday before the Friday Audit Committee Meeting, and requested that it becomes the standard moving forward.

6. Old Business

None

7. New Business

- A. [2018-829](#) Proposed Resolution Regarding Approval of Series Ordinance Authorizing Issuance and Sale of Water Supply System Revenue Refunding Bonds an Amount Not to Exceed \$225,000,000 (Ordinance 2018-02)

Indexes: Finance

Attachments: [Water Refunding Series Ordinance 07.20.2018](#)

[BLOOMFIELD-#2098153-2-Resolution Approving 2018 Water Series Ordinance](#)
[BLOOMFIELD-#2097163-3-Series Ordinance 2018 Water Refunding](#)

Motion By: Robert Daddow
Support By: Gary Brown
Action: Referred to the Board of Directors Workshop Meeting
Agenda of August 8, 2018
The motion carried by a unanimous vote.

- B. [2018-830](#) Resolution Regarding Approval of Series Ordinance Authorizing Issuance and Sale of Sewage Disposal System Revenue and Revenue Refunding Bonds an Amount Not to Exceed \$325,000,000 (Ordinance 2018-03)

Indexes: Finance

Attachments: [Sewer Refunding and New Money Series Ordinance 07.20.2018](#)

[BLOOMFIELD-#2098156-2-Resolution Approving 2018 Sewer Series Ordinance](#)
[BLOOMFIELD-#2097159-3-Series Ordinance 2018 Sewer New Money and Refunding](#)

Motion By: Robert Daddow
Support By: Gary Brown
Action: Referred to the Board of Directors Workshop Meeting
Agenda of August 8, 2018
The motion carried by a unanimous vote.

C. 2018 Bond Transaction Update (verbal)

Nicolette Bateson, Chief Financial Officer/Treasurer, and Bart Foster of The

Foster Group, provided a verbal update regarding the 2018 Bond Transaction.

D. [2018-831](#) Cash Analysis - Long-term Planning

Indexes: Finance

Attachments: [Cash Analysis](#)

[FY 2017 Cash Footnote](#)

[TFG Cash Investment Balances Cover Memo 072018](#)

[TFG Cash Review exhibit 7.20.2018](#)

Director Daddow motioned to receive and file the Cash Analysis - Long Term Planning, subject to reading the document.

Motion By: Robert Daddow

Support By: Gary Brown

Action: Received and Filed

The motion carried by a unanimous vote.

E. [2018-832](#) Financial Reporting Schedule

Indexes: Finance

Attachments: [Financial Reporting Schedule as of 7.20.2018](#)

[Reporting Schedule 7.20.2018](#)

Motion By: Robert Daddow

Support By: Gary Brown

Action: Received and Filed

The motion carried by a unanimous vote.

F. Wastewater Charges Outreach Committee Update (verbal)

Nicolette Bateson, Chief Financial Officer/Treasurer, provided a verbal update regarding the Wastewater Charges Outreach Committee.

G. [2018-833](#) Proposed Amendments to the Great Lakes Water Authority Investment Policy

Indexes: Finance

Attachments: [GLWA Audit Committee Memo Investment Policy Amendments 7.20.18](#)

[GLWA Investment Policy PFM Review Memo for Audit Committee](#)

[Investment Policy Approved by GLWA Board 9 14 16 FINAL Redlined with July 2018 changes](#)

Motion By: Robert Daddow

Support By: Gary Brown

Action: Recommended for Approval to the Board of Directors Workshop Meeting Agenda of August 8, 2018

The motion carried by a unanimous vote.

H. [2018-834](#) Proposed Audit Fee Change Order for the FY 2017 Audit

Indexes: Finance

Attachments: [Proposed FY 2017 Audit Fee Amendment](#)
[GLWA incremental billing 7-19-18](#)

Motion By: Robert Daddow
Support By: Gary Brown
Action: Recommended for Approval to the Board of Directors Workshop Meeting
Agenda of August 8, 2018
The motion carried by a unanimous vote.

- I. [2018-835](#) Update: Drinking Water Revolving Fund (DWRP) Project Plan Submittals for the Lake Huron Water Treatment Plant Sludge System Improvements Project and the Waterworks Park to Northeast Transmission Main Project

Indexes: Finance

Attachments: [Update- DWRP Project Plan Submittals 7.20.2018](#)

Motion By: Robert Daddow
Support By: Gary Brown
Action: Received and Filed
The motion carried by a unanimous vote.

8. Reports

- A. [2018-836](#) Quarterly Investment Report as of March 31, 2018

Indexes: Finance

Attachments: [March 2018 Investment Report 7.20.18](#)
[Audit Committee - GLWA Quarterly Report March 2018pw](#)

Motion By: Robert Daddow
Support By: Gary Brown
Action: Received and Filed
The motion carried by a unanimous vote.

- B. [2018-837](#) Master Bond Ordinance Monthly Cash Transfers through July 1, 2018

Indexes: Finance

Attachments: [DWSD GLWA Cash Transfers July 2018](#)
[Audit Committee - Monthly Transfers to DWSD July 2018](#)
[Audit Committee - Monthly Transfers to GLWA July 2018](#)

Motion By: Robert Daddow
Support By: Gary Brown
Action: Received and Filed
The motion carried by a unanimous vote.

- C. [2018-838](#) Monthly Revenue & Collections Report for May 2018

Indexes: Finance

Attachments: [New Monthly Revenue and Collections Report 07.20.2018v2](#)
[8C2 AR Aging W. S. IWC. PS. 06.30.18](#)

Motion By: Robert Daddow
Support By: Brian Baker
Action: Received and Filed
The motion carried by a unanimous vote.

Note: Director Brown excused himself from the remainder of the meeting at 10:00 a.m.

D. [2018-839](#) Trust Receipts & Disbursements Report for May 2018

Indexes: Finance

Attachments: [TRD Audit Comm Rpt thru 5-31-18 v2 complete](#)

Motion By: Robert Daddow
Support By: Brian Baker
Action: Received and Filed
The motion carried by a unanimous vote.

9. CFO Update (verbal)

Nicolette Bateson, Chief Financial Officer/Treasurer, stated that the Asset Management and CIP Committee, through the outreach process, will be meeting on Tuesday (July 24, 2018) in Lathrup Village. Financial Services will be walking through a number of its process improvements at the meeting, in response to the vendor outreach event. Ms. Bateson further stated that since we now have Bonfire, we have begun uploading our executed contracts on our website.

10. Look Ahead

Nicolette Bateson, Chief Financial Officer/Treasurer, stated that the next Audit Committee Meeting is scheduled for Friday, August 17, 2018 at 8:00 am; however, there may be a request forthcoming to cancel or reschedule the meeting.

11. Information

None

12. Other Matters

Chairman Baker made inquiries regarding the status of the Procurement Policy, as well as the Lean Transformational Team and optimizing efficiencies.

13. Adjournment

There being no further business, Chairman Baker adjourned the meeting at 10:15 a.m.



Financial Services Audit Committee Communication

Date: September 21, 2018
To: Great Lakes Water Authority Audit Committee
From: Nicolette N. Bateson, CPA, Chief Financial Officer & Treasurer
Re: 2018 Refunding and New Money Transaction Results

Background: On Monday, September 17, 2018, the Great Lakes Water Authority (GLWA) successfully refinanced \$178.8 million of water system bonds and \$207.7 million of sewer system bonds. This resulted in water system gross cashflow savings of \$30.9 million (\$24.9 million of present value savings, or 13.9%) and sewer system gross cashflow savings of \$54.0 million (\$34.5 million of present value savings, or 16.6%) over the remaining life of the bonds. In addition, GLWA issued \$81.6 million of new money sewer bonds for the Local System, achieving a very favorable long-term average interest cost of 4.03% for 30-year debt and meeting the project funding target of \$91 million.

Analysis: By all measures this was a very successful transaction. The financing team has prepared a synopsis of the transaction (attached) which will be reviewed at the Audit Committee.

Proposed Action: Receive and file report.



Great Lakes Water Authority

Presentation to the Audit Committee Summary of 2018 Financing Results

September 21, 2018



Executive Summary

The recent bond transactions for both the water and sewer systems achieved a number of favorable results.

- Successfully refinanced \$178.8 million of water system bonds and \$207.7 million of sewer system bonds
 - Water system gross cashflow savings of \$30.9 million (\$24.9 million of present value savings, or 13.9%)
 - Sewer system gross cashflow savings of \$54.0 million (\$34.5 million of present value savings, or 16.6%)
- Issued \$81.6 million of new money sewer bonds for the Local System, achieving a very favorable long-term average interest cost of 4.03% for 30-year debt and meeting the project funding target of \$91 million
- Rating upgrades or positive outlooks achieved from all three rating agencies, including a three notch upgrade to AA- on the Water System from S&P
 - Senior lien ratings of AA-/A2/A for Water and A+/A2/A for Sewer
 - Second lien ratings of A+/A3/A- for Water and A/A3/A- for Sewer
- Extensive outreach to investors, with an electronic roadshow, investor meetings, and one on one investor calls
 - Over 100 investors reached in the outreach process
 - 42 different institutional investors placed orders for GLWA bonds, with substantial retail orders as well
- As a result of the rating upgrades and investor outreach, GLWA substantially narrowed its credit spreads (relative to benchmark indices) and afforded lower interest rates and greater debt service savings
- Achieved further consents on the DSRF springing amendment for the potential future elimination of the Bond Reserve Funds once GLWA attains two AA category ratings (S&P achieved on the Water System)

Goals Set . . . Goals Met

The goals for the Series 2018 financing were achieved and provide the Authority with a strong base with which to achieve future rating upgrades and financial goals.



Secure Rating Upgrades



Highlight Strong Financial Results and Expand the Investor Base for GLWA credits



Lock-in Favorable Interest Rates and Substantial Savings



Enhance GLWA's Future Flexibility

Bond Rating Upgrades Attained

As part of the financing process, the Great Lakes Water Authority team sought and received rating improvements from all three rating agencies including a three notch upgrade to AA- from S&P on the Water System.

Sewer System

Water System

S&P

S&P

Senior Lien **A-**
(Positive) **2 notch improvement** → **A+**
(Positive)

Senior Lien **A-**
(Positive) **3 notch improvement** → **AA-**
(Stable)

Second Lien **BBB+**
(Positive) **2 notch improvement** → **A-**
(Positive)

Second Lien **BBB+**
(Positive) **3 notch improvement** → **A+**
(Stable)

Moody's

Moody's

Senior Lien **A3**
(Stable) **1 notch improvement** → **A2**
(Stable)

Senior Lien **A3**
(Stable) **1 notch improvement** → **A2**
(Stable)

Second Lien **Baa1**
(Stable) **1 notch improvement** → **A3**
(Stable)

Second Lien **Baa1**
(Stable) **1 notch improvement** → **A3**
(Stable)

Fitch

Fitch

Senior Lien **A**
(Stable) **Outlook Upgrade** → **A**
(Positive)

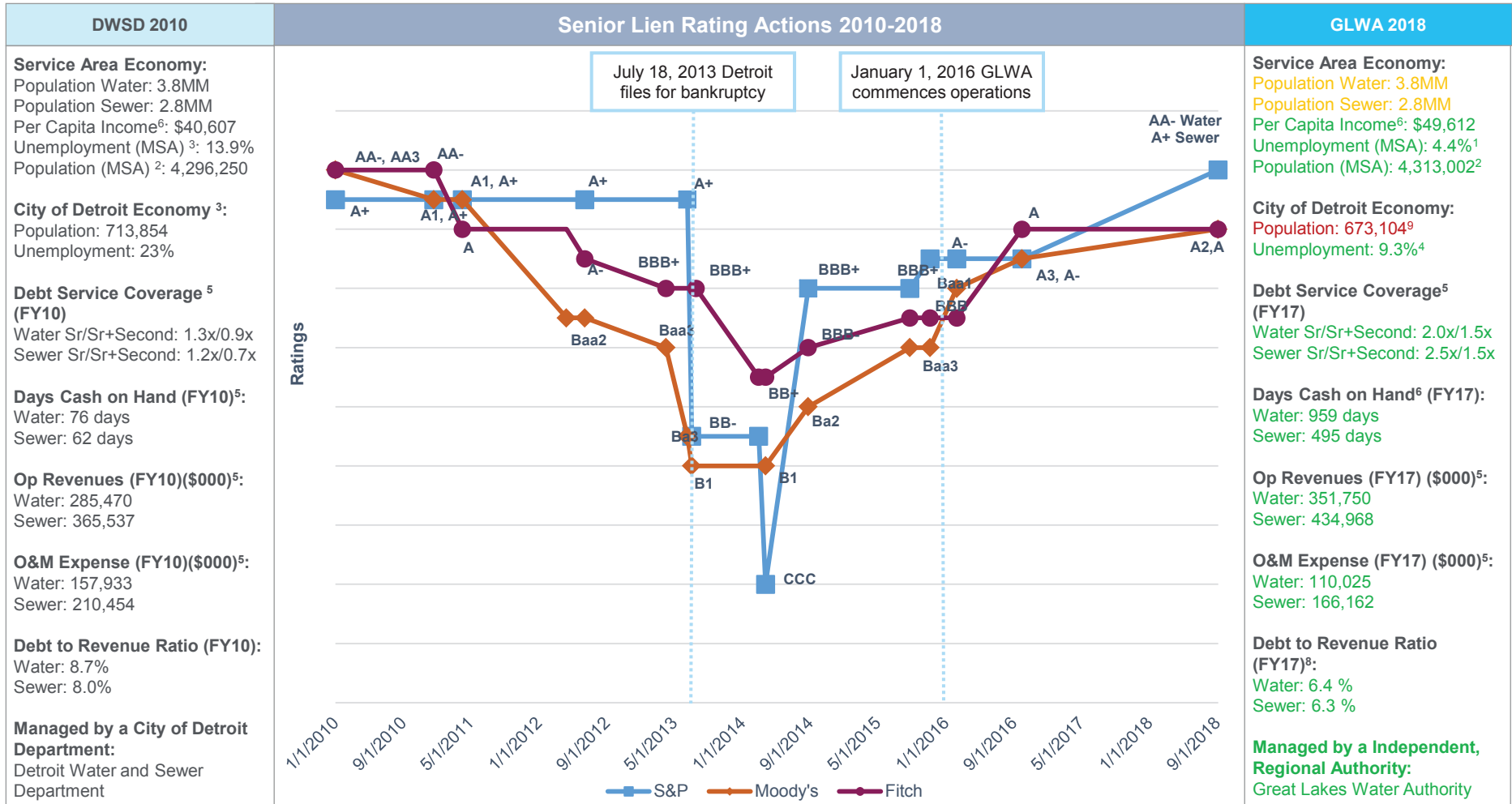
Senior Lien **A**
(Stable) **Outlook Upgrade** → **A**
(Positive)

Second Lien **A-**
(Stable) **Outlook Upgrade** → **A-**
(Positive)

Second Lien **A-**
(Stable) **Outlook Upgrade** → **A-**
(Positive)



The Systems Have Been Transformed



(1) Detroit-Dearborn-Livonia MSA Bureau of Labor Statistics Data August 2018
 (2) Detroit-Dearborn-Livonia MSA Census Factfinder 2017
 (3) Appendix III GLWA Water Revenue Series 2016 OS
 (4) U.S. Department of Labor, Bureau of Labor Statistics as of August 2018
 (5) Moody's Financial Ratio Analysis
 (6) Great Lakes Water Authority Comprehensive Annual Financial Report June 30, 2017
 (7) Detroit Water and Sewer Department FY2010 Audit
 (8) Consolidated Regional and Local perspective as described in the Master Bond Ordinance
 (9) Credit Scope, US Census Bureau as of 12/31/2017



Comprehensive Marketing Outreach



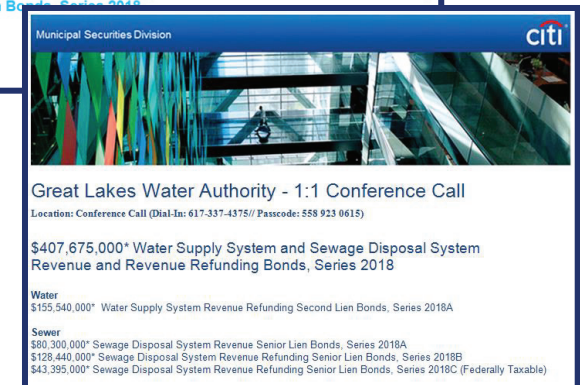
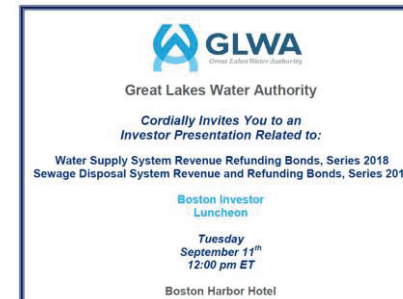
Citi and Wells used a comprehensive marketing campaign including an investor luncheon, investor conference, an internet roadshow presentation and one-on-one investor calls to educate investors and explain the transaction.

Marketing Outreach

1. Internet Roadshow (September 5th – September 17th)
 - 67 investors viewed the electronic roadshow
2. Live Investor Presentation and Luncheon in Boston, MA (September 11th)
 - Presentations from GLWA Management
 - 12 investors attended
3. In-person New York Investor Conference (September 12th)
 - Presentation during Citi's High-Yield Conference
 - 89 investors attended
4. One-on-One Calls/Meetings with Key Institutional Accounts (September 12th – September 14th)
 - 3 individual one-on-one calls & meetings with key investors

Results

- Over \$921 million of orders were received for the Series 2018 bonds, including \$454 million of Water System orders and \$467 million of Sewer System orders
- 42 distinct institutional investors placed orders
 - Existing holders added to positions
 - New investors came in to buy the System's bonds for the 1st time
 - Variety of account types participated including asset managers, mutual funds, insurance companies, SMAs, and relative value funds
- "Top Tier" investors, including the some of the largest bond funds and insurance companies in the municipal market, came in for significant orders



Summary of Financing Results

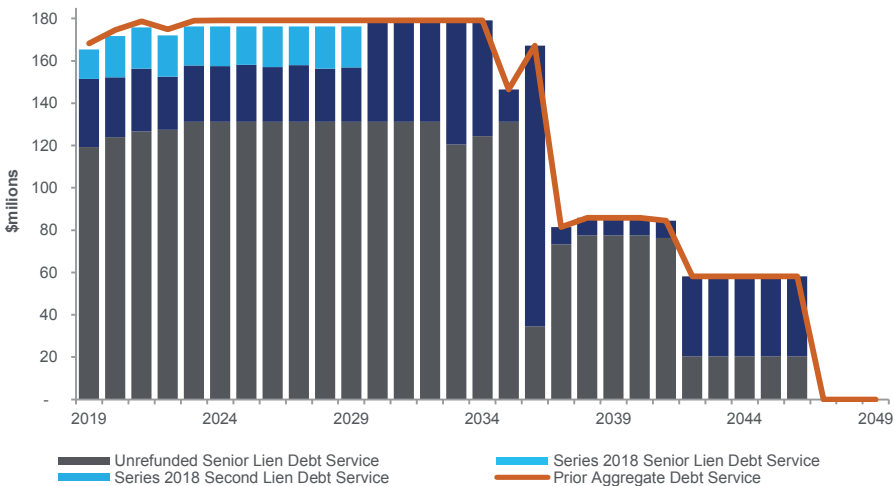
The Series 2018 Bonds were sold at an attractive all-in interest rate and produced a significant amount of debt service savings for the systems.

- Issued \$413 million of total bonds including \$155.6 million of water system bonds and \$257.5 million of sewer system bonds
 - All-in interest rate on the water system bonds of 2.88%
 - All-in interest rate on the sewer system bonds of 3.54%
- Issued \$81.6 million of new money sewer bonds for the Local System at a favorable long-term all-in interest rate of 4.03% and meeting the project funding target of \$91 million
- \$85 million in debt service savings generated to provide future financial flexibility
 - Savings structured for level annual savings on each system and in aggregate
- Released \$12.8 million of Bond Reserve Funds to reduce the amount of refunding bonds issued
- Increased debt service coverage levels on both GLWA credits
- Achieved further consents on the springing amendment for the potential future elimination of the Bond Reserve Funds once GLWA attains two AA category ratings (S&P achieved on the Water System)

Series 2018 – Financing Results

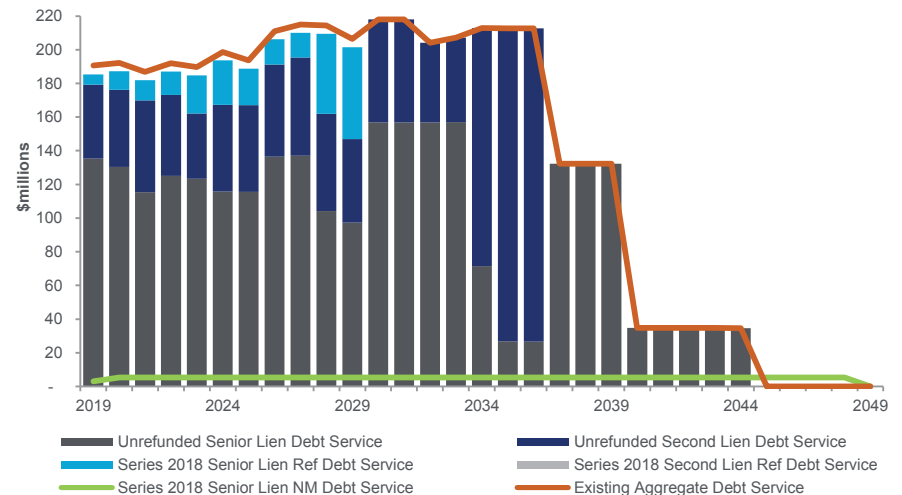
Water System - Summary of Results

	Series 2018A
Par Amount	\$155,595,000
Premium / OID	19,731,395
DSF Release	5,589,194
DSRF Cash Release	1,602,152
Total Sources	\$182,517,740
Deposit to Escrow Fund	\$181,333,455
Deposit to Construction Fund	-
COI / UW's Discount	1,182,854
Additional Proceeds	1,432
Total Uses	\$182,517,740
All-In TIC (%)	2.88%
Arb Yield (%)	2.76%
Weighted Avg. Maturity	6.45 yrs
Par of Refunded Bonds	\$178,735,000
Cashflow Savings	30,880,652.08
Net PV Savings (\$)	24,896,770.98
Net PV Savings (%)	13.93%



Sewer System - Summary of Results

Sources of Funds	Series 2018A	Series 2018B	Series 2018C	Total
Par Amount	\$81,595,000	\$131,690,000	\$44,180,000	\$257,465,000
Premium / OID	9,936,771	22,385,349	-	32,322,120
DSF Release	-	-	3,791,028	3,791,028
DSRF Cash Release	-	8,608,089	2,593,402	11,201,491
Total Sources	\$91,531,771	\$162,683,438	\$50,564,430	\$304,779,639
Uses of Funds				
Deposit to Escrow Fund	\$-	\$161,820,126	\$50,272,414	\$212,092,540
Deposit to Construction Fund	91,000,000	-	-	91,000,000
COI / UW's Discount	530,730	858,416	289,315	1,678,461
Additional Proceeds	1,041	4,895	2,702	8,638
Total Uses	\$91,531,771	\$162,683,438	\$50,564,430	\$304,779,639
Financing & Refunding Results				
All-In TIC (%)				3.54%
Arb Yield (%)				3.10%
Weighted Avg. Maturity				11.76 yrs
Par of Refunded Bonds	\$-	\$159,605,000	\$48,085,000	\$207,690,000
Cashflow Savings	\$-	\$36,669,181	\$17,379,702	\$54,048,882
Net PV Savings (\$)	\$-	\$25,591,857	\$8,927,565	\$34,519,422
Net PV Savings (%)	-	16.03%	18.57%	16.62%



Note: For purposes of this analysis reserve releases are treated as an upfront adjustment (reduction) to PV savings

Series 2018 Cashflow Savings From Refunding

Through a combination of refunding structure optimization and aggressive pricing, the refunding was able to achieve \$85 million of total debt service savings and nearly \$7.7 million per year between 2019 and 2029.

Bond Year	Water System Second Lien Savings	Sewer System Senior Lien Savings	Aggregate Savings
2019	\$2,805,990	\$5,325,799	\$8,131,788
2020	2,811,200	4,865,005	7,676,205
2021	2,804,188	4,875,900	7,680,088
2022	2,809,300	4,870,148	7,679,448
2023	2,804,875	4,873,158	7,678,033
2024	2,808,800	4,846,108	7,654,908
2025	2,809,600	4,899,650	7,709,250
2026	2,807,825	4,849,575	7,657,400
2027	2,805,750	4,898,125	7,703,875
2028	2,805,363	4,847,725	7,653,088
2029	2,807,763	4,897,688	7,705,450
Total	\$30,880,652	\$54,048,882	\$84,929,534

Note: For purposes of this analysis reserve releases are treated as an upfront adjustment (reduction) to PV savings

GLWA's Credit Spreads Continue to Improve

In conjunction with continued financial out performance and rating upgrades, the additional credit yield investors charge to buy GLWA's bonds has continued to decline.

Senior Lien Credit Spreads

	Series 2014	Series 2015	Series 2016	Series 2018 Water	Series 2018 Sewer	Net Change ¹
1	--	--	--	--	--	
2	+84	+33	--	--	--	
3	+94	--	--	--	--	
4	--	+49	--	--	--	
5	--	+58	--	--	--	
6	--	+65	+63	--	+30	-35
7	--	+75	+65	--	+33	-42
8	--	--	+67	--	+37	-30
9	--	--	+69	--	+40	-29
10	--	--	+71	--	+40	-31
11	--	--	+73	--	+42	-31
12	--	+85	+75	--	+44	-41
13	--	--	+77	--	+45	-32
14	--	+85	+79	--	+45	-40
15	+190	+87	+81	--	+45	-145
16	+189	+86	+81	--	+45	-144
17	+190	+85	+81	--	+45	-145
18	+187	+85	+81	--	+45	-142
19	+185	+83	+81	--	+45	-140
20	+185	+83	--	--	+45	-140
21						
22						
23						
24						
25	--	--	--	--	+47	
26						
27						
28						
29						
30	--	--	+81	--	+48	-33

Second Lien Credit Spreads

	Series 2014	Series 2015	Series 2016	Series 2018 Water	Series 2018 Sewer	Net Change ¹
1	--	--	--	+19	--	
2	+120	+55	--	+22	--	-98
3	+128	--	--	+26	--	-102
4	+136	--	--	+29	--	-107
5	--	--	--	+30	--	
6	--	--	--	+33	--	
7	--	--	--	+36	--	
8	--	--	+82	+40	--	-42
9	--	--	+84	+42	--	-42
10	--	--	+86	+42	--	-44
11	--	+105	+88	+45	--	-60
12	--	+110	+90	--	--	
13	--	+110	+92	--	--	
14	--	--	+94	--	--	
15	--	--	+96	--	--	
16	--	--	--	--	--	
17	--	+110	--	--	--	
18	--	+107	--	--	--	
19	--	+103	+96	--	--	
20	--	+103	+96	--	--	
21						
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25	--	--	--	--	--	
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29						
30	--	--	+96	--	--	

Note: Only shows credit spreads for uninsured, non-AMT, 5% coupon, tax-exempt bonds
 1. Net Change is the difference in spread from Series 2018 to the earliest other spread

Springing Amendment to GLWA Master Bond Ordinances

In conjunction with the refunding transactions, GLWA continues to implement a “springing amendment” in both the Water and Sewer bond ordinances related to the Debt Service Reserve Fund (“DSRF”) requirement.

- Springing amendment would allow GLWA the *option* to reduce the reserve requirement when:
 - Senior lien rating is in AA category or higher by two rating agencies
 - Confirmation that the reduction in the DSRF will not result in a downgrade
 - 51% of the outstanding bondholders have consented to the provision

- GLWA has funded the DSRFs for both water and sewer system bonds (senior and second lien) with a combination of bond proceeds and surety bonds by a qualified credit provider

- Cost of maintaining bond proceeds in the DSRF is high
 - Interest rates on debt are higher than GLWA can invest the DSRF money

- Existing sureties are scheduled to begin expiring in 2022, which may require GLWA to put in more cash to the DSRF or fund new surety policies, both at potentially higher costs

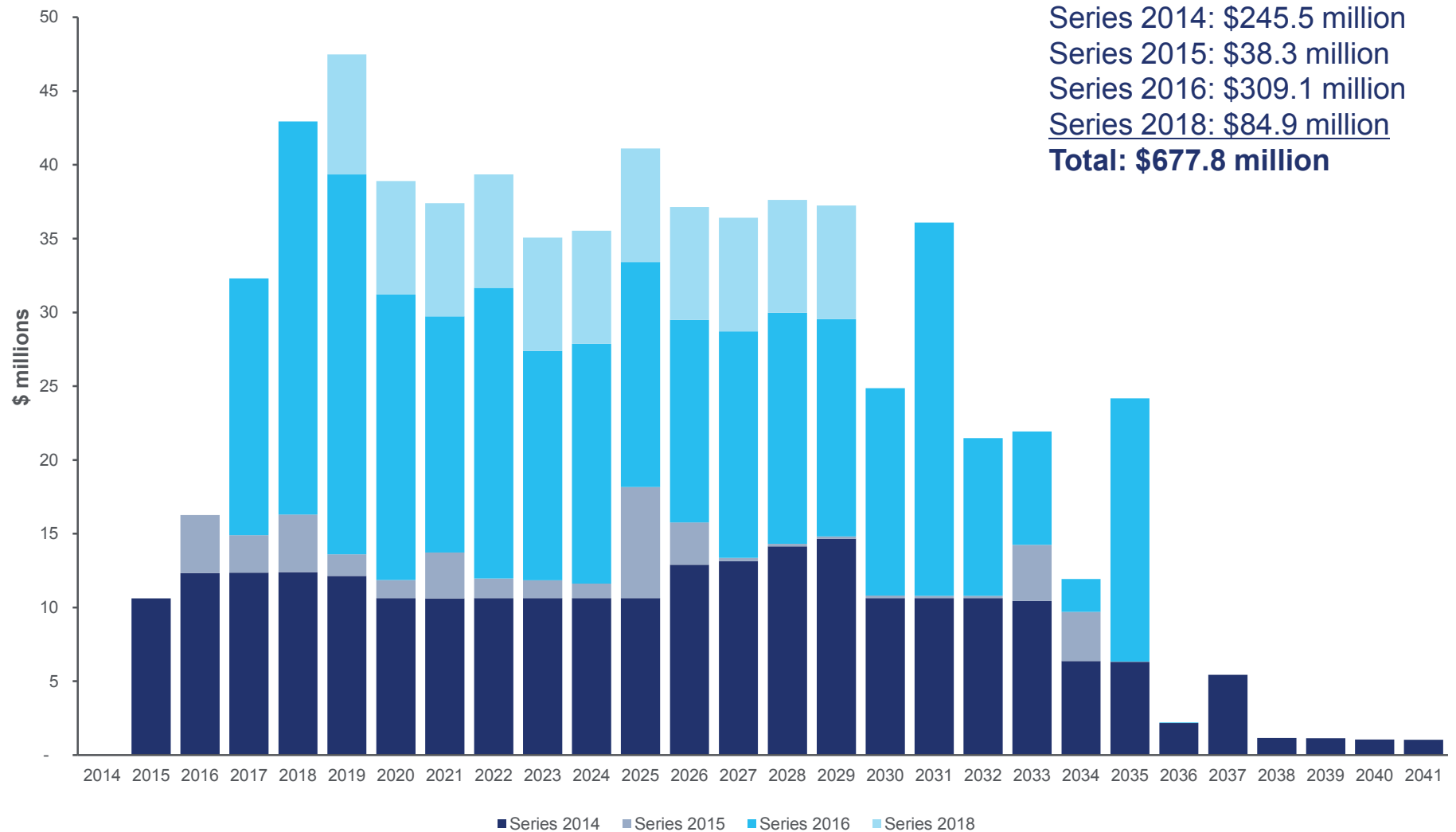
- The springing amendments could significantly reduce the cost to GLWA when it obtains AA category ratings

Water System (Sr rating of AA-/A2/A)	Consents Obtained (After 2018 Bonds)	DSRF Requirement	Cash and Securities in DSRF (After 2018 Releases)
Senior Lien	32.9%	\$120.7 million	\$14.4 million
Second Lien	84.0%	\$50.8 million	\$5.0 million

Sewage System (Sr rating of A+/A2/A)	Consents Obtained (After 2018 Bonds)	DSRF Requirement	Cash and Securities in DSRF (After 2018 Releases)
Senior Lien	20.0%	\$127.2 million	\$23.5 million
Second Lien	39.2%	\$71.6 million	\$30.3 million

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 nearly \$678 million of debt service savings for the systems since the tender and refunding transaction in 2014.





Financial Services Audit Committee Communication

Date: September 21, 2018
To: Great Lakes Water Authority Audit Committee
From: Nicolette N. Bateson, CPA, Chief Financial Officer & Treasurer
Re: Impact of 2018 Bond Transaction Results on Feasibility Forecast

Background: On Monday, September 17, 2018, the Great Lakes Water Authority (GLWA) successfully refinanced \$178.8 million of water system bonds and \$207.7 million of sewer system bonds. This resulted in water system gross cashflow savings of \$30.9 million (\$24.9 million of present value savings, or 13.9%) and sewer system gross cashflow savings of \$54.0 million (\$34.5 million of present value savings, or 16.6%) over the remaining life of the bonds. In addition, GLWA issued \$81.6 million of new money sewer bonds for the Local System, achieving a very favorable long-term average interest cost of 4.03% for 30-year debt and meeting the project funding target of \$91 million.

Analysis: With the results of the transaction now known, the feasibility forecast for the final official statements will be updated based upon the savings realized. The Foster Group, feasibility consultant for the transaction, has provided the attached analysis to explain the impact on the forecast and to present a summary of key updates that will be reflected in the final official statements.

Proposed Action: Receive and file report.

TFG
THE FOSTER GROUP

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LEAWOOD, KS 66225
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FAX: (913) 345-1640

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MEMORANDUM

Series 2018 GLWA Revenue Bonds
Preliminary Results Summary

September 18, 2018

To: Nicolette Bateson

From: Bart Foster

The attached exhibits are designed to provide a high-level summary of the results from yesterday's pricing of the above captioned GLWA bond sale(s). By way of background, the Preliminary Official Statements for the bond sales contained five-year financial forecasts that we developed as part of our responsibilities as Feasibility Consultant for the transactions. Those forecasts produced projected financial plans that embraced the Authority's strategic objective to improve the financial position of the Water and Sewer utilities. Specifically, the financial plans were designed to reduce the traditional heavy reliance on debt to finance capital improvements by employing more "pay go" strategy via utilization of the Improvement and Extension ("I&E") Funds of the utilities.

The original financial forecasts set forth in the Preliminary Official Statements were accompanied by supporting materials, including the "Preliminary Feasibility Report Introduction" memorandum we submitted on August 20, 2018. As noted in all of that material, the preliminary forecasts did not reflect any potential debt service savings associated with the refinancing portion of the Series 2018 Bonds. It did, however, include the estimated impact on debt service of the new money portion of the Series 2018 **Sewer** Bonds (to finance Local DWSD Sewer System capital improvements), and of future projected bond sales during the five-year forecast period to finance Regional System capital improvements for both the Water and Sewer Systems.

The principal objective of this discussion is to illustrate the impact on the financial forecasts of the refinancing savings achieved by the pricing of the Series 2018 Bonds. The updated forecasts reflect the pricing results, and will be set forth in the Final Official Statements. As of this writing it is our understanding that the Final Official Statements will be posted on September 20.

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Water Bond Sale Highlights:

- The Series 2018 Water Bonds are entirely refunding bonds issued for purposes of achieving debt service savings. No “new money” proceeds were generated.
- The Series 2018 Water Bonds refinanced certain existing outstanding bonds maturing from 2019 through 2029.
- The total debt service savings achieved was almost \$31 million, which equates to almost \$25 million on a net present value basis.
- The refinancing generates approximately \$2.8 million of annual debt service savings for FYs 2019 through 2029, and approximately \$14 million in total for the five-year forecast period.
- Our original five-year forecast anticipated:
 - *Issuance of approximately \$11 million of additional revenue bonds to finance Regional Water System capital improvements;*
 - *Increasing “all in” Water debt service coverage ratios from 1.41 to 1.51 during the forecast period.*
- Our updated five-year forecast:
 - *Maintains the original “top line” revenue projections;*
 - *Redirects the debt service savings towards deposits to the I&E Fund;*
 - *Eliminates the need to project ANY additional bond sales for Regional Water System capital improvements during the five-year forecast period;*
 - *Results in “all in” Water debt service coverage ratios that are approximately 2 points higher than the preliminary forecast.*

Sewer Bond Sale Highlights:

- The Series 2018 Sewer Bonds contain both new money and refunding elements.
- The new money debt service is not materially different than envisioned in the preliminary forecast.
- The Series 2018 Sewer Bonds refinanced certain existing outstanding bonds maturing from 2019 through 2029.
- The total debt service savings achieved was over \$54 million, which equates to almost \$35 million on a net present value basis.
- The refinancing generates approximately \$4.9 million of annual debt service savings for FYs 2019 through 2029, and almost \$25 million in total for the five-year forecast period.
- Our original five-year forecast anticipated:
 - *Issuance of approximately \$257 million of additional revenue bonds to finance Regional Sewer System capital improvements;*

- *Increasing “all in” Sewer debt service coverage ratios from 1.23 to 1.40 during the forecast period.*
- **Our updated five-year forecast:**
 - *Maintains the original “top line” revenue projections;*
 - *Redirects the debt service savings towards deposits to the I&E Fund;*
 - *Reduces the projected additional bond sales for Regional Sewer System capital improvements during the five-year forecast period by almost \$40 million, to a total of approximately \$217 million;*
 - *Results in “all in” debt service coverage ratios that are approximately 4 points higher than the preliminary forecast by the end of the forecast period.*

The accompanying exhibits are designed to illustrate the executive summary observations above. We are prepared to further discuss this matter at your convenience.

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Illustration of the Effect of the 2018 Bonds on Financial Forecast

	(1)	(2)	(3)	(4)	(5)	(6)	
	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>5-Year Total</u>	
	\$ millions	\$ millions	\$ millions	\$ millions	\$ millions	\$ millions	
WATER SUPPLY SYSTEM							
Pre-Refunding							
1 Debt Service	171.0	178.9	190.8	187.4	192.9	920.9	Debt service savings applied to I&E deposits
2 I&E Funding	<u>39.1</u>	<u>41.4</u>	<u>41.3</u>	<u>56.8</u>	<u>64.7</u>	<u>243.2</u>	
3 Combined Total	210.1	220.3	232.0	244.1	257.6	1,164.1	
4 All In Debt Service Coverage	1.41	1.41	1.39	1.48	1.51		
5 Projected Bond Sale (Regional)	0.0	0.0	0.0	0.0	11.0	11.0	
Post-Refunding							
6 Debt Service	168.2	176.1	188.0	184.6	189.9	906.6	
7 I&E Funding	<u>41.9</u>	<u>44.2</u>	<u>44.1</u>	<u>59.6</u>	<u>67.7</u>	<u>257.5</u>	
8 Combined Total	210.1	220.3	232.0	244.1	257.6	1,164.1	
9 All In Debt Service Coverage	1.44	1.44	1.41	1.50	1.53		
10 Projected Bond Sale (Regional)	0.0	0.0	0.0	0.0	0.0	0.0	
Impact of 2018 Bonds							
11 Debt Service	(2.8)	(2.8)	(2.8)	(2.8)	(3.0)	(14.3)	
12 I&E Funding	<u>2.8</u>	<u>2.8</u>	<u>2.8</u>	<u>2.8</u>	<u>3.0</u>	<u>14.3</u>	
13 Combined Total	0.0	0.0	0.0	0.0	0.0	0.0	
14 All In Debt Service Coverage	0.03	0.03	0.02	0.02	0.02		
15 Projected Bond Sale (Regional)	0.0	0.0	0.0	0.0	(11.0)	(11.0)	

Results in lower projected bond sales and . . .

Higher debt service coverage ratios

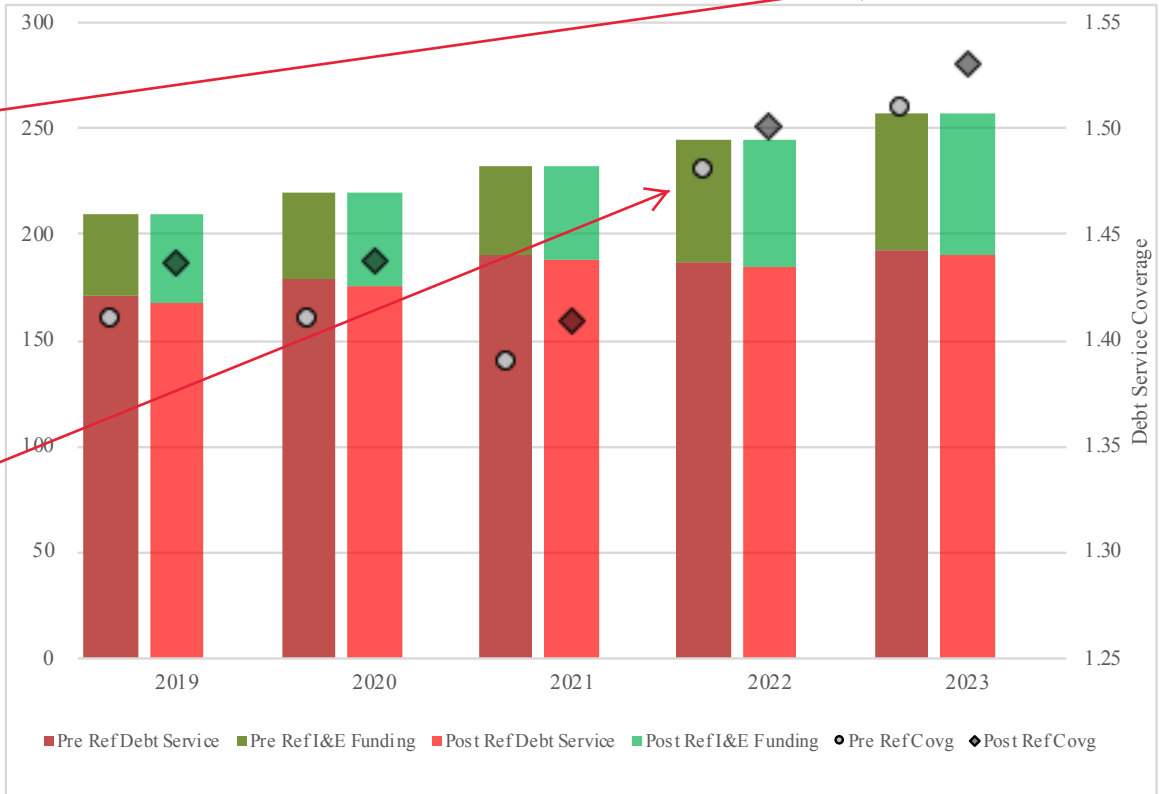


Illustration of the Effect of the 2018 Bonds on Financial Forecast

	(1)	(2)	(3)	(4)	(5)	(6)
	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>5-Year Total</u>
	\$ millions	\$ millions	\$ millions	\$ millions	\$ millions	\$ millions

SEWAGE DISPOSAL SYSTEM

Pre-Refunding

1 Debt Service	242.1	252.8	251.7	261.1	258.4	1,266.1
2 I&E Funding	<u>14.4</u>	<u>19.2</u>	<u>35.8</u>	<u>42.6</u>	<u>62.3</u>	<u>174.3</u>
3 Combined Total	256.5	272.0	287.5	303.8	320.7	1,440.4
4 All In Debt Service Coverage	1.23	1.24	1.31	1.32	1.40	
5 Projected Bond Sale (Regional)	0.0	56.0	59.0	90.0	52.0	257.0

Post-Refunding

6 Debt Service	238.2	247.7	246.2	255.3	252.3	1,239.6
7 I&E Funding	<u>19.7</u>	<u>24.3</u>	<u>41.4</u>	<u>48.6</u>	<u>68.5</u>	<u>202.5</u>
8 Combined Total	257.9	272.0	287.6	303.8	320.8	1,442.1
9 All In Debt Service Coverage	1.25	1.26	1.34	1.35	1.44	
10 Projected Bond Sale (Regional)	0.0	42.3	50.8	79.9	44.2	217.1

Impact of 2018 Bonds

11 Debt Service	(3.9)	(5.0)	(5.6)	(5.9)	(6.2)	(26.5)
12 I&E Funding	<u>5.3</u>	<u>5.1</u>	<u>5.6</u>	<u>5.9</u>	<u>6.2</u>	<u>28.2</u>
13 Combined Total	1.4	0.1	0.0	0.0	0.0	1.7
14 All In Debt Service Coverage	0.02	0.02	0.03	0.03	0.04	
15 Projected Bond Sale (Regional)	0.0	(13.7)	(8.2)	(10.1)	(7.8)	(39.9)

Minor impact on use of Lease Payment for debt service

Debt service savings applied to I&E deposits

Results in lower projected bond sales and . . .

Higher debt service coverage ratios

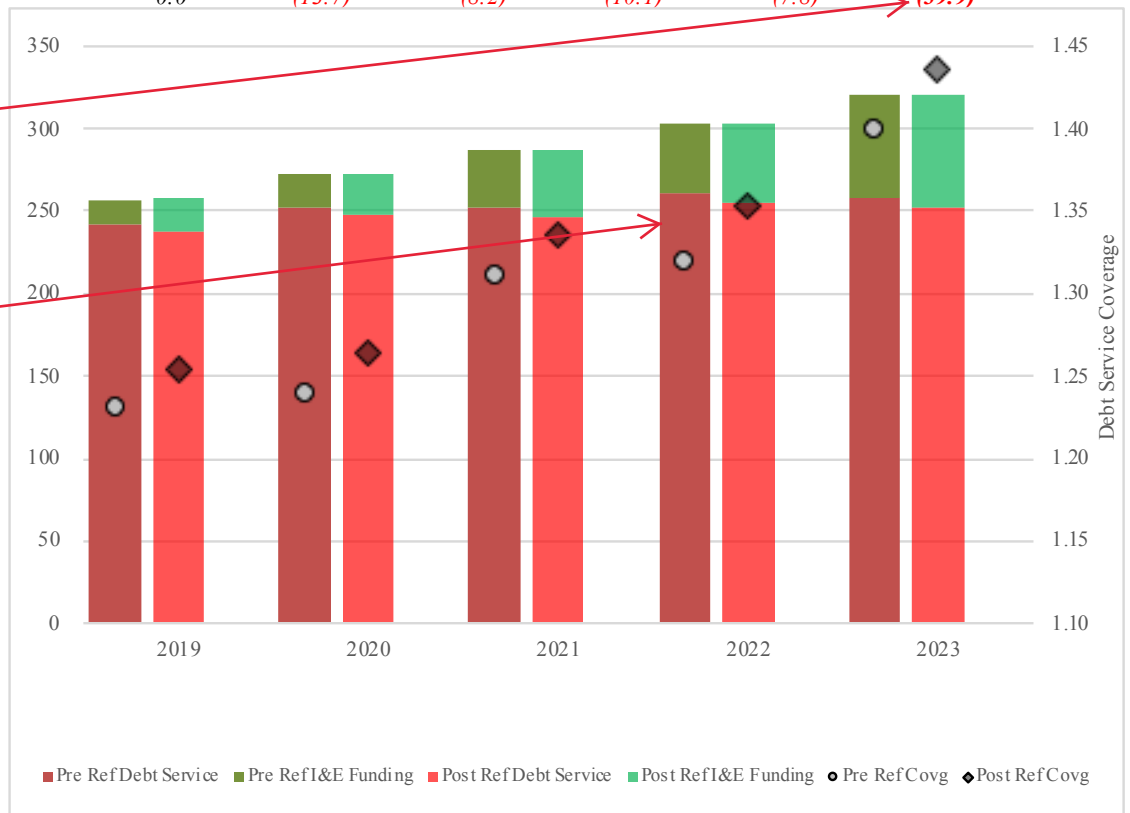


Illustration of the Effect of the 2018 Bonds on Financial Forecast

	(1)	(2)	(3)	(4)	(5)	(6)
	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>5-Year Total</u>
	\$ millions	\$ millions	\$ millions	\$ millions	\$ millions	\$ millions
COMBINED WATER & SEWER						
Pre-Refunding						
1 Debt Service	413.0	431.7	442.5	448.5	451.3	2,187.0
2 I&E Funding	<u>53.5</u>	<u>60.6</u>	<u>77.0</u>	<u>99.4</u>	<u>126.9</u>	<u>417.5</u>
3 Combined Total	466.6	492.2	519.5	547.9	578.3	2,604.5
4 All In Debt Service Coverage	1.30	1.31	1.34	1.39	1.45	
5 Projected Bond Sale (Regional)	0.0	56.0	59.0	90.0	63.0	268.0
Post-Refunding						
6 Debt Service	406.3	423.8	434.1	439.8	442.2	2,146.2
7 I&E Funding	<u>61.7</u>	<u>68.5</u>	<u>85.5</u>	<u>108.1</u>	<u>136.2</u>	<u>460.0</u>
8 Combined Total	468.0	492.3	519.6	548.0	578.3	2,606.2
9 All In Debt Service Coverage	1.33	1.34	1.37	1.42	1.48	
10 Projected Bond Sale (Regional)	0.0	42.3	50.8	79.9	44.2	217.1
Impact of 2018 Bonds						
11 Debt Service	(6.7)	(7.8)	(8.4)	(8.7)	(9.2)	(40.8)
12 I&E Funding	<u>8.1</u>	<u>7.9</u>	<u>8.4</u>	<u>8.7</u>	<u>9.3</u>	<u>42.5</u>
13 Combined Total	1.4	0.1	0.0	0.0	0.1	1.7
14 All In Debt Service Coverage	0.02	0.03	0.02	0.03	0.03	
15 Projected Bond Sale (Regional)	0.0	(13.7)	(8.2)	(10.1)	(18.8)	(50.9)

Debt service savings applied to I&E deposits

Results in lower projected bond sales and . . .

Higher debt service coverage ratios (informational only - combined debt service coverage is not a formal metric)





Financial Services Audit Committee Communication

Date: September 21, 2018

To: Great Lakes Water Authority Audit Committee

From: Jon Wheatley, Public Finance Manager

Re: Proposed Change Order No. 2
Contract No. GLWA-CS-010 Water Residential Assistance Program (WRAP)

Background: The Water Residential Assistance Program (“WRAP”) provides sustainable funding for qualifying low-income residents served by the Great Lakes Water Authority’s (“GLWA”) customers. The program is funded by GLWA at an amount equal to 0.5 percent of budgeted revenues with the FY 2016 funding level of \$4.5 million combined for water and sewer services, \$4.7 million in FY 2017, \$4.9 million for FY 2018 and \$4.9 million for FY 2019.

The scope of funding includes a) payment assistance and b) water audit and water conservation measures. Eligible residential customers with a past due bill and/or who are in active shut off can receive assistance with paying down arrears and receive \$25 toward monthly bill payment assistance (\$300 annually) and up to \$700 for arrearage assistance annually. High volume water users can receive a one-time home audit and home water conservation services up to \$1,000. Maximum annual assistance per household is \$2,000. To participate in WRAP, an applicant must have household gross incomes at or below 150% of the federal poverty income thresholds. Customers with water usage at or above 120% of the average residential usage are eligible to participate in a water audit and install water conservation measures. WRAP participants are also encouraged to participate in both financial coaching and water conservation workshops as well as other support services.

The program is administered by Wayne Metro Community Action Agency (Wayne Metro), a nonprofit agency. The WRAP began providing assistance to customers of GLWA on March 1, 2016 and has the potential to serve over 100 communities within the GLWA service area. In order to assist qualified households each community must opt into the program and sign a Memorandum of Agreement (MOA) with Wayne Metro. To date, 75 communities have opted into WRAP.

Justification: The WRAP is funded each fiscal year, based on 0.50% of budgeted revenues for that fiscal year. The contract with Wayne Metro (GLWA CS-010) specifies the not to exceed administrative fee amount based on the anticipated allocation of assistance dollars to each county. This change order extends the GLWA CS-010 through June 30, 2020 and it increases the contract amount based on the total budgeted WRAP funding amounts from the table below. Based on the budgeted WRAP funding, and the proposed allocation of WRAP funds to the City of Detroit and participating counties, the administration fees for FY 2019 and FY 2020 total \$950,000.

PROJECT MANAGEMENT STATUS

Original Start Work Date:	February 22, 2016
Original Contract End Date:	February 21, 2018
Change Order 1 Contract End Date:	June 30, 2018
Proposed Change Order 2 Contract End Date:	June 30, 2020

PROJECT ESTIMATE

Original Contract Price	\$825,000.00
Change Order No. 1	\$480,900.00
Change Order No. 2	\$950,000.00
New Contract Total	\$2,255,900.00

Budget Impact: The funding of the proposed administration fees for WRAP are paid from the 0.50% of the budgeted WRAP funds each year and do not impact the FY 2019 or FY 2020 Budget.

Proposed Action: Audit Committee recommends that the Great Lakes Water Authority Board approve a resolution to enter into Change Order No. 2 of Contract No. GLWA-CS-010, "Water Residential Assistance Program (WRAP)" with Wayne Metropolitan Communication Action Agency, a cost increase of \$950,000.00, for a total cost not to exceed \$2,255,900.00, and a time extension of 24 months for a total contract duration of fifty-four months.

**BUDGETED WRAP REVENUE ALLOCATION
WHOLESALE AND CITY OF DETROIT CUSTOMERS
FY 2019**

Community	Budgeted Direct Assistance	Budgeted Conservation Assistance	Budgeted Administration Costs	Total Budgeted Revenue	Allocation
WAYNE COUNTY					
CITY OF DETROIT	\$1,405,432	\$327,530	\$208,481	\$1,941,442	39.36%
SUBURBAN	818,952	190,853	121,483	1,131,288	22.94%
TOTAL WAYNE COUNTY	\$2,224,384	\$518,383	\$329,964	\$3,072,731	62.86%
OAKLAND COUNTY	866,319	201,892	85,855	1,154,065	23.40%
MACOMB COUNTY	452,003	105,337	44,795	602,135	12.21%
GENESEE COUNTY	17,202	4,009	1,705	22,915	0.46%
WASHTENAW COUNTY	39,783	9,271	3,943	52,997	1.07%
LAPEER COUNTY	11,131	2,594	1,103	14,829	0.30%
MONROE COUNTY	6,392	1,490	634	8,516	0.17%
ST. CLAIR COUNTY	2,862	667	284	3,812	0.08%
TOTAL	\$3,620,076	\$843,643	\$468,281	\$4,932,000	100.00%

- (1) Based on allocation of assistance funds of 81.1% Direct Bill Asst. and 18.9% Conservation Asst.
(2) Based on FY 2019 Budgeted WRAP Funding of: \$4,932,000

FY 2020

Community	Budgeted Direct Assistance	Budgeted Conservation Assistance	Budgeted Administration Costs	Total Budgeted Revenue	Allocation
WAYNE COUNTY					
CITY OF DETROIT	\$1,453,898	\$338,825	\$211,663	\$2,004,386	39.36%
SUBURBAN	845,128	196,953	125,884	1,167,966	22.94%
TOTAL WAYNE COUNTY	\$2,299,026	\$535,778	\$337,547	\$3,172,352	62.86%
OAKLAND COUNTY	894,236	208,398	88,848	1,191,481	23.40%
MACOMB COUNTY	466,568	108,732	46,356	621,656	12.21%
GENESEE COUNTY	17,756	4,138	1,764	23,658	0.46%
WASHTENAW COUNTY	41,065	9,570	4,080	54,715	1.07%
LAPEER COUNTY	11,490	2,678	1,142	15,309	0.30%
MONROE COUNTY	6,598	1,538	656	8,792	0.17%
ST. CLAIR COUNTY	2,954	688	293	3,936	0.08%
TOTAL	\$3,739,694	\$871,519	\$480,687	\$5,091,900	100.00%

- (1) Based on allocation of assistance funds of 81.1% Direct Bill Asst. and 18.9% Conservation Asst.
(2) Based on FY 2020 Budgeted WRAP Funding of: \$5,091,900

2-Year Total

\$948,968



Financial Services Audit Committee Communication

Date: September 21, 2018

To: Great Lakes Water Authority Audit Committee

From: Deirdre Henry, Treasury Manager

Re: Quarterly Investment Report through June 30, 2018 (Unaudited)

Background: As stated in section 14 of the Great Lakes Water Authority (GLWA) Investment Policy, quarterly reporting shall be presented to provide a clear picture of the status of the current GLWA investment portfolio. The attached report, prepared and presented by PFM Asset Management LLC, summarizes portfolio information through June 30, 2018 (unaudited).

Analysis: The Quarterly Investment Report is in compliance with the requirements of Public Act 20 of 1948, as amended and the GLWA Investment Policy. GLWA is actively investing its funds in a diversified portfolio which includes bank deposits, money market funds, a local government investment pool, U.S. Treasuries, Federal Agencies, and commercial paper. All securities in the portfolio are in compliance with the GLWA investment policy. Key metrics are provided below with additional commentary in the attached report.

- Yield to Market at Cost compared to market index:
 - As of June 30, 2018: 1.84% vs 1.80% (3-Month Treasury Index)
 - As of March 31, 2018: 1.72% vs 1.61% (3-Month Treasury Index)

- Portfolio Allocation in Cash/Money Market Securities
 - As of June 30, 2018: 66%
 - As of March 31, 2018: 54%

As GLWA continues to implement process improvements and more clearly define cash flows, the treasury group will work with PFM Asset Management LLC to identify strategies to maximize investment returns while meeting GLWA standards for safety and liquidity.

Proposed Action: Receive and file report.

Great Lakes Water Authority

Investment Performance Report – June 2018



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Portfolio Mix

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Yield at Cost and Market

Yield to Maturity vs. Duration

Investment Income by Month

Investment Income Year over Year

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Portfolio Holdings

Economic Update

Great Lakes Water Authority Executive Summary

PORTFOLIO RECAP

- Safety – The overall portfolio is diversified amongst cash, bank deposits, U.S. Treasuries, Federal Agencies, commercial paper, SEC-registered money market funds, and a local government investment pool. The total credit profile of the pool is strong with over 98% of the assets invested in bank deposits or securities that are rated within the two highest short and long-term rating classifications as established by S&P.
- Liquidity – The portfolio’s liquidity has increased compared to last quarter with approximately 66% of the total assets maturing overnight.
- Return – The overall yield increased to 1.84% as of June 30, 2018 versus 1.72% at March 31, 2018. The Authority earned \$13,207,619 in investment income for fiscal year 2018 on a book value basis. Based on the current interest rate environment, the investment income earned for the previous quarter, and assuming that the Authority maintains the same investable balances for the next fiscal year, we are projecting that the Authority will earn approximately \$17.1 million in investment income for fiscal year 2019.
- Compliance – The aggregate portfolio is in compliance with the Authority’s investment policy and Michigan Public Act 20.

AVAILABLE FUNDS (Unaudited)

Type	Financial Institution	Book Value	Market Value	YTM @ Market (as of 6/30/18)
Deposit Account	Comerica	\$56,084	\$56,084	0.25%
Deposit Account - Retainage	First Independence	\$14,437,389	\$14,437,389	0.05%
Deposit Account – Flint Security Deposit	Chase	\$3,756,015	\$3,756,015	0.05%
Deposit Account	Chase	\$47,681,306	\$47,681,306	0.57%
Trust Money Market Fund	U.S. Bank	\$513,826,368	\$513,826,368	1.75%
Money Market Fund	JP Morgan	\$73,311,427	\$73,311,427	1.73%
Local Government Investment Pool	GovMIC	\$22,791,693	\$22,791,693	2.02%
Managed Funds	PFM	\$345,041,454	\$343,234,564	2.25%
TOTAL		\$1,020,901,736	\$1,126,515,321	1.84%

The accounts at Comerica Bank get an earnings credit to offset bank fees. The funds and earnings in the Retainage account are held on behalf of the contractors and do not belong to GLWA. The funds and earnings in the Flint Security Deposit account are held on behalf of the City of Flint and do not belong to GLWA. Note that market values move inversely to interest rates, and the recent rise in yields has led to the overall market value being less than the book value. In addition to the totals listed above, there also exists surety bonds in the amount of \$331,914,579 as of 6/30/2018.

**Great Lakes Water Authority
Investment Strategy****GLWA INVESTMENT STRATEGY**

- The portfolio is in compliance with the Authority's investment policy
- To date, the Authority has continued to invest its funds in assets concentrated in a mixture of short and intermediate-term investments to ensure sufficient liquidity; there was a slight increase in funds maturing overnight at the end of June to cover debt service, debt reserve, and pension obligation payments and requirements
- The aggregate portfolio was yielding 1.84% at the end of June*
 - This compares to the 1.80% yield of the Bank of America / Merrill Lynch 3-Month U.S. Treasury Bill Index as of 6/30/2018, which is a comparable market indicator
- The Authority continues to implement a disciplined investment plan to provide improved safety and diversification and putting every dollar to work
- For the first quarter of FY 2019, the investment strategy steps to be taken includes seeking opportunities to invest intermediate and longer-term funds based on refined cash flows (specifically for the Water and Sewer Emergency Repair & Replacement Funds, the Water and Sewer Improvement & Extension Funds, and the Water and Sewer Budget Stabilization Funds)
- The Authority will continue to work with its investment advisor to identify strategies to maximize future investment income while meeting the objectives of safety and liquidity
- Assuming that the Authority maintains the same investable balances for FY 2019 and the interest rate environment remains in a similar range, we conservatively expect to earn approximately \$17.1 million in interest income in FY 2019

* Current market yield as of June 30, 2018.

**Great Lakes Water Authority
Market Overview and Outlook****ECONOMIC HIGHLIGHTS UPDATE**

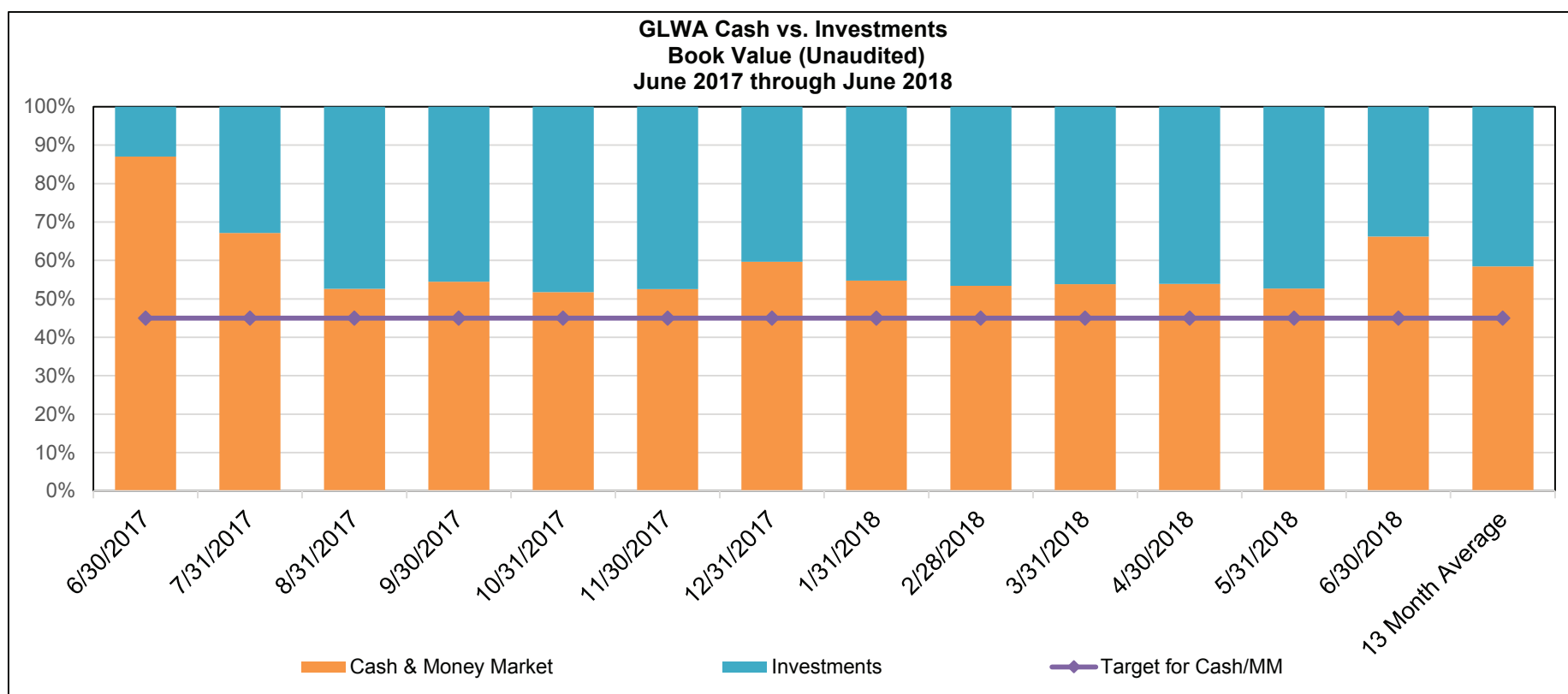
- Federal tax cuts and expanded federal spending accelerated the pace of growth in the second quarter.
- Labor market conditions remained positive as the economy added 213,000 jobs in June; the average for the second quarter was 211,000, which is above the level that is normally required to absorb new entrants into the job market.
- This strength led the Federal Open Market Committee (“FOMC”) to tighten monetary policy again at its June meeting by increasing the overnight Federal Funds target rate by a quarter of a percentage point to a new range of 1.75% to 2.00%, even as most FOMC members warned of the potential increased risks posed by new trade policy.

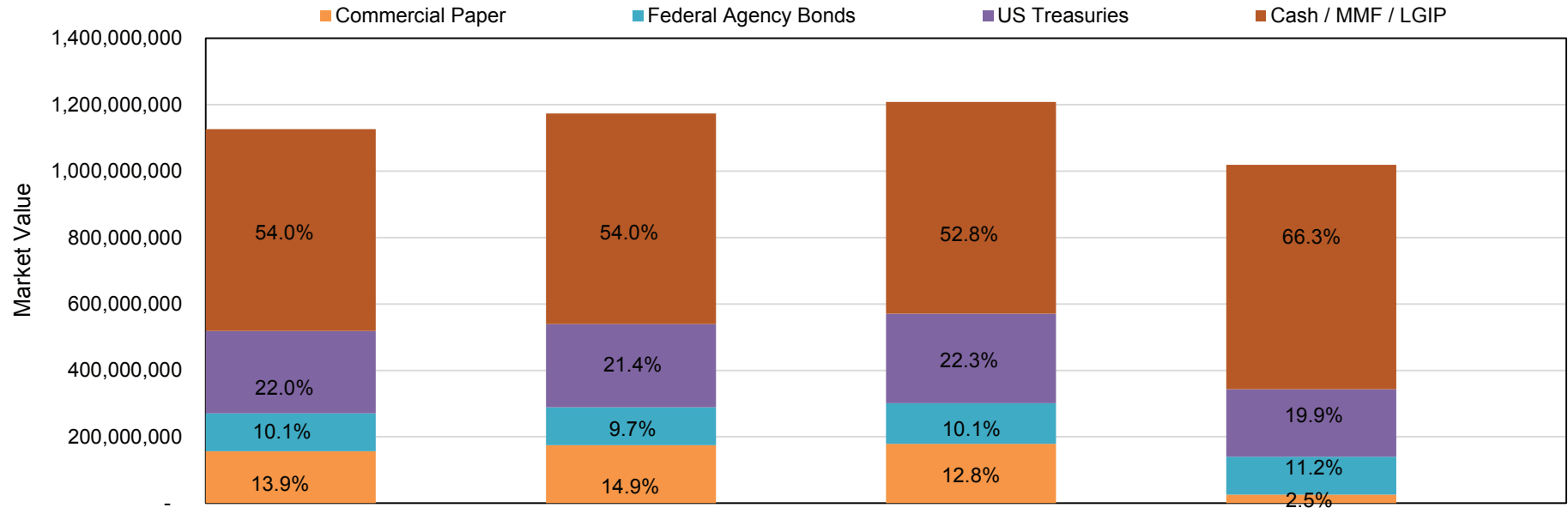
ECONOMIC IMPACT ON PORTFOLIO

- Given the strength of the U.S. economy, we expect the Fed to hike rates at least once more this year; new tariffs on imported goods could put further pressures on U.S. prices in the short run, thus supporting the Fed’s action of moving rates higher, and that would be beneficial to the Authority’s portfolio.
- Our view in the near term is that the commercial paper sector offers value to the Authority’s portfolio as economic and earnings growth balance the increase in corporate debt levels.
- By contrast, Federal Agency yields remain very close to matched-maturity Treasuries, for the most part, and offer little opportunity for the Authority’s accounts.
- The Fed rate hike in coming months has boosted money market rates well into the 2.00% range and, as bank deposit rates have lagged, short-term Treasuries and commercial paper are quite attractive for the Authority’s liquid funds.

Great Lakes Water Authority
Portfolio Mix
Cash / Money Market vs. Investments

- The Authority's liquidity requirements fluctuate each month based on operational requirements, capital funding, and debt payments. Based on a review of historical activity and refinement of cash flow projections, the Authority has set an average target of 45% cash/money market accounts and 55% investments for the portfolio holdings.
- The chart below compares the monthly allocation of the portfolio holdings to the 13-month average and the target. The increase in the cash/money market holdings for June of 2018 is related to the fiscal year end debt and pension requirements.

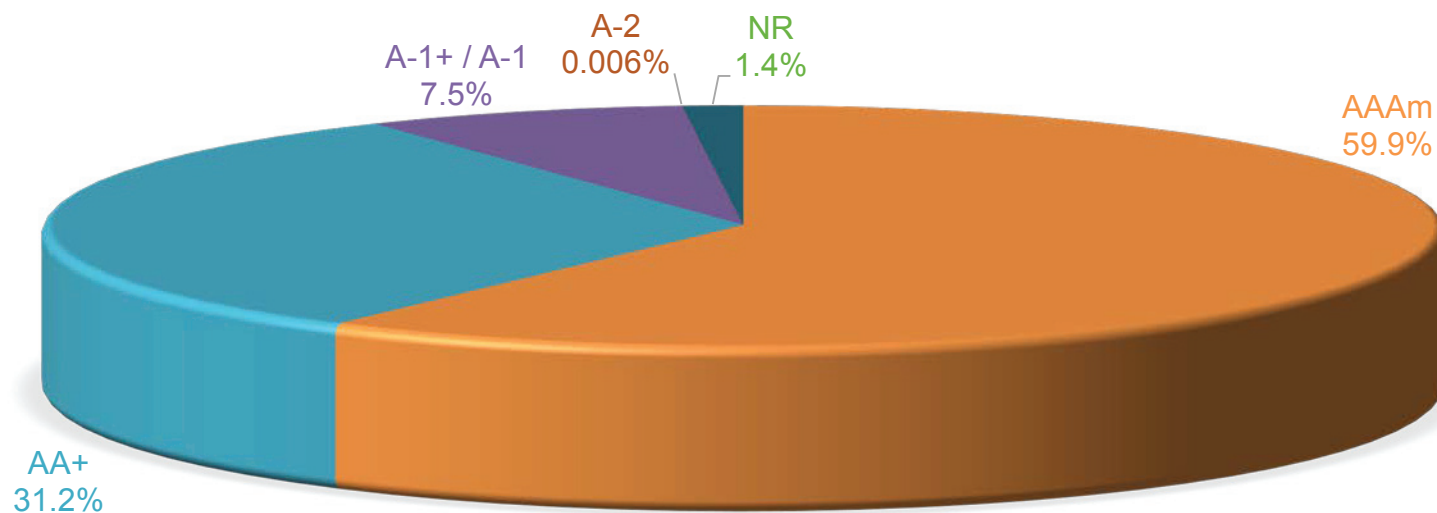


**Great Lakes Water Authority
 Investments – By Security Type**


Security Type	March		April		May		June	
	Market Value	Asset Allocation	Market Value	Asset Allocation	Market Value	Asset Allocation	Market Value	Asset Allocation
Commercial Paper	156,395,705	13.9%	174,725,272	14.9%	178,906,971	14.8%	25,488,959	2.5%
Federal Agencies	113,884,953	10.1%	113,824,690	9.7%	122,008,610	10.1%	114,513,030	11.2%
U.S. Treasuries	248,380,261	22.0%	251,233,046	21.4%	269,652,308	22.3%	203,232,575	19.9%
Cash / MMF / LGIP	607,854,402	54.0%	634,342,810	54.0%	637,960,488	52.8%	675,860,282	66.3%
Total	1,126,515,321	100.0%	1,174,125,818	100.0%	1,208,528,377	100.0%	1,019,094,846	100.0%

In addition to the totals listed above, there also exists surety bonds in the amount of \$331,914,579 as of June 30, 2018.

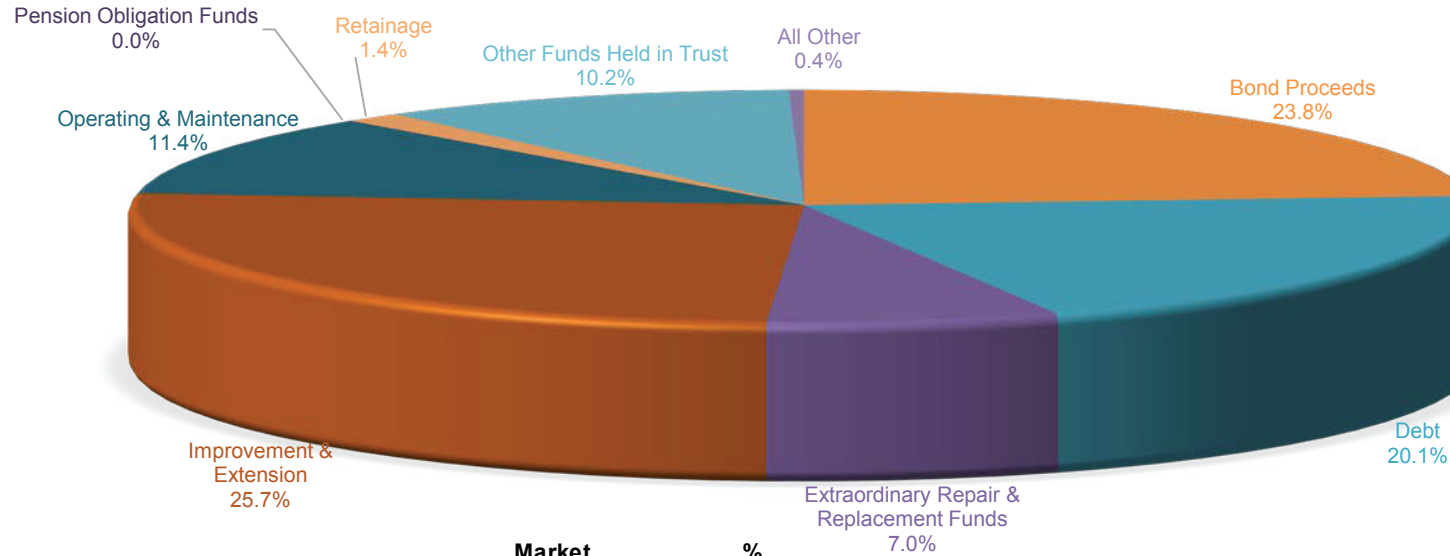
**Great Lakes Water Authority
Investments – By Credit Quality
As of June 30, 2018**



Credit Quality	Market Value	Asset Allocation
Ratings		
AAAm	609,929,488	59.9%
AA+	317,745,606	31.2%
A-1 + / A-1	76,926,280	7.5%
A-2	56,084	0.006%
NR	14,437,389	1.4%
Totals	1,019,094,846	100.0%

In addition to the totals listed above, there also exists surety bonds in the amount of \$331,914,579 as of June 30, 2018.

**Great Lakes Water Authority
Investment Analysis – By Account Purpose
As of June 30, 2018**



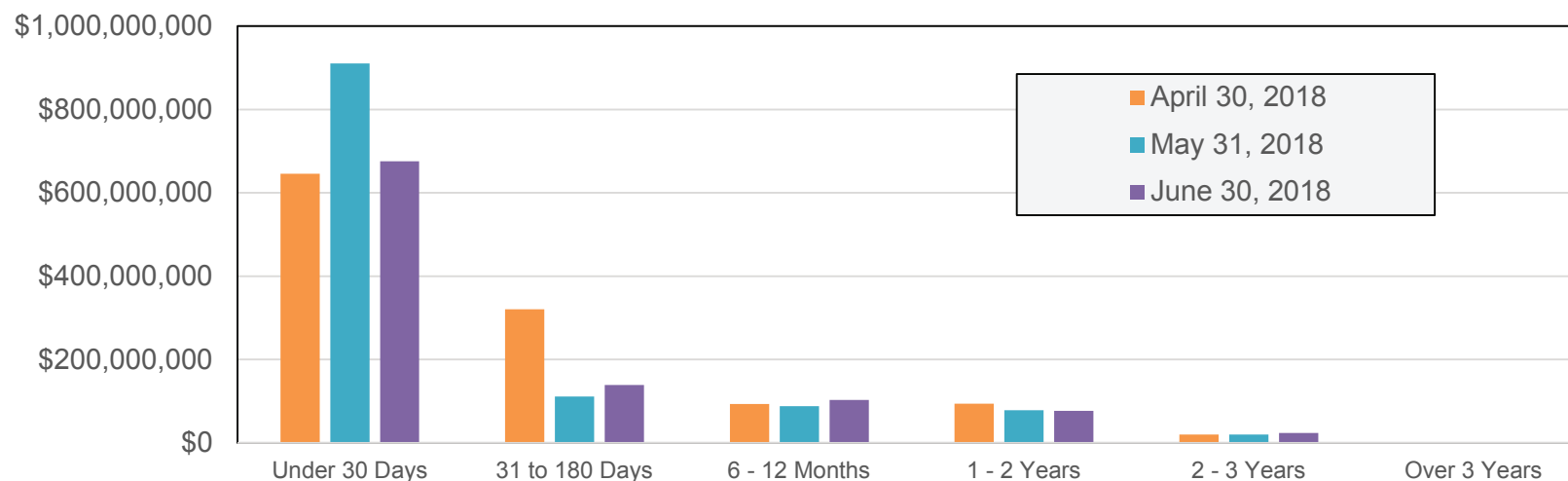
Account Purpose	Market Value	% Allocation
Bond Proceeds	\$ 242,078,019	23.8%
Debt	\$ 205,002,911	20.1%
Extraordinary Repair & Replacement Funds	\$ 71,547,911	7.0%
Improvement & Extension	\$ 262,264,175	25.7%
Operating & Maintenance	\$ 115,724,951	11.4%
Pension Obligation Funds	\$ 474,498	0.0%
Retainage	\$ 14,437,389	1.4%
Other Funds Held in Trust	\$ 103,808,977	10.2%
All Other	\$ 3,756,015	0.4%
Total	\$ 1,019,094,846	100.0%

Other Funds Held in Trust	Market Value	% Allocation
Budget Stabilization Funds	\$ 7,000,000	6.7%
Receiving Funds	\$ 89,899,856	86.6%
WRAP Funds	\$ 6,909,120	6.7%
Total	\$ 103,808,977	100.0%

In addition to the totals listed above, there also exists surety bonds in the amount of \$331,914,579 as of June 30, 2018. "All Other" funds includes funds in the Flint Security Deposit account that are held on behalf of the City of Flint and do not belong to GLWA.

**Great Lakes Water Authority
 Investment Analysis – By Maturity**

Maturity Distribution	April 30, 2018		May 31, 2018		June 30, 2018	
	\$	%	\$	%	\$	%
Under 30 Days	\$ 645,448,590	55.0%	\$ 910,014,458	75.3%	\$ 675,865,318	66.3%
31 to 180 Days	320,842,044	27.3%	111,380,526	9.2%	139,230,724	13.7%
6 - 12 Months	93,279,973	7.9%	87,899,380	7.3%	103,203,007	10.1%
1 - 2 Years	94,120,648	8.0%	78,741,687	6.5%	76,634,203	7.5%
2 - 3 Years	20,434,563	1.7%	20,492,325	1.7%	24,161,593	2.4%
Over 3 Years	-	0.0%	-	0.0%	-	0.0%
Totals	\$ 1,174,125,818	100.0%	\$ 1,208,528,377	100.0%	\$ 1,019,094,846	100.0%



In addition to the totals listed above, there also exists surety bonds in the amount of \$331,914,579 as of June 30, 2018.



**Great Lakes Water Authority
Investment Accounts – Yield at Cost & Market
As of June 30, 2018**

	As of June 30, 2018		As of March 31, 2018	
	YTM @ Cost	YTM @ Market	YTM @ Cost	YTM @ Market
Bank Deposits				
Comerica	0.25%	0.25%	0.25%	0.25%
First Independence	0.05%	0.05%	0.05%	0.05%
Flint Deposit Account	0.05%	0.05%	0.05%	0.05%
JP Morgan Chase	0.57%	0.57%	0.49%	0.49%
Sub-Total Bank Deposits	0.43%	0.43%	0.30%	0.30%
Money Market Funds / LGIPs				
GovMIC	2.02%	2.02%	1.59%	1.59%
U.S. Bank - First American MMF	1.75%	1.75%	1.50%	1.50%
JP Morgan Securities - Blackrock MMF	1.73%	1.73%	1.43%	1.43%
Sub-Total MMF / LGIPs	1.76%	1.76%	1.50%	1.50%
Investment Portfolios				
Sewage SR Debt Serv 5403	0.00%	0.00%	1.71%	2.15%
Sewage SR Res 5400	1.35%	2.33%	1.31%	2.14%
Sew 2nd Debt Serv 5403	0.00%	0.00%	1.83%	2.20%
Sewage 2nd Res 5481	1.30%	2.29%	1.30%	2.15%
Sew SRF Debt Serv 5410	1.98%	2.17%	1.82%	2.23%
Sewage R & R	1.50%	1.92%	1.39%	1.82%
Sewer Pension Obligation	0.00%	0.00%	1.31%	1.75%
Sewer Bond Fund	1.49%	2.25%	1.37%	2.07%
Sewer O&M Pension Sub Account	0.00%	0.00%	1.39%	1.75%
Water SR Debt Ser 5503	0.00%	0.00%	1.73%	2.18%
Water SR Reserve 5500	1.17%	2.11%	1.13%	2.01%
Water 2nd Debt Serv 5503	0.00%	0.00%	1.80%	2.19%
Water 2nd Res 5581	2.15%	2.36%	2.15%	2.19%
Water SRF Debt Serv 5575	1.98%	2.16%	1.83%	2.23%
Water R & R	1.50%	1.92%	1.39%	1.82%
Water Pension Obligation	0.00%	0.00%	1.32%	1.75%
Water Bond Fund	1.63%	2.29%	1.39%	2.09%
Water O&M Pension Sub Account	0.00%	0.00%	1.39%	1.75%
Sub-Total Investment Portfolios	1.56%	2.25%	1.48%	2.08%
Grand Total	1.61%	1.84%	1.45%	1.72%
Short-Term Index				
BoA / ML 3-Month Treasury Index		1.80%		1.61%

The accounts at Comerica Bank get an earnings credit to offset bank fees. The earnings in the accounts at First Independence Bank is credited to the contractors and not the Authority. The funds in the Flint Security Deposit account are held on behalf of the City of Flint and the earnings do not belong to GLWA. The Bank of America / Merrill Lynch 3-Month Treasury Bill is an unmanaged index tracking the on-the-run Treasury Bill. The index is produced and maintained by Bank of America / Merrill Lynch & Co. YTM @ Cost is the expected return, based on the original cost, the annual interest receipts, maturity value and the time period from purchase date to maturity, stated as a percentage, on an annualized basis. YTM @ Market is the rate of return, based on the current market value, the annual interest receipts, maturity value and time period remaining until maturity, stated as a percentage, on an annualized basis.

**Great Lakes Water Authority
 Demonstration of Yield to Maturity vs. Duration
 As of June 30, 2018**

- The comparison agencies included in the list below were selected based on type and/or other non-performance based criteria to show a broad range of water entities/utilities. This peer group list does not represent an endorsement of any of the public agencies or their services. The types of funds (e.g., bond proceeds, debt service, etc.) and duration of the overall portfolios listed below as well as the various differences in permitted investments and allowable credit capacity in state statutes (i.e., the ability or non-ability to invest in long-term corporate credit) will have a direct impact on the corresponding yields at market.
- The overall yield of the Authority's aggregate portfolio compares favorably to those of other short-term indices (i.e., the S&P LGIP index and the 3-month U.S. Treasury index).
- The Authority does not have a potential for a longer duration portfolio when compared to other similar water entities/utilities as the Authority's covenants limits and restricts its ability in managing assets to a longer-term strategy.

As of June 30, 2018				
	<i>Market Value</i>	<i>YTM @ Market</i>	<i>Effective Duration</i>	<i>Weighted Average Maturity</i>
GLWA				
Great Lakes Water Authority	\$1,019,094,846	1.84%	0.27 Years	100 Days
Short/Intermediate-Term Indices				
S&P Rated Government Investment Pool Index		1.70%	0.10 Years	37 Days
BoA / ML 3-Month Treasury Index		1.80%	0.14 Years	90 Days
BoA / ML 6-Month Treasury Index		2.06%	0.39 Years	180 Days
BoA / ML 1-Year Treasury Index		2.34%	0.90 Years	365 Days
BoA / ML 1-3 Year Treasury Index		2.51%	1.80 Years	657 Days
BoA / ML 1-5 Year Treasury Index		2.58%	2.58 Years	942 Days
Peer Analysis (Water Entities / Utilities)				
Alameda County Water District, CA	\$109,795,090	2.70%	2.44 Years	930 Days
Coachella Valley Water District, CA	\$457,516,783	2.60%	1.82 Years	765 Days
District of Columbia Water & Sewer Authority, DC	\$316,778,425	2.25%	0.84 Years	316 Days
DuPage Water Commission, IL	\$136,544,503	2.57%	2.14 Years	984 Days
Fairfax County Water Authority, VA	\$220,489,795	2.45%	1.68 Years	638 Days
San Bernardino Valley Municipal Water District, CA	\$300,931,711	2.63%	1.79 Years	677 Days
Truckee Meadows Water Authority, NV	\$112,022,886	2.42%	1.61 Years	610 Days

The BoA / ML indexes are unmanaged indexes tracking on-the-run Treasuries. These indexes are produced and maintained by Bank of America / Merrill Lynch & Co. Yield to maturity is the rate of return, based on the current market value, the annual interest receipts, maturity value and time period remaining until maturity, stated as a percentage, on an annualized basis.

Great Lakes Water Authority
Investment Income (by Book Value)
As of June 30, 2018

INVESTMENT INCOME BY MONTH (Unaudited)

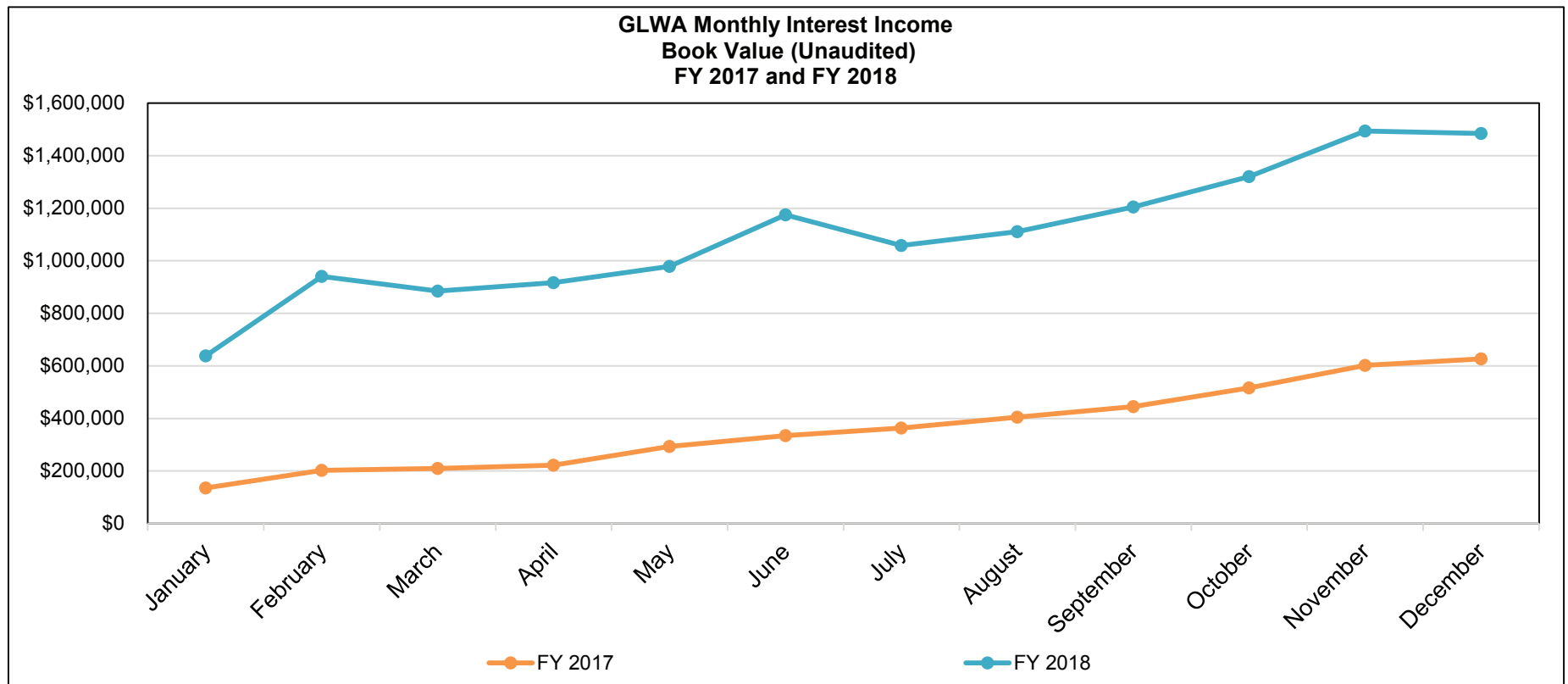
Month	Interest Earned During Period	Realized Gain / Loss	Investment Income
July 2017	\$637,658.61	\$0.00	\$637,658.61
August 2017	\$940,941.92	\$0.00	\$940,941.92
September 2017	\$884,798.87	\$0.00	\$884,798.87
October 2017	\$917,018.83	\$0.00	\$917,018.83
November 2017	\$979,111.10	\$0.00	\$979,111.10
December 2017	\$1,174,533.01	\$0.00	\$1,174,533.01
January 2018	\$1,058,271.07	\$0.00	\$1,058,271.07
February 2018	\$1,111,055.20	\$0.00	\$1,111,055.20
March 2018	\$1,205,317.00	(\$761.09)*	\$1,204,555.91
April 2018	\$1,320,892.80	\$0.00	\$1,320,892.80
May 2018	\$1,493,909.27	\$0.00	\$1,493,909.27
June 2018	\$1,484,872.45	\$0.00	\$1,484,872.45
<u>FY 2018 Y-T-D</u>	<u>\$13,208,380.13</u>	<u>(\$761.09)</u>	<u>\$13,207,619.04</u>

* The Authority generally does not realize losses on its investments. However, on March 9, 2018, PFM purchased a 6-month commercial paper investment, thinking that the amount could be fully invested to the October 1st payment date. Upon reviewing the Sewage SRF Debt Service account with the Authority in mid-March, it was determined that the amount necessary for the April 1st payment was different from what PFM had previously calculated. Therefore, a portion of the commercial paper investment was sold to ensure that the required liquid funds were available on the April 1st payment date.

These figures are based upon actual interest earned and posted to the Authority's various accounts via book value and does not include any earnings credit rate tied to the Authority's bank deposits.

**Great Lakes Water Authority
Monthly Investment Income**

- The Authority earned \$13,207,619 in investment income for fiscal year 2018 on a book value basis compared to \$4,357,728 for fiscal year 2017.
- The monthly investment earnings are continuing on an upward trend as the Authority continues to refine cash flows and work with its investment advisor to identify strategies to maximize future investment income while meeting the objectives of safety and liquidity.
- Projected investment income for fiscal year 2019 is \$17.1 million.



Appendix I: Portfolio Holdings



**Great Lakes Water Authority
Portfolio Holdings
As of June 30, 2018**

DESCRIPTION	CUSIP	PAR AMOUNT	MATURITY DATE	SETTLEMENT DATE	YTM AT COST	ORIGINAL COST	DAYS TO MATURITY	ACCRUED INTEREST	TOTAL VALUE
Short-Term Bank Deposits / MMF / LGIP									
COMERICA BANK		\$ 56,084	7/1/2018	6/30/2018	0.25%	\$ 56,084	1	\$ -	\$ 56,084
FIRST INDEPENDENCE BANK		14,437,389	7/1/2018	6/30/2018	0.05%	14,437,389	1	-	14,437,389
FLINT DEPOSIT ACCOUNT		3,756,015	7/1/2018	6/30/2018	0.05%	3,756,015	1	-	3,756,015
JP MORGAN CHASE		47,681,306	7/1/2018	6/30/2018	0.57%	47,681,306	1	-	47,681,306
GoMIC		22,791,693	7/1/2018	6/30/2018	2.02%	22,791,693	1	-	22,791,693
U.S. BANK - FIRST AMERICAN MMF		513,826,368	7/1/2018	6/30/2018	1.75%	513,826,368	1	-	513,826,368
JP MORGAN SECURITIES - BLACKROCK MMF		73,311,427	7/1/2018	6/30/2018	1.73%	73,311,427	1	-	73,311,427
Commercial Paper									
Toyota Motor Credit 0 7/31/2018	89233HGX6	\$ 5,050,000	7/31/2018	1/2/2018	1.79%	\$ 4,997,859	31	\$ -	\$ 5,041,117
Bank of Tokyo 0 9/17/2018	06538CJH5	123,000	9/17/2018	12/21/2017	1.97%	121,238	79	-	122,416
Bank of Tokyo 0 9/17/2018	06538CJH5	3,029,000	9/17/2018	12/21/2017	1.97%	2,985,610	79	-	3,014,612
GE Capital 0 9/25/2018	36164KJR3	121,000	9/25/2018	1/9/2018	1.89%	119,381	87	-	120,366
JPMorgan Securities 0 9/25/2018	46640QJR3	161,000	9/25/2018	4/6/2018	2.38%	159,192	87	-	160,156
JPMorgan Securities 0 9/25/2018	46640QJR3	123,000	9/25/2018	2/2/2018	2.05%	121,378	87	-	122,355
Toyota Motor Credit 0 9/25/2018	89233HJR6	171,000	9/25/2018	6/7/2018	2.30%	169,809	87	-	170,104
Toyota Motor Credit 0 9/25/2018	89233HJR6	122,000	9/25/2018	3/9/2018	2.25%	120,495	87	-	121,361
Cooperative Rabobank 0 9/25/2018	21687BJR3	1,583,000	9/25/2018	3/13/2018	2.23%	1,564,039	87	-	1,574,705
Dexia Credit Local 0 9/25/2018	25214PFG3	1,977,000	9/25/2018	4/9/2018	2.21%	1,956,675	87	-	1,966,641
GE Capital 0 9/25/2018	36164KJR3	3,026,000	9/25/2018	1/9/2018	1.89%	2,985,507	87	-	3,010,144
JPMorgan Securities 0 9/25/2018	46640QJR3	1,839,000	9/25/2018	4/6/2018	2.38%	1,818,352	87	-	1,829,364
JPMorgan Securities 0 9/25/2018	46640QJR3	3,026,000	9/25/2018	2/2/2018	2.05%	2,986,099	87	-	3,010,144
Toyota Motor Credit 0 9/25/2018	89233HJR6	1,356,000	9/25/2018	3/9/2018	2.25%	1,339,276	87	-	1,348,895
Toyota Motor Credit 0 9/25/2018	89233HJR6	3,897,000	9/25/2018	6/7/2018	2.30%	3,869,851	87	-	3,876,580

In addition to the totals listed above, there also exists surety bonds in the amount of \$331,914,579 as of June 30, 2018.



Great Lakes Water Authority
Portfolio Holdings
As of June 30, 2018

DESCRIPTION	CUSIP	PAR AMOUNT	MATURITY DATE	SETTLEMENT DATE	YTM AT COST	ORIGINAL COST	DAYS TO MATURITY	ACCRUED INTEREST	TOTAL VALUE
Federal Agencies									
FNMA 1.15 10/30/2018-14	3136G1KL2	\$ 10,000,000	10/30/2018	4/30/2013	1.36%	\$ 9,889,200	122	\$ 19,167	\$ 9,969,400
FNMA 1.375 1/28/2019	3135G0H63	5,200,000	1/28/2019	7/26/2017	1.39%	5,198,908	212	30,189	5,174,359
FNMA 1.375 1/28/2019	3135G0H63	6,695,000	1/28/2019	8/31/2017	1.31%	6,700,758	212	38,868	6,661,987
FNMA 1 2/26/2019	3135G0J53	5,205,000	2/26/2019	7/26/2017	1.39%	5,173,666	241	17,928	5,161,799
FNMA 1 2/26/2019	3135G0J53	6,690,000	2/26/2019	8/31/2017	1.33%	6,657,821	241	23,043	6,634,473
FHLB 1.5 3/8/2019	3133782M2	6,595,000	3/8/2019	8/31/2017	1.34%	6,611,026	251	30,777	6,561,682
FHLB 1.375 3/18/2019	3130AAXX1	5,175,000	3/18/2019	7/26/2017	1.38%	5,174,431	261	20,161	5,141,880
FHLB 1.375 5/28/2019	3130ABF92	5,260,000	5/28/2019	7/26/2017	1.40%	5,257,423	332	6,429	5,213,460
FHLB 1.375 5/28/2019	3130ABF92	5,245,000	5/28/2019	8/31/2017	1.34%	5,248,409	332	6,411	5,198,592
FHLB 1.625 6/14/2019	313379EE5	7,050,000	6/14/2019	9/1/2017	1.38%	7,080,033	349	5,092	6,998,831
FHLMC 0.875 7/19/2019	3137EAEB1	5,230,000	7/19/2019	7/26/2017	1.41%	5,176,079	384	20,466	5,147,382
FHLMC 0.875 7/19/2019	3137EAEB1	6,720,000	7/19/2019	8/31/2017	1.36%	6,659,386	384	26,297	6,613,844
FHLMC 1.375 8/15/2019	3137EAEH8	5,215,000	8/15/2019	7/26/2017	1.45%	5,206,917	411	26,890	5,153,932
FNMA 1 8/28/2019	3135G0P49	6,715,000	8/28/2019	8/31/2017	1.39%	6,664,100	424	22,756	6,605,176
FNMA 1.75 9/12/2019	3135G0ZG1	4,705,000	9/12/2019	7/26/2017	1.45%	4,734,171	439	24,701	4,666,913
FHLB 1 9/26/2019	3130A9EP2	7,550,000	9/26/2019	8/31/2017	1.39%	7,490,053	453	19,714	7,419,279
FHLMC 1.25 10/2/2019	3137EADM8	5,045,000	10/2/2019	12/28/2017	1.93%	4,985,469	459	15,415	4,968,346
FHLB 2.125 2/11/2020	3130ADN32	3,750,000	2/11/2020	6/28/2018	2.52%	3,726,750	591	31,211	3,727,095
FHLMC 2.5 4/23/2020	3137EAEM7	3,750,000	4/23/2020	6/28/2018	2.56%	3,746,288	663	18,490	3,743,449
FHLB 2.625 5/28/2020	3130AECJ7	3,750,000	5/28/2020	6/28/2018	2.57%	3,753,825	698	10,664	3,751,151

In addition to the totals listed above, there also exists surety bonds in the amount of \$331,914,579 as of June 30, 2018.



Great Lakes Water Authority
Portfolio Holdings
As of June 30, 2018

DESCRIPTION	CUSIP	PAR AMOUNT	MATURITY DATE	SETTLEMENT DATE	YTM AT COST	ORIGINAL COST	DAYS TO MATURITY	ACCRUED INTEREST	TOTAL VALUE
U.S. Treasuries									
T-Note 0.75 8/31/2018	9128282C3	\$ 5,190,000	8/31/2018	7/26/2017	1.27%	\$ 5,160,806	62	\$ 12,904	\$ 5,180,175
T-Note 0.75 8/31/2018	9128282C3	6,650,000	8/31/2018	7/26/2017	1.27%	6,612,594	62	16,535	6,637,412
T-Note 1 9/15/2018	912828L40	7,018,000	9/15/2018	11/8/2017	1.50%	6,988,393	77	20,406	7,004,525
T-Note 1 9/15/2018	912828L40	121,000	9/15/2018	10/4/2017	1.36%	120,594	77	352	120,768
T-Note 1 9/15/2018	912828L40	122,000	9/15/2018	11/7/2017	1.49%	121,490	77	355	121,766
T-Note 1 9/15/2018	912828L40	176,000	9/15/2018	5/15/2018	1.96%	175,436	77	512	175,662
T-Note 1 9/15/2018	912828L40	9,525,000	9/15/2018	11/8/2017	1.50%	9,484,816	77	27,695	9,506,712
T-Note 1 9/15/2018	912828L40	3,815,000	9/15/2018	5/15/2018	1.96%	3,802,780	77	11,093	3,807,675
T-Note 1 9/15/2018	912828L40	2,993,000	9/15/2018	10/4/2017	1.36%	2,982,945	77	8,702	2,987,253
T-Note 1 9/15/2018	912828L40	2,994,000	9/15/2018	11/7/2017	1.49%	2,981,486	77	8,705	2,988,252
T-Note 0.75 9/30/2018	912828T42	5,160,000	9/30/2018	7/26/2017	1.28%	5,128,355	92	9,622	5,144,293
T-Note 0.75 9/30/2018	912828T42	6,605,000	9/30/2018	7/26/2017	1.28%	6,564,493	92	12,317	6,584,894
T-Note 1.375 9/30/2018	912828RH5	10,220,000	9/30/2018	10/26/2016	0.87%	10,317,809	92	34,939	10,204,466
T-Note 1.375 9/30/2018	912828RH5	7,805,000	9/30/2018	10/26/2016	0.87%	7,879,696	92	26,683	7,793,136
T-Note 0.75 10/31/2018	912828T83	5,215,000	10/31/2018	7/26/2017	1.31%	5,178,536	123	6,483	5,193,405
T-Note 0.75 10/31/2018	912828T83	4,275,000	10/31/2018	8/31/2017	1.26%	4,249,784	123	5,315	4,257,297
T-Note 0.75 10/31/2018	912828T83	2,400,000	10/31/2018	7/26/2017	1.31%	2,383,219	123	2,984	2,390,062
T-Note 1.375 11/30/2018	912828RT9	10,400,000	11/30/2018	7/26/2017	1.32%	10,407,313	153	11,721	10,369,122
T-Note 1 11/30/2018	912828U40	13,370,000	11/30/2018	8/31/2017	1.26%	13,326,652	153	10,959	13,310,463
T-Note 1 3/15/2019	912828P95	793,000	3/15/2019	5/15/2018	2.26%	784,760	258	2,306	786,093
T-Note 1 3/15/2019	912828P95	794,000	3/15/2019	6/7/2018	2.28%	786,277	258	2,309	787,084
T-Note 1 3/15/2019	912828P95	810,000	3/15/2019	4/6/2018	2.10%	801,742	258	2,355	802,945
T-Note 1.25 4/30/2019	912828S18	5,225,000	4/30/2019	7/26/2017	1.37%	5,214,183	304	10,826	5,179,077

In addition to the totals listed above, there also exists surety bonds in the amount of \$331,914,579 as of June 30, 2018.



Great Lakes Water Authority
Portfolio Holdings
As of June 30, 2018

DESCRIPTION	CUSIP	PAR AMOUNT	MATURITY DATE	SETTLEMENT DATE	YTM AT COST	ORIGINAL COST	DAYS TO MATURITY	ACCRUED INTEREST	TOTAL VALUE
U.S. Treasuries									
T-Note 1.25 4/30/2019	912828ST8	6,680,000	4/30/2019	8/31/2017	1.31%	6,673,216	304	13,841	6,621,289
T-Note 1.25 5/31/2019	912828XS4	5,180,000	5/31/2019	7/26/2017	1.37%	5,168,669	335	5,307	5,129,008
T-Note 1.25 6/30/2019	912828XV7	6,463,000	6/30/2019	2/28/2018	2.17%	6,385,242	365	-	6,392,295
T-Note 1.625 6/30/2019	912828WS5	146,000	6/30/2019	7/21/2017	1.35%	146,776	365	-	144,934
T-Note 1.625 6/30/2019	912828WS5	1,625,000	6/30/2019	2/27/2017	1.27%	1,638,267	365	-	1,613,138
T-Note 1.25 6/30/2019	912828XV7	159,000	6/30/2019	2/28/2018	2.17%	157,087	365	-	157,261
T-Note 1.25 6/30/2019	912828XV7	5,800,000	6/30/2019	10/11/2017	1.49%	5,776,664	365	-	5,736,548
T-Note 1.625 6/30/2019	912828WS5	4,475,000	6/30/2019	2/10/2017	1.32%	4,506,989	365	-	4,442,333
T-Note 1.25 6/30/2019	912828XV7	195,000	6/30/2019	2/28/2018	2.17%	192,654	365	-	192,867
T-Note 1.25 6/30/2019	912828XV7	10,150,000	6/30/2019	10/11/2017	1.49%	10,109,162	365	-	10,038,959
T-Note 1.625 6/30/2019	912828WS5	2,450,000	6/30/2019	2/27/2017	1.27%	2,470,002	365	-	2,432,115
T-Note 1.5 10/31/2019	912828F62	3,405,000	10/31/2019	6/28/2018	2.43%	3,363,635	488	8,466	3,362,703
T-Note 1.75 11/30/2019	9128283H1	3,350,000	11/30/2019	6/28/2018	2.44%	3,317,809	518	4,805	3,316,239
T-Note 1.75 11/30/2019	9128283H1	3,780,000	11/30/2019	6/28/2018	2.44%	3,743,677	518	5,422	3,741,905
T-Note 1.875 12/31/2019	9128283N8	3,300,000	12/31/2019	6/28/2018	2.46%	3,271,770	549	-	3,270,482
T-Note 1.875 12/31/2019	9128283N8	3,750,000	12/31/2019	6/28/2018	2.46%	3,717,920	549	-	3,716,456
T-Note 2 1/31/2020	9128283S7	3,750,000	1/31/2020	6/28/2018	2.46%	3,723,047	580	31,077	3,721,729
T-Note 2.25 3/31/2020	9128284C1	3,725,000	3/31/2020	6/28/2018	2.49%	3,709,431	640	20,839	3,708,122
T-Note 1.875 6/30/2020	912828VJ6	3,750,000	6/30/2020	6/28/2018	2.52%	3,703,271	731	-	3,701,805
T-Note 1.625 6/30/2020	912828XH8	9,705,000	6/30/2020	10/11/2017	1.61%	9,709,928	731	-	9,532,542
T-Note 1.625 6/30/2020	912828XH8	4,565,000	6/30/2020	2/27/2017	1.54%	4,578,374	731	-	4,483,880
T-Note 1.625 6/30/2020	912828XH8	6,560,000	6/30/2020	10/11/2017	1.61%	6,563,331	731	-	6,443,429

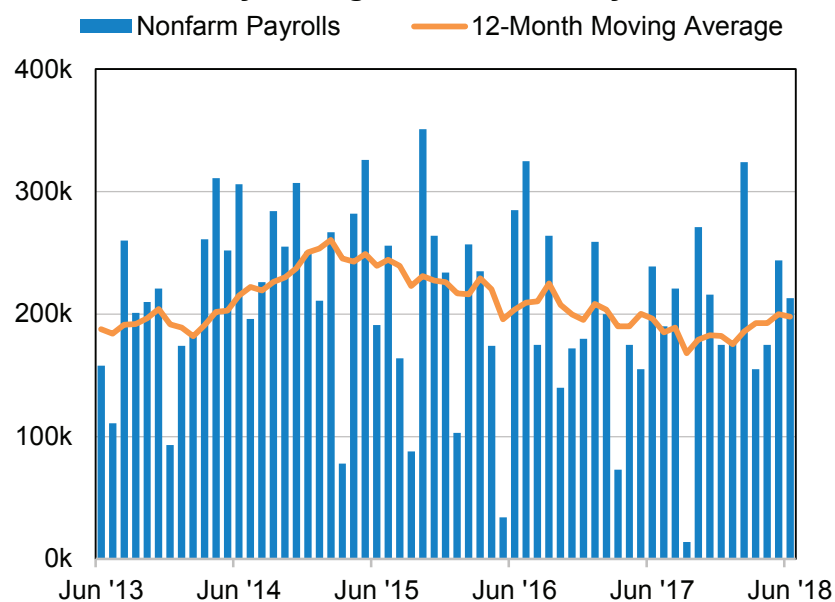
In addition to the totals listed above, there also exists surety bonds in the amount of \$331,914,579 as of June 30, 2018.

Appendix II: Economic Update

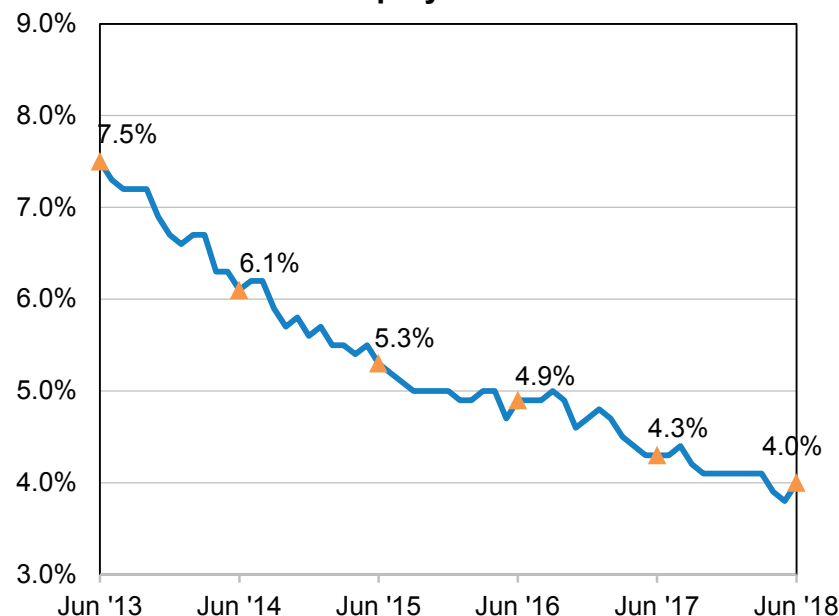
Labor Market Strengthened Further in June

- The U.S. labor market added 213,000 jobs in June, well above the expected 195,000 jobs
 - The headline unemployment rate rose slightly to 4.0%, but remained near historic lows
 - Wage growth remained modest, with average hourly earnings – a key measure of wage growth – matching May’s level of 2.7% year-over-year

Monthly Change in Nonfarm Payrolls



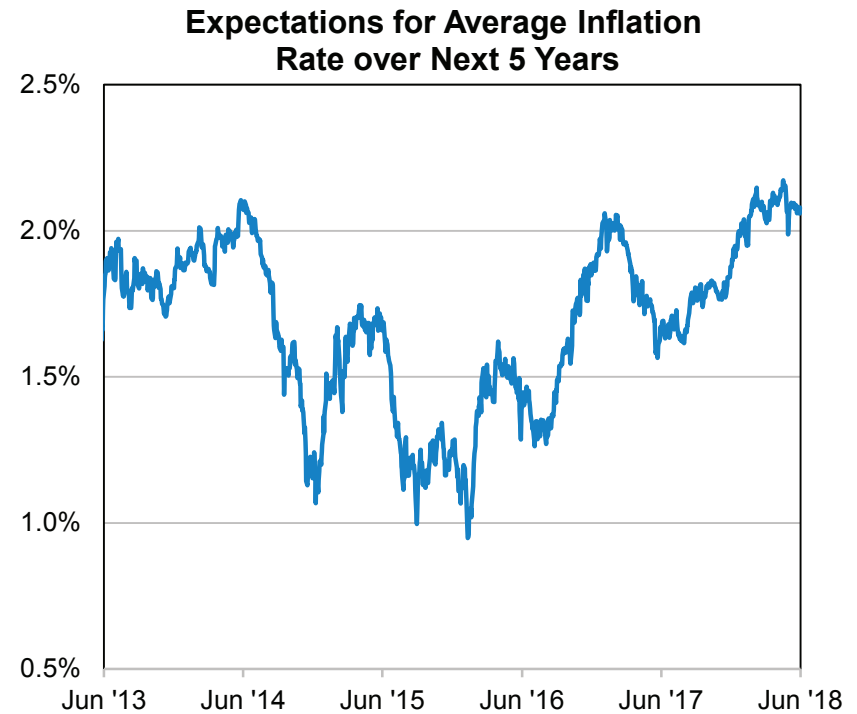
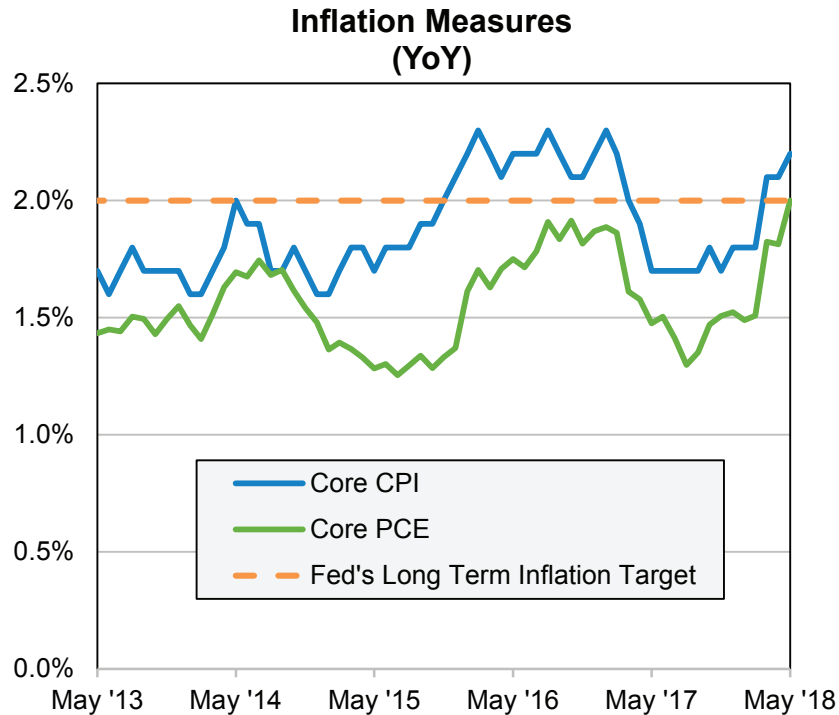
Unemployment Rate



Source: Bloomberg as of June of 2018

Inflation Reaches Fed's 2.0% Target

- The core personal consumption expenditures (“PCE”) price index, the Fed’s preferred measure of inflation, rose to 2.0% year-over-year in May, right at the Fed’s 2.0% target
- Forward-looking inflation expectations remain anchored around the 2.0% level



Source: Bloomberg, latest data available as of June 2018. Inflation expectations based on yield difference between 5-year Treasury note and 5-year Treasury Inflation Protected Securities (TIPS).

FOMC Statement Highlights

June

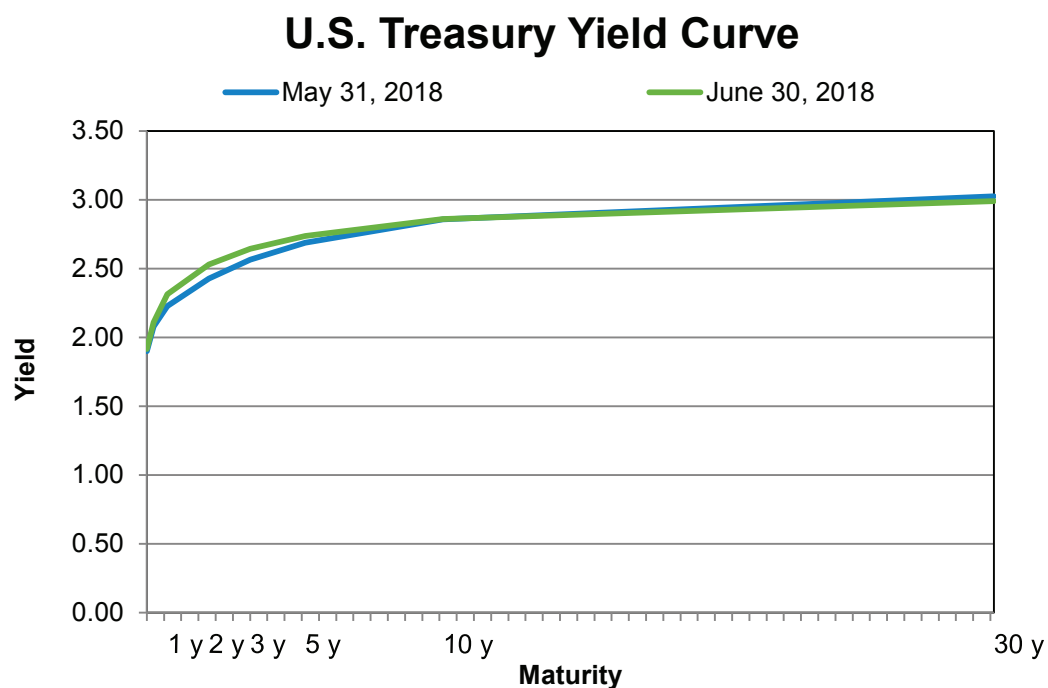
13

- Information received since the FOMC met in May indicates that the labor market has continued to strengthen and that **economic activity has been rising at a solid rate**. Job gains have been strong in recent months, and **the unemployment rate has declined**. Recent data suggest that growth of household spending **has picked up**, and **business fixed investment has continued to grow strongly**.
- In view of realized and expected labor market conditions and inflation, the Committee decided to **raise the target range for the Federal Funds rate by 25 basis points (0.25%) to 1.75% – 2.00%**.
- The Committee noted that **further gradual increases in the target range for the Federal Funds rate will be consistent with sustained expansion** of labor market conditions and inflation near the Committee's symmetric 2.0% objective over the medium term.

Source: Federal Reserve

U.S. Treasury Yields

	<u>5/31/2018</u>	<u>6/30/2018</u>	<u>Change</u>
3 month	1.90%	1.92%	0.02%
6 month	2.08%	2.11%	0.03%
1 year	2.22%	2.31%	0.09%
2 year	2.43%	2.53%	0.10%
3 year	2.55%	2.64%	0.09%
5 year	2.70%	2.74%	0.04%
10 year	2.86%	2.86%	0.00%
30 year	3.03%	2.99%	-0.04%



Source: Bloomberg

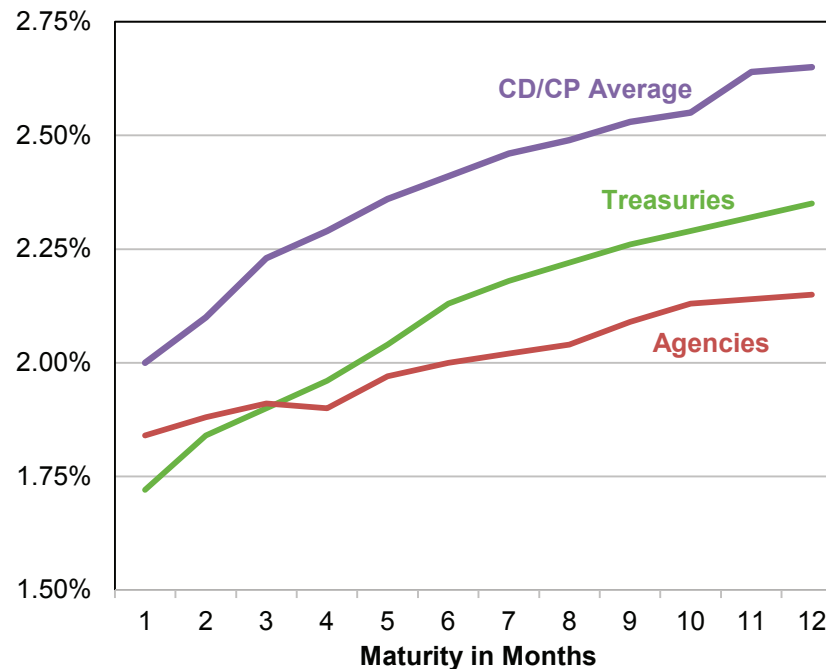
Current Short-Term Credit Environment

- Commercial paper investments remain attractive alternatives to short-term Treasuries, Agencies, bank deposits, and government money market funds

Yield Spread on 6-month Commercial Paper over T-Bill

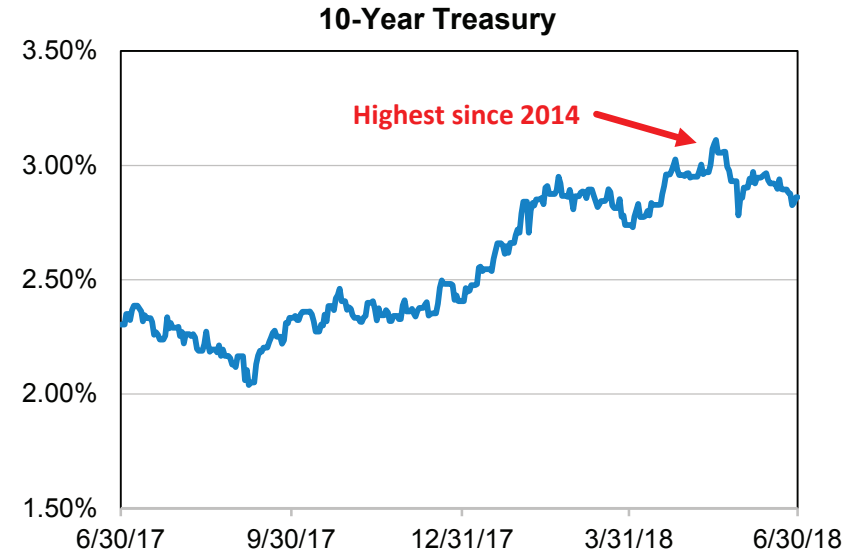
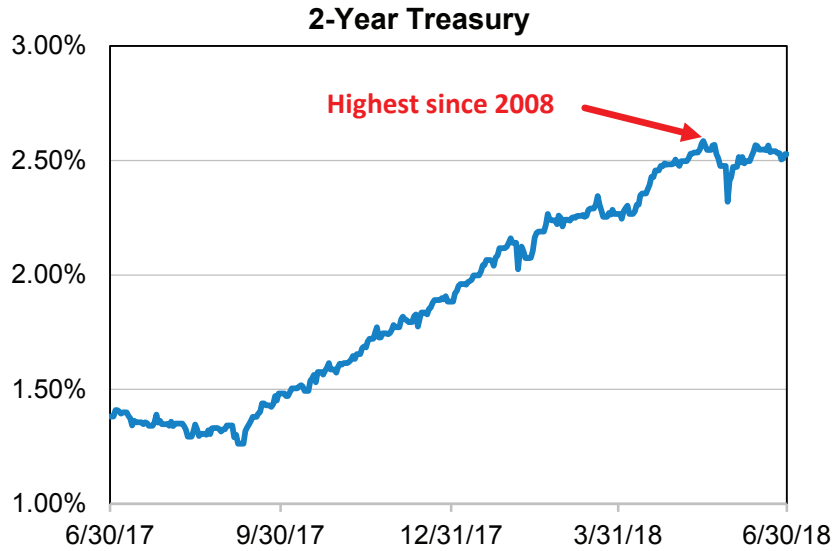


Money Market Yield Curves

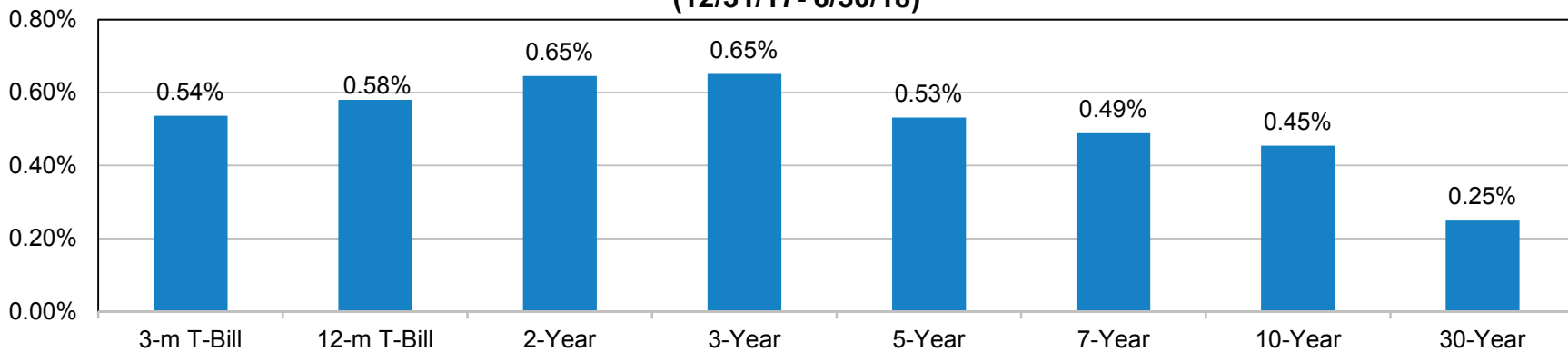


Source: Bloomberg, PFM Trading Desk as of 6/30/18. Not a specific recommendation. 6-month CP yield spread based on A1/P1 rated CP index.

Rates Up Strongly Year-to-Date



2018 YTD Change in Yield (12/31/17 - 6/30/18)



Source: Bloomberg as of 6/30/18.

Great Lakes Water Authority
Market Overview and Outlook

FIXED INCOME MARKET – ECONOMIC HIGHLIGHTS

- Despite the myriad of global headwinds to economic growth, including global trade wars and geopolitical uncertainty, the strength and resolve of domestic economic themes continued to rule the day:
 - U.S. GDP grew at 2.0% in the first quarter of 2018 with year-over-year growth up to 2.8%
 - Inflation trended higher, as the personal consumption expenditures (“PCE”) core price index grew at 2.0% year-over-year for the first time since 2012
 - The labor market saw continued strength as the U.S. unemployment rate reached a multi-decade low of 3.8% (before bouncing back to 4.0% in June), job growth remained robust, and wages trended modestly higher
 - The S&P 500 index grinded out a 3.4% return for the quarter
 - The Fed increased short-term rates by an additional 0.25% in June and is expected to continue to pursue additional gradual rate hikes over the near term

- U.S. Treasury yields increased during the quarter, but the impact varied widely by maturity:
 - Yields on maturities 3 years and under rose by about 20 – 25 basis points (0.20% – 0.25%), the result of the widely anticipated Fed rate hike in June
 - Yields on longer-term maturities rose by much less: the 10-year Treasury rose by 12 basis points while the 30-year Treasury bond rose just 2 basis points (0.02%), the result of modest inflation expectations, moderating growth prospects, and persistently low global interest rates
 - As a consequence, the yield curve flattened to a new post-recession low

- In what we viewed as a well-choreographed interest rate environment, we continued to strategically position portfolios with a modestly-defensive duration bias relative to benchmarks. However, with rates near multi-year highs, there were also opportunities to selectively capture higher yields in some parts of the yield curve when rebalancing portfolios or participating in new issues

**Great Lakes Water Authority
Market Overview and Outlook**

FIXED INCOME MARKET – ECONOMIC HIGHLIGHTS

- Most investment-grade sectors contributed positive excess returns (returns in excess of similar-duration Treasuries) to fixed income portfolios for the quarter.
 - Federal Agency yield spreads remained very narrow throughout the quarter. Limited incremental yield in combination with light issuance and diminishing supply influenced our continued preference to reduce allocations to Agencies. Generally, the Agency sector generated returns similar to Treasuries in the second quarter of 2018, except for longer-maturity issues where wider yield spreads resulted in underperformance.
 - Short-term, high-quality commercial paper investments continued to offer considerable value relative to not only similar-maturity government securities but also somewhat longer Treasury maturities. The combination of incremental income and the interest rate risk protection offered by this sector’s shorter duration continued to benefit investment portfolios

- In light of continued economic growth, inflation near the Fed’s symmetric target of 2.0%, and strong labor market conditions, the Fed appears poised to raise rates further. As a result of the expectation for 1 or 2 additional hikes in 2018 and 3 to 4 more in 2019, our view remains that the general trend of interest rates will be to increase gradually over the near-term. Therefore, we plan to maintain a defensive duration posture to mitigate a portion of interest rate risk relative to benchmarks.

- The outlook for some of the major investment-grade fixed-income sectors are as follows:
 - Federal Agency securities remain expensive, as most maturities offer less than five basis points of incremental yield relative to U.S. Treasuries. We will continue to reduce exposure to Agencies in maturities where spreads are tight, seeking better value in either Treasuries or other sectors. Over the past quarter, however, the 2 – 3 year portions of the Agency curve experienced modest widening that may create some opportunities in the third quarter of 2018.
 - Short-term money market investors continue to reap the rewards of current monetary policy tightening and higher overnight target rates. Further, the yield curve for high-quality commercial paper is quite steep and attractive, offering opportunities to extend maturities and to add allocations in this space.

Disclosure

This material is based on information obtained from sources generally believed to be reliable and available to the public, however PFM Asset Management LLC cannot guarantee its accuracy, completeness or suitability. This material is for general information purposes only and is not intended to provide specific advice or a specific recommendation. All statements as to what will or may happen under certain circumstances are based on assumptions, some but not all of which are noted in the presentation. Assumptions may or may not be proven correct as actual events occur, and results may depend on events outside of your or our control. Changes in assumptions may have a material effect on results. Past performance does not necessarily reflect and is not a guaranty of future results. The information contained in this presentation is not an offer to purchase or sell any securities.



Financial Services Audit Committee Communication

Date: September 21, 2018

To: Great Lakes Water Authority Audit Committee

From: Kim Garland, Public Finance Management Professional

Re: Trust Receipt & Disbursement Report for *Preliminary* Activity as of July 31, 2018

Background: The trusts established pursuant to the Master Bond Ordinance (MBO) outline a flow of funds that governs the priority of the application of cash receipts from both the regional wholesale (i.e. Great Lakes Water Authority or GLWA) and local retail (i.e. Detroit Water & Sewerage Department) activities which are further separated by the water system and the sewage disposal system.¹

This report provides an ongoing status of the net cash flow of both organizations (GLWA and DWSD) to fund their allocated share of Master Bond Ordinance requirements in accordance with the leases for the regional systems. This report begins with the operational effective date of the GLWA on January 1, 2016.

Analysis: The attached tables summarize activity along three lines: Local System Activity, Regional System Activity, and Combined Activity accompanied by a series of charts that further breakdown this activity by fund, inflows, and outflows. Activity is reported as preliminary until the June 30, 2018 fiscal year is closed.

Water collections for both the local and regional systems remain steady through June and July. Although net July activity for Water reports a slightly negative change, this appears to be a temporary status due to the timing of payments made. The regional Sewer system also reports a negative change this period due to payment timing where there are very few customers and the timing of payments made generates noticeable swings in net activity. Regional Sewer is best reviewed over longer timeframes. Local Sewer activity remains negative but reflects improved collections over the two prior periods. The annual County tax settlement payment will also help improve net activity for the Local Sewer system this first quarter.

Proposed Action: Receive and file report.

¹ The Master Bond Ordinance is online at <http://www.glwater.org/board/organizational-documents/> (see "compiled" documents dated August 10, 2016. A graphic depiction of the MBO Flow of Funds is at <http://www.glwater.org/wp-content/uploads/2015/11/Master-Bond-Ordinance-Flow-of-Funds-Graphic-version10-10-16.pdf>).

Great Lakes Water Authority
 Local System Trust Receipts & Disbursements - Budget to Actual
 January 1, 2016 thru July 31, 2018 (Preliminary)

Month	Retail System Cash Receipts			Lease Consideration - Debt Contribution			Revenue Requirements due to GLWA		
	Water	Sewer	Total	Water	Sewer	Total	Water	Sewer	Total
YE 6/30/2016	26,201,881	65,256,734	91,458,615	1,163,500	9,995,800	11,159,300	6,833,500	96,981,750	103,815,250
YE 6/30/2017	114,210,305	285,398,467	399,608,772	-	-	-	15,490,300	188,809,372	204,299,672
YTD 6/30/2018	101,199,051	242,094,523	343,293,574	1,875,000	9,166,668	11,041,668	15,130,596	181,688,604	196,819,200
Jul-18	7,451,963	22,286,950	29,738,913	329,100	405,333	734,433	1,693,842	15,473,708	17,167,550
YTD 6/30/2019	7,451,963	22,286,950	29,738,913	329,100	405,333	734,433	1,693,842	15,473,708	17,167,550
	\$ 249,063,200	\$ 615,036,674	\$ 864,099,874	\$ 3,367,600	\$ 19,567,801	\$ 22,935,401	\$ 39,148,238	\$ 482,953,434	\$ 522,101,672

Month	Local System O&M and MBO Disbursements			Difference (shortfall)/surplus			Budgeted Revenue Requirements (Reference) Local System O&M and MBO Requirements		
	Water	Sewer	Total	Water	Sewer	Total	Water	Sewer	Total
YE 6/30/2016	42,139,552	35,311,350	77,450,902	(21,607,671)	(57,040,566)	(78,648,237)	42,139,900	35,311,100	77,451,000
YE 6/30/2017	76,888,944	69,074,600	145,963,544	21,831,061	27,514,495	49,345,556	74,132,300	72,903,200	147,035,500
YTD 6/30/2018	79,793,857	93,695,891	173,489,748	8,149,597	(24,123,304)	(15,973,706)	78,610,600	82,397,900	161,008,500
Jul-18	6,776,483	8,533,109	15,309,592	(689,262)	(1,314,534)	(2,003,796)	6,776,467	8,533,108	15,309,575
YTD 6/30/2019	6,776,483	8,533,109	15,309,592	(689,262)	(1,314,534)	(2,003,796)	6,776,467	8,533,108	15,309,575
	\$ 205,598,837	\$ 206,614,950	\$ 412,213,786	\$ 7,683,725	\$ (54,963,908)	\$ (47,280,183)	\$ 201,659,267	\$ 199,145,308	\$ 400,804,575

Report Notes: This report reflects actual cash receipts received. These values will not tie to revenues reported on the CAFR due to that difference. Actual O&M/MBO Disbursements differ from budget in FY 17 & FY18 to date as a result of the use of lease payments to cover budgeted expenses and adjustments made for actual pension transfers.

Great Lakes Water Authority
Regional System Trust Receipts & Disbursements - Budget to Actual
January 1, 2016 thru July 31, 2018 (Preliminary)

Month	Regional System Cash Receipts			Regional System O&M Disbursements			Regional System MBO Disbursements		
	Water	Sewer	Total	Water	Sewer	Total	Water	Sewer	Total
YE 6/30/2016	148,460,783	222,315,173	370,775,955	58,846,800	92,551,800	151,398,600	86,181,457	116,923,983	203,105,440
YE 6/30/2017	352,432,097	469,205,155	821,637,251	117,927,700	186,682,800	304,610,500	170,340,472	254,176,813	424,517,285
YTD 6/30/2018	337,488,663	474,946,331	812,434,994	127,621,404	201,888,996	329,510,400	194,219,768	278,389,009	472,608,777
Jul-18	23,964,873	33,415,284	57,380,157	10,897,475	16,995,500	27,892,975	13,585,032	19,948,453	33,533,485
YTD 6/30/2019	23,964,873	33,415,284	57,380,157	10,897,475	16,995,500	27,892,975	13,585,032	19,948,453	33,533,485
	\$ 862,346,415	\$ 1,199,881,942	\$2,062,228,358	\$ 315,293,379	\$ 498,119,096	\$ 813,412,475	\$ 464,326,729	\$ 669,438,258	\$1,133,764,987

Month	Difference (shortfall)/surplus			Budgeted Revenue Requirements (Reference)		
	Water	Sewer	Total	Water	Sewer	Total
YE 6/30/2016	3,432,526	12,839,390	16,271,915	159,276,000	220,731,000	380,007,000
YE 6/30/2017	64,163,925	28,345,542	92,509,466	331,213,200	471,710,200	802,923,400
YTD 6/30/2018	15,647,491	(5,331,675)	10,315,817	328,119,300	468,310,700	796,430,000
Jul-18	(517,634)	(3,528,669)	(4,046,303)	27,484,217	39,318,058	66,802,275
YTD 6/30/2019	(517,634)	(3,528,669)	(4,046,303)	27,484,217	39,318,058	66,802,275
	\$ 82,726,308	\$ 32,324,588	\$ 115,050,895	\$ 846,092,717	\$1,200,069,958	\$2,046,162,675

Report Notes: This report reflects actual cash receipts received. These values will not tie to revenues reported on the CAFR due to that difference.

Actual O&M/MBO Disbursements differ from budget in FY 17 & FY18 to date as a result of the use of lease payments to cover budgeted expenses, adjustments made for actual pension transfers and because debt transfers are net of interest earned.

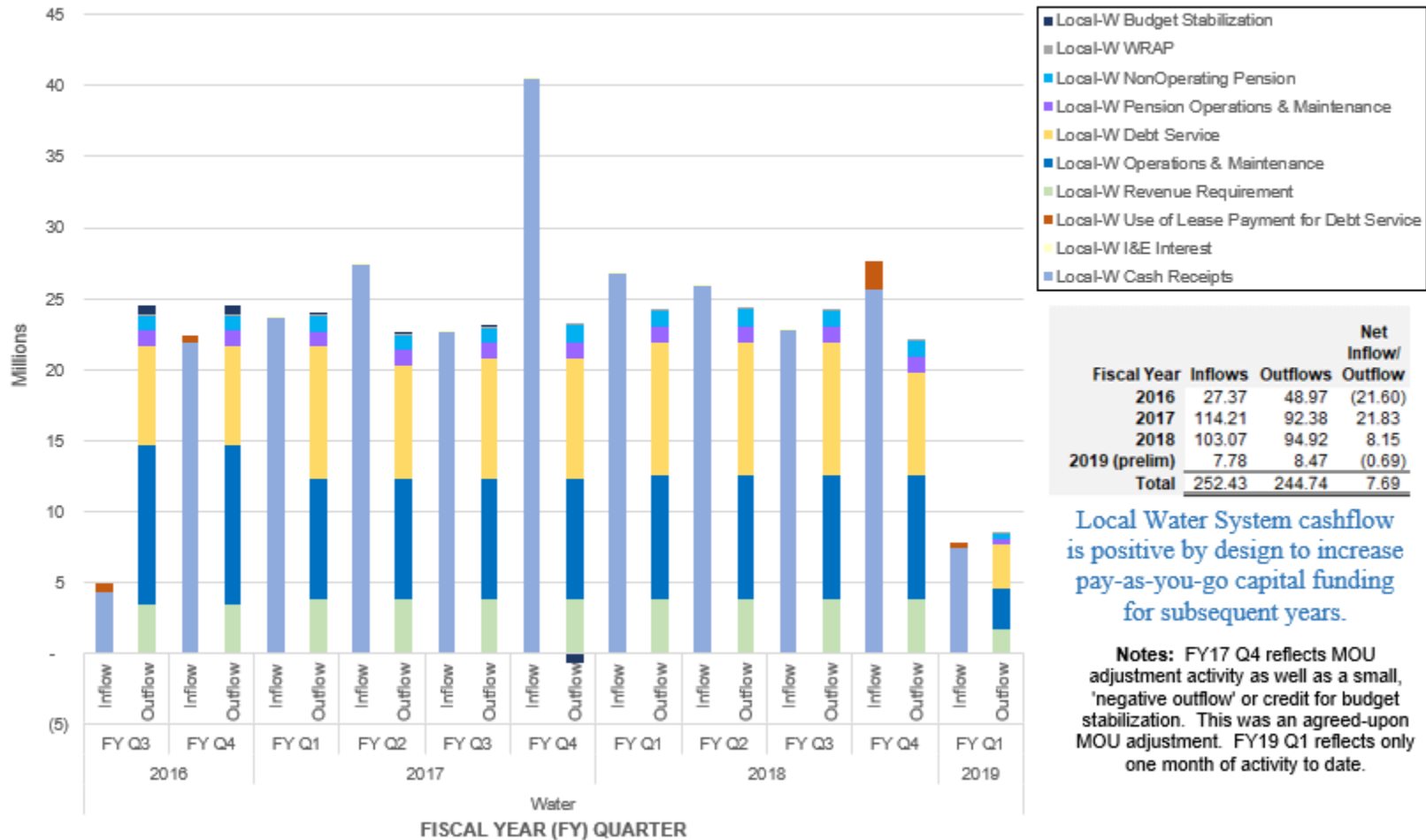
Great Lakes Water Authority
 Combined System Trust Receipts & Disbursements - Budget to Actual
 January 1, 2016 thru July 31, 2018 (Preliminary)

Month	Combined Systems Cash Receipts			Lease Consideration - Debt Contribution			Combined Systems O&M and MBO Disbursements		
	Water	Sewer	Total	Water	Sewer	Total	Water	Sewer	Total
YE 6/30/2016	167,829,164	190,590,157	358,419,321	1,163,500	9,995,800	11,159,300	187,167,809	244,787,133	431,954,942
YE 6/30/2017	451,152,102	565,794,250	1,016,946,351	-	-	-	365,157,116	509,934,213	875,091,329
YTD 6/30/2018	423,557,118	535,352,250	958,909,368	1,875,000	9,166,668	11,041,668	401,635,029	573,973,896	975,608,925
Jul-18	29,722,994	40,228,526	69,951,520	329,100	405,333	734,433	31,258,990	45,477,062	76,736,052
YTD 6/30/2019	29,722,994	40,228,526	69,951,520	329,100	405,333	734,433	31,258,990	45,477,062	76,736,052
	\$ 1,072,261,377	\$ 1,331,965,182	\$ 2,404,226,560	\$ 3,367,600	\$ 19,567,801	\$ 22,935,401	\$ 985,218,945	\$ 1,374,172,304	\$ 2,359,391,249

Month	Difference (shortfall)/surplus			Budgeted Revenue Requirements (Reference)		
	Water	Sewer	Total	Water	Sewer	Total
YE 6/30/2016	(18,175,146)	(44,201,176)	(62,376,322)	201,415,900	256,042,100	457,458,000
YE 6/30/2017	85,994,986	55,860,037	141,855,022	405,345,500	544,613,400	949,958,900
YTD 6/30/2018	23,797,089	(29,454,978)	(5,657,889)	406,729,900	550,708,600	957,438,500
Jul-18	(1,206,896)	(4,843,203)	(6,050,099)	34,260,683	47,851,167	82,111,850
YTD 6/30/2019	(1,206,896)	(4,843,203)	(6,050,099)	34,260,683	47,851,167	82,111,850
	\$ 90,410,033	\$ (22,639,321)	\$ 67,770,712	\$ 1,047,751,983	\$ 1,399,215,267	\$ 2,446,967,250

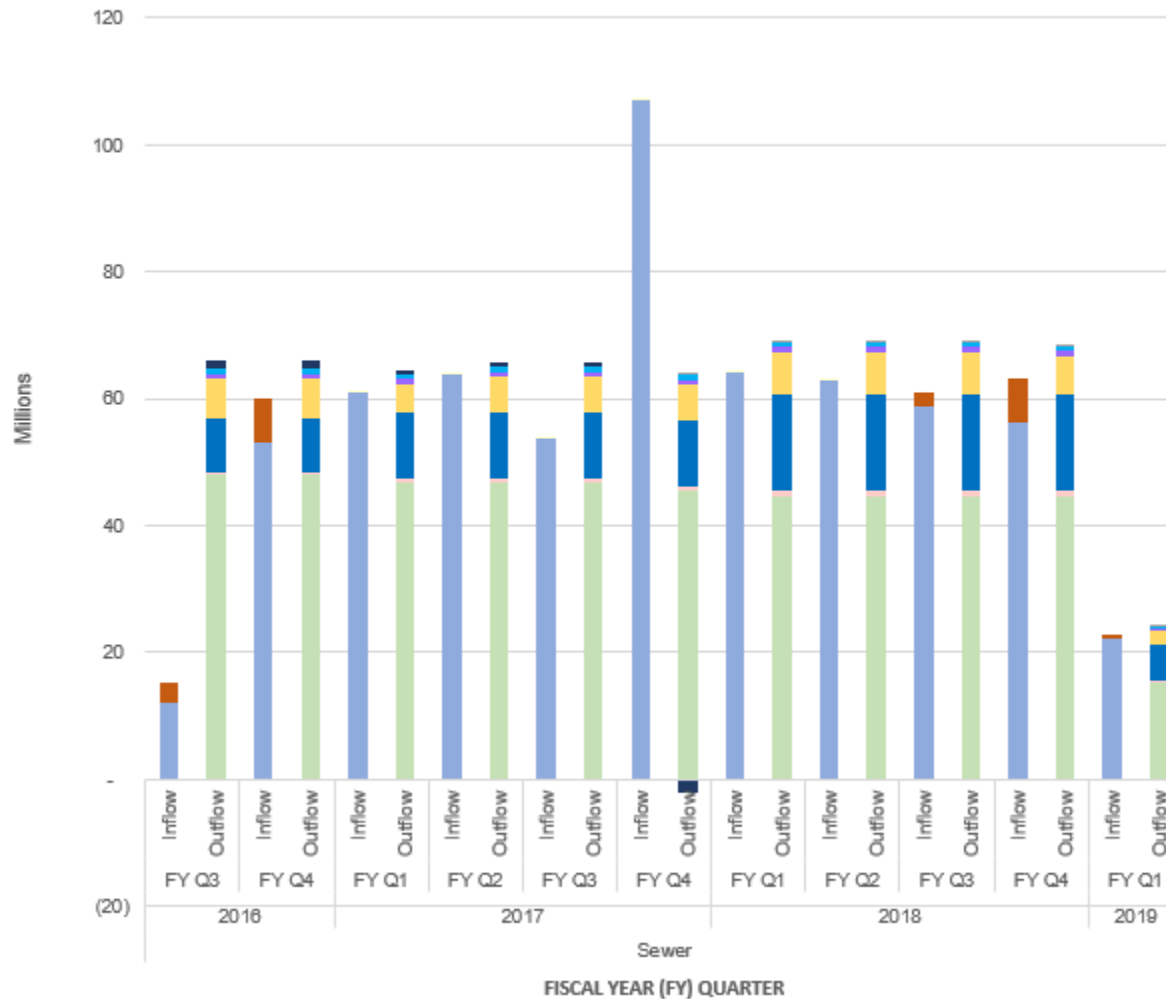
Local Water System (DWSD)
Master Bond Ordinance Inflows and Outflows

MOU: Memorandum of Understanding between GLWA and DWSD



Local Sewer System (DWSD)
Master Bond Ordinance Inflows & Outflows

MOU: Memorandum of Understanding between GLWA and DWSD



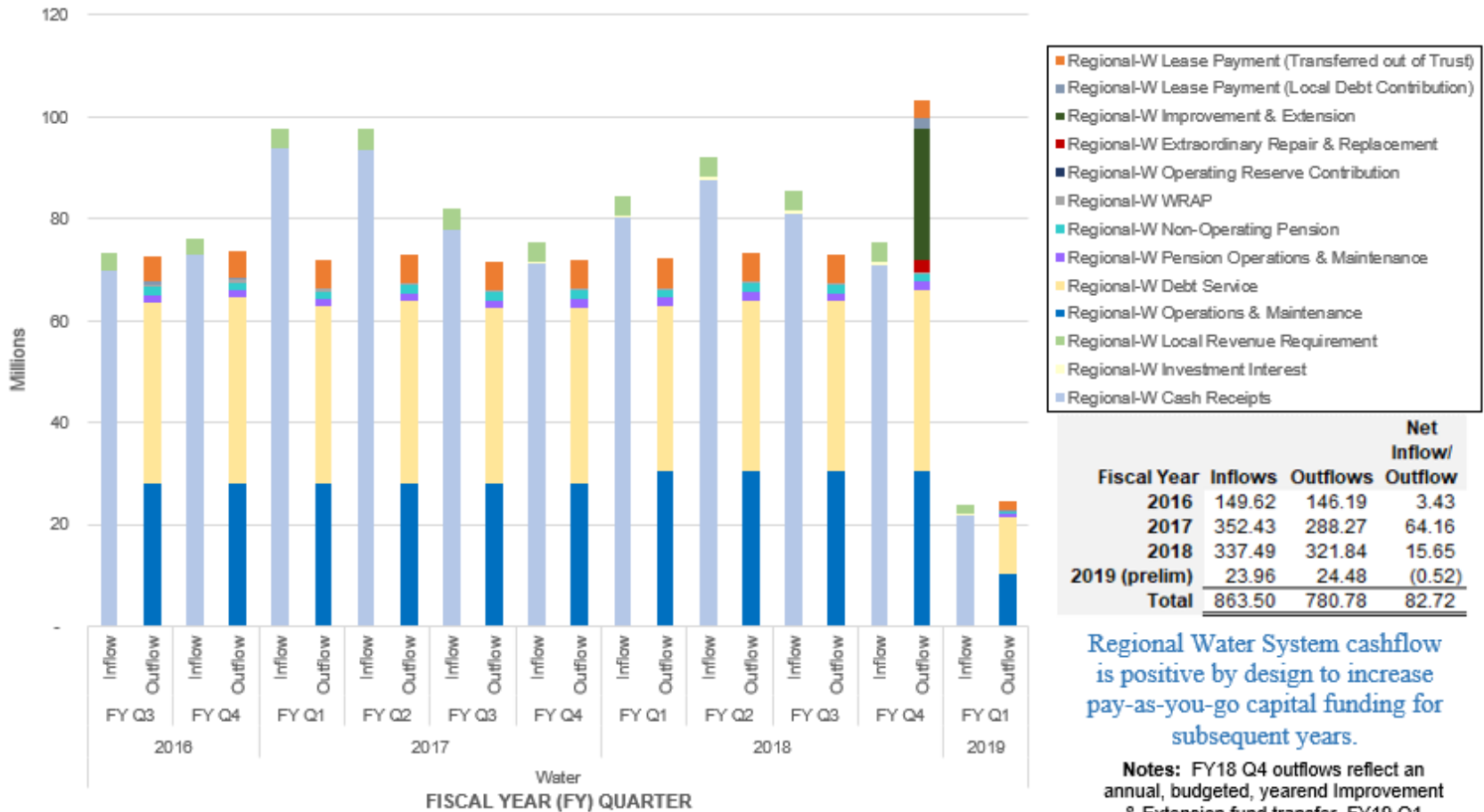
■ Local-S Budget Stabilization
■ Local-S WRAP
■ Local-S NonOperating Pension
■ Local-S Pension Operations & Maintenance
■ Local-S Debt Service
■ Local-S Operations & Maintenance
■ Local-S IWC
■ Local-S Revenue Requirement
■ Local-S Use of Lease Payment for Debt Service
■ Local-S I&E Interest
■ Local-S Cash Receipts

Fiscal Year	Inflows	Outflows	Net Inflow/ Outflow
2016	75.25	132.29	(57.04)
2017	285.40	257.88	27.52
2018	251.26	275.39	(24.13)
2019 (prelim)	22.69	24.00	(1.31)
Total	634.60	689.56	(54.96)

Local Sewer System cashflow is negative due largely to drainage credits and similar, one-time matters. DWSD Administration is developing a plan to address the current shortfall.

Notes: FY17 Q4 reflects MOU adjustment activity as well as a small, 'negative outflow' or credit for budget stabilization. This was an agreed-upon MOU adjustment. FY19 Q1 reflects only one month of activity to date.

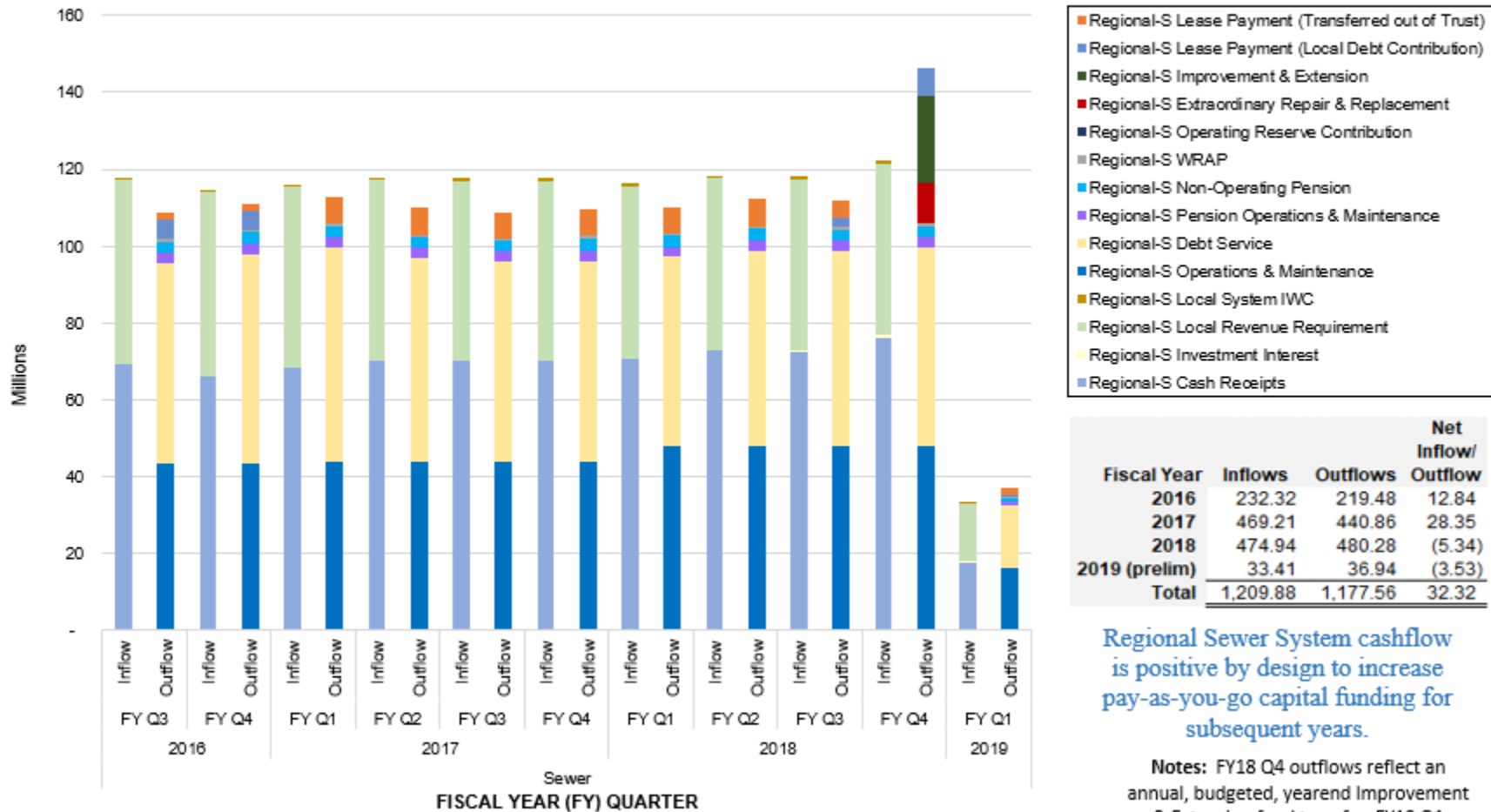
Regional Water System Master Bond Ordinance Inflows and Outflows



Regional Water System cashflow is positive by design to increase pay-as-you-go capital funding for subsequent years.

Notes: FY18 Q4 outflows reflect an annual, budgeted, yearend Improvement & Extension fund transfer. FY19 Q1 reflects only one month of activity to date.

Regional Sewer System Master Bond Ordinance Inflows & Outflows



Regional Sewer System cashflow is positive by design to increase pay-as-you-go capital funding for subsequent years.

Notes: FY18 Q4 outflows reflect an annual, budgeted, yearend Improvement & Extension fund transfer. FY19 Q1 reflects only one month of activity to date.



Financial Services Audit Committee Communication

Date: September 21, 2018

To: Great Lakes Water Authority Audit Committee

From: Andrew Sosnoski, Manager, Construction Accounting & Financial Reporting

Re: FY 2018 Construction Work-in-Progress Report through June 30, 2018

Background: The quarterly construction work-in-progress (CWIP) provides information and analysis related to the execution of the Great Lakes Water Authority capital improvement program (CIP).

Analysis: The attached documents summarize the FY 2018 CWIP activity and provides a detailed snapshot to inform decision makers and stakeholders.

Proposed Action: Receive and file report.



**Construction Work-in-Progress Quarterly Report
(Unaudited, Pre-close)**

As of June 30, 2018

For questions, please contact:

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September 21st, 2018

To Our Stakeholders:

The contents of this report represent the financial presentation of construction work-in-progress activity for the Great Lakes Water Authority (GLWA) as of June 30, 2018. While KPI's now being released monthly are at a summary level, the information in this report presents a detailed snapshot to inform decision makers and stakeholders. This is important as we and approach the implementation of the FY 2019–2023 Capital Improvement Plan (CIP).

During the development of the FY 2019-2023 CIP plan, the FY 2018 CIP was reforecast to align with anticipated spend. The FY 2018 realignment has been reflected in this report.

Report Contents and Organization

This report is divided into two sections: one for the Water System and one for the Wastewater System as identified in the table of contents. Each section includes analysis and reporting of the following:

Percent of Spend Compared to Budget and Capital Improvement Plan (CIP) Requests: Presentation of spend information is necessary to report our progress on CIP projects.

Analysis of Projects with Largest Percent of Spend and Otherwise Noteworthy Projects: A combination of commentary and analysis provides further insight into risk factors and project status. An excerpt from the CIP for each of the selected projects follows the commentary as further background information.

Construction Work-in-Progress Rollforward: This table provides a list of all projects in the CIP along with status or financial activity. This table may be used to revisit priorities, workload, and phasing.

Budget Amendments / Allowance & Program Analysis: This information identifies the specific usage and the reallocation of allowance and program budgets to CIP projects

Financial Information

All project amounts are unaudited and are “pre-close”. This means that direct contractor costs are generally included in these totals with most pay estimates entered through June 30, 2018. There may, however, be some pay estimates that lag. The totals do not include indirect overhead.

Budget vs. Plan

Generally, GLWA’s CIP projects span two or more fiscal years. The GLWA Board of Directors adopts a biennial “budget” and a five-year capital improvement “plan”.

- ✓ The adopted **budget** relates to operations and maintenance expense, annual fixed commitments such as debt service, and incremental adjustments to reserves. The budget provides authority to spend within defined amounts. The budget is also referred to as the “revenue requirement” for the utility.
- ✓ The CIP “budget” for the same biennial budget period above is based on the first two years of the CIP. Funding for these projects are established in the financial plan through a combination of bond proceeds and Improvement & Extension fund reserves
- ✓ The five-year capital improvement **plan** is a rolling plan that is updated at an administrative tracking level as projects move from estimated to actual bid numbers. An updated mid-cycle CIP would be presented to the Board for approval if the prioritization strategy was revised and/or the plan was in need of material revisions.

Future Enhancements

This report presents information that is readily available. Currently under development are enhancements that will provide the opportunity for improved CWIP reporting.

Monthly Capital Spend Projections – Implementation of an integrated master schedule of projects utilizing Primavera P6 is underway. The integrated master schedule, which is intended to be updated monthly, will provide a monthly snapshot of cost and schedule information related to the execution of projects as compared to our plan. In addition to an increased visibility to project status and spend, this joint effort with our engineering partners will also allow for improved accuracy of our Key Performance Indicator on rate of spending and more reliable communication with Treasury regarding monthly capital spend projections to allow for investment optimization.

Direct Labor Capitalization – Technology solutions have been procured to improve direct labor capture accuracy, timeliness and ease in which labor costs are captured. This solution named *BigTime*, was successfully launched on the previously anticipated date of July 1, 2018.

Indirect Labor Capitalization – An effort to identify and capture indirect labor related to the capital process remains underway.

WATER SYSTEM

Percent of Spend Compared to Annual Budget and Capital Improvement Plan (CIP) Requests

The rate of spend of is a key performance indicator. The development of the FY 2019-2023 CIP included a realignment of projected spend for FY 2018 and forward to accurately forecast planned spend. The Water system spend is 92.4% of the FY 2018 realigned budget. While the ratios for FY 2017 of 37.9% and for FY 2018 of 33.6% are lower than a simple benchmark of 80% the FY 2019 CIP Net Budget is funded at 100% and anticipated to achieve spending in full. Numerous project designs have already and/or will soon complete that will allow for increased construction spend to occur in FY 2019. The effort associated with the development of new spend projections and ongoing effort of monitoring spend are anticipated to result in 100% spend in FY19.

Water System Projects	FY 2017 Original Plan and Budget	FY 2017 Activity	FY 2017 Activity as a Percentage of Budget	FY 2018 Amended Budget	FY 2018 Pre-Close Activity (Unaudited)	FY 2018 Pre-Close as a Percent of Budget (Unaudited)
FY 2017 CIP Project Requests @ 100%	\$ 130,232,000	\$ 39,483,833	30.3%			
FY 2017 CIP Net Budget (approx. 80% of request)	104,185,600	39,483,833	37.9%			
FY 2018 CIP Project Requests @ 100%				\$ 137,655,000	\$ 37,013,482	26.9%
FY 2018 CIP Net Budget (approx. 80% of request)				110,124,000	37,013,482	33.6%
FY 2018 CIP Realigned Forecast as per 2019 CIP				40,043,000	37,013,482	92.4%

It should be noted that these interim reports have been prepared on a modified cash basis. This means that expenses may lag in vendor invoice receipt and posting. Known expenses, material in nature, have been accrued.

Analysis of Projects with Largest Percent of Spend and Otherwise Noteworthy Projects

Of the total Water System Construction Bond spend for FY 2018 to date, **five projects account for \$16.5 million or 44.6% of the total spend.** Those projects are summarized in the following table. An analysis of each project and its related CIP summary follow the table. Note that the last page of this report provides a Glossary of Acronyms.

Water System Projects	Total Project Budget per CIP (Life of Projects)	Life-to-Date Through June 30, 2017	FY 2018 Requested Budget Per Realigned CIP	FY 2018 Pre-Close Activity (Unaudited)	FY 2018 Pre-Close as a Percent of Spend (Unaudited)
Project 114001- Springwells WTP 1958 Filter Rehabilitation	\$ 77,422,000	\$ 82,884,422	\$ 7,281,000	\$ 6,425,152	17.4%
Prebifurcation budget not included in CIP 114001	6,500,000				
Total Project Budget	<u>\$ 83,922,000</u>				
Project 114003-Water Production Flow Metering Improvements at NE, SW, and SPW WTP Total	12,900,000	184,952	704,000	3,259,862	8.8%
Project 114015-Emergency Grating Replacement at Springwells WTP	2,500,000	253,623	2,763,213	2,483,374	6.7%
Project 115004-Water Works Park WTP Chlorine System Upgrade	9,690,000	370,797	672,000	2,155,956	5.8%
Project 116002- PA, SW and NE Raw Water Tunnel Improvements	32,400,000	10,401	3,625,000	2,167,584	5.9%
Selected Projects as a Percentage of the Total	<u>\$ 141,412,000</u>	<u>\$ 83,704,195</u>	<u>\$ 15,045,213</u>	<u>\$ 16,491,928</u>	44.6%
Total			<u>\$ 40,043,000</u>	<u>\$ 37,013,482</u>	100.0%

The following analysis provides brief highlights related to these projects.

Project 114001 – Springwells Water Treatment Plant 1958 Filter Rehabilitation

Water System Projects	Total Project Budget per CIP (Life of Projects)	Life-to-Date Through June 30, 2017	FY 2018 Requested Budget Per Realigned CIP	FY 2018 Pre-Close Activity (Unaudited)	FY 2018 Pre-Close as a Percent of Spend (Unaudited)
Project 114001- Springwells WTP 1958 Filter Rehabilitation	\$ 77,422,000	\$ 82,884,422	\$ 7,281,000	\$ 6,425,152	17.4%
Prebifurcation budget not included in CIP 114001	6,500,000				
Total Project Budget	<u>\$ 83,922,000</u>				

Project Engineer/Manager: Grant Gartrell

Manager: Grant Gartrell

Total Construction and Construction Assistance Budget: \$77,422,000

Timeline: To be completed by November 2018

FY 2018 Last Pay Estimate Processed: June 30, 2018

Key Contracts/Vendors: SP-563 Walsh Construction; CS-1425 & CS-200 CDM Michigan

Project Description: Installation of new filter media, underdrains, filter valves and rate controllers; replace the existing filter control console and hydraulic controls at Springwells Water Treatment Plant.

Purpose: Rehabilitation of both filter trains to restore filtration capacity and sustain the useful service life of the process treatment infrastructure.

Status: Construction continues with the installation of new stop logs and guides in the 1930 weir chamber, renovation of the laboratory and offices in the administration building, installation of new heating, ventilating and air-conditioning equipment in the administration building, rehabilitation of elevators in the switch house, store house and boiler house buildings, and construction of the 1958 breezeway.

Additional Project Manager Comments: There are no additional comments to provide at this time.

Additional Construction Accounting & Financial Reporting Team Comments: Total project budget per the Board approved CIP schedule does not include the historical, pre-fiscal year 2017 budget for the design contract CS-1425 nor the allocation of the Water Treatment Plant Allowance to fund CS-200 the Owner’s Representative (RPR) consultant contract. The design contract has a total budget amount of \$6,500,000.

FY 2018-2022 CIP Page VI-3 for Project 114001 – Springwells Water Treatment Plant 1958 Filter Rehabilitation

CIP Number: CIP 917
Title: SPRINGWELLS WATER TREATMENT PLANT 1958 FILTER REHABILITATION AND AUXILIARY FACILITIES

Classification: 114: Water > Treatment Plants & Facilities > Springwells
Managing Dept: Water Eng
RC Score: NA
Contract No.: CS-1425, SP-563
Significance: Rehabilitation of Springwells WTP 1958 Filters and 1930s failed filters to provide the WTP with a renovated capacity of 295 MGD
Location: Springwells WTP
Driver: N/A - Active
Explanation: N/A - Active

Preliminary Scope of Work:

This project includes the study, design (CS-1425) and construction assistance of improvements to the Springwells WTP that includes the replacement of Phosphoric Acid Feed System, rehabilitation of the 1958 Filters, rehabilitation of failed 1930s Filters, Update of Operation and Maintenance Manuals, and addition of polymer systems and controls. Provide construction services to furnish and install new filter media, underdrains, filter valves, and rate controllers; replace the existing filter control consoles, hydraulic control valves with electric control valves, enclosures; add appurtenances to enable automatic backwashing of the filters; provide a Filter Aid Polymer System to the 1930 and 1958 filter complexes; Programmable Logic Controller-based controls for automatic control of the polymer system; install a local instrumentation and controls system.

Challenges: N/A - Active

Initial Project Cost Estimates (in \$1000s)

Phase	Status	Start Date	End Date	Lifetime Actual Thru FY2016 (Unaudited)	Projected Expenditures FY2017	Projected Expenditures FY2018	Projected Expenditures FY2019	Projected Expenditures FY2020	Projected Expenditures FY2021	Projected Expenditures FY2022	Projected Expenditures FY2023 & Beyond	2018-2022 CIP Total	Phase Total
S/D/C A	Active	1/18/2008	1/18/2018	\$0	\$353	\$95	\$0	\$0	\$0	\$0	\$0	\$95	\$448
C	Active	7/8/2013	3/14/2018	\$56759	\$20000	\$215	\$0	\$0	\$0	\$0	\$0	\$215	\$76974
Totals				\$56759	\$20353	\$310	\$0	\$0	\$0	\$0	\$0	\$310	\$77422



Springwells filter building

*Budget Amendment 6094 for RPR Services increases planned CIP from \$310,000 to \$1,200,000

Project 114003-Water Production Flow Metering Improvements at NE, SW and SPW WTP

Water System Projects	Total Project Budget per CIP (Life of Projects)	Life-to-Date Through June 30, 2017	FY 2018 Requested Budget Per Realigned CIP	FY 2018 Pre-Close Activity (Unaudited)	FY 2018 Pre-Close as a Percent of Spend (Unaudited)
Project 114003-Water Production Flow Metering Improvements at NE, SW, and SPW WTP Total	12,900,000	184,952	704,000	3,259,862	8.8%

Project Engineer/Manager: Jorge Nicolas

Manager: Grant Gartrell

Total Budget: \$12,900,000

Timeline: July 31, 2019

FY 2018 Last Pay Estimate Processed: June 30, 2018

Key Contracts/Vendors: CON-133 Lakeshore Global Corporation

Project Description: Rehabilitate the existing water production meters at Northeast, Southwest and Springwells Water Treatment Plants.

Purpose: Rehabilitation of the meters will provide direct measurement of finished water flows that are pumped out of the plants to the transmission system. The rehabilitated flow meters will improve the accuracy and reliability of measuring water production flows from these water treatment plants.

Status: Construction work is currently being performed at the Northeast and Southwest Water Treatment Plants. Two new flow meters were installed at Southwest plant. Substantial completion for Southwest delayed to November 16, 2018 due to discovery of a damaged 72" main that must be repaired as soon as possible. A Construction Change Directive is in process and work on the 72" main repair. Substantial completion for the Northeast Water treatment plant is August 31, 2018 . Four new 66" gate valves were installed and four flow meters rehabilitated at Northeast plant, other miscellaneous work is underway. Work on Springwells plant to start soon after Northeast plant substantial completion.

Additional Project Manager Comments: There are no additional comments to provide at this time.

Additional Construction Accounting & Financial Reporting Team Comments: There are no additional comments to provide at this time.

FY 2018-2022 CIP Page VI-17 for Project 114003-Water Production Flow Metering Improvements at NE, SW and SPW WTP

CIP Number: CIP 1264

Title: WATER PRODUCTION FLOW METERING IMPROVEMENTS AT NE, SW, AND SPW WTP

Classification: 114: Water > Treatment Plants & Facilities > Springwells

Managing Dept: Water Eng

RC Score: 41.4

Contract No.: NA

Significance: Existing water production flow meters need to be rehabilitated to place back into reliable and accurate service. Once completed, accurate flow measurement from these plants will answer non-revenue water questions.

Location: Springwells, Northeast and Southwest WTP

Driver: 7 - Financial

Explanation: Not provided.

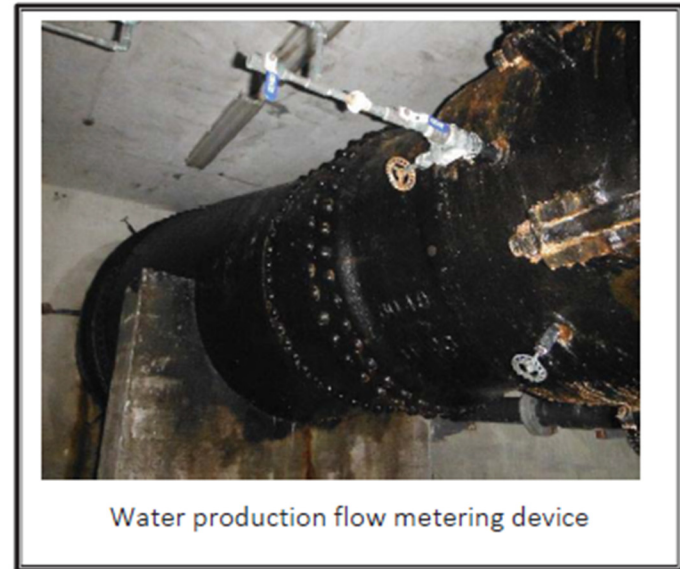
Preliminary Scope of Work:

Water production metering is needed at the Water Treatment Plants to manage non-revenue and provide estimates of usage for non-wholesale customers.

Challenges: Removing and replacing existing meters in original piping requires isolation using existing yard piping and valving. Condition of existing pipe and valves needs to be adequately addressed in the final design documents and coordinated with operations.

Initial Project Cost Estimates (in \$1000s)

Phase	Status	Start Date	End Date	Lifetime Actual Thru FY2016 (Unaudited)	Projected Expenditures FY2017	Projected Expenditures FY2018	Projected Expenditures FY2019	Projected Expenditures FY2020	Projected Expenditures FY2021	Projected Expenditures FY2022	Projected Expenditures FY2023 & Beyond	2018-2022 CIP Total	Phase Total
C	Not Yet Started	NA	NA	\$0	\$1000	\$8800	\$2100	\$1000	\$0	\$0	\$0	\$11900	\$12900
Totals				\$0	\$1000	\$8800	\$2100	\$1000	\$0	\$0	\$0	\$11900	\$12900



Water production flow metering device

Project 114015 – Emergency Grating Replacement at Springwells WTP

Water System Projects	Total Project Budget per CIP (Life of Projects)	Life-to-Date Through June 30, 2017	FY 2018 Requested Budget Per Realigned CIP	FY 2018 Pre-Close Activity (Unaudited)	FY 2018 Pre-Close as a Percent of Spend (Unaudited)
Project 114015-Emergency Grating Replacement at Springwells WTP	2,500,000	253,623	2,763,213	2,483,374	6.7%

Project Manager/Manager: Erich Klun

Manager: Grant Gartrell

Total Budget: \$3,245,186.00 (including Change Order No. 1)

Timeline: The contract time was extended by 210 calendar days and now ends on November 27, 2018 due to increased scope costing \$745,186 per Change Order No. 1 approved by the Board of Directors on April 25, 2018.

FY 2018 Last Pay Estimate Processed: June 30, 2018

Key Contracts/Vendors: SCP-DB-112 Barton Malow Company

Project Description: The base scope of the contract involves replacement of grating and supports in the low lift pumping station at elevation 42.0 feet and replacement of the low lift station sump pumps. Change Order No. 1 added the replacement of select high lift header piping steel supports in the high-lift header vault, replacement of a steel reinforced concrete column in the basement of the administration building, and replacement of hatch covers at an outdoor vault near the drainage pump house at the site.

Purpose: Replace grating, supports, columns, and hatch covers that are significantly deteriorated and are in danger of failure. Replace sump pumps in the low lift station that are not reliable and protect the low lift station from flooding.

Status: The base scope of the contract is complete in the low lift station and contractor is proceeding with the additional scope added via Change Order No. 1 totaling \$745,186 as detailed in project description above.

Additional Project Manager Comments: There are no additional comments to provide at this time.

Additional Construction Accounting & Financial Reporting Team Comments: There are no additional comments to provide at this time.

FY 2018-2022 CIP Page VI-71 for Project 114015 – Emergency Grating Replacement at Springwells

CIP Number: CIP 1412
Title: EMERGENCY GRATING REPLACEMENT AT SPRINGWELLS WTP

Classification: 114: Water > Treatment Plants & Facilities > Springwells
Managing Dept: WSO Engineering

RC Score: NA

Contract No.: NA

Significance: Original grating and supporting structural steel dating back to 1930 has deteriorated to the point where operator, consultant and contractor safety at Springwells is severely compromised. Additionally, structural failure could result in lost water production at Springwells.

Location: Springwells Water Treatment Plant

Driver: 1 – Condition

Explanation: Failure of structural components could injure personnel and/or take Springwells out of commission

Preliminary Scope of Work:

Refer to the RFP and proposals received. The scope is very well defined, and the winning proposal is very well authored. It involves a lot of demolition and replacement of deteriorated grating and structural steel at five (5) locations at Springwells, the bulk of which is in the Low Lift Station.

Challenges: Maintaining operations through execution of the work.

Initial Project Cost Estimates (in \$1000s)

Phase	Status	Start Date	End Date	Lifetime Actual Thru FY2016 (Unaudited)	Projected Expenditures FY2017	Projected Expenditures FY2018	Projected Expenditures FY2019	Projected Expenditures FY2020	Projected Expenditures FY2021	Projected Expenditures FY2022	Projected Expenditures FY2023 & Beyond	2018-2022 CIP Total	Phase Total
D	New	NA	NA	\$0	\$250	\$250	\$0	\$0	\$0	\$0	\$0	\$250	\$500
C	New	NA	NA	\$0	\$250	\$1750	\$0	\$0	\$0	\$0	\$0	\$1750	\$2000
Totals				\$0	\$500	\$2000	\$0	\$0	\$0	\$0	\$0	\$2000	\$2500



Project 115004 – Water Works Park WTP Chlorine System Upgrade

Water System Projects	Total Project Budget per CIP (Life of Projects)	Life-to-Date Through June 30, 2017	FY 2018 Requested Budget Per Realigned CIP	FY 2018 Pre-Close Activity (Unaudited)	FY 2018 Pre-Close as a Percent of Spend (Unaudited)
Project 115004-Water Works Park WTP Chlorine System Upgrade	9,690,000	370,797	672,000	2,155,956	5.8%

Project Engineer/Manger: Todd King

Manager: Grant Gartrell

Total Budget: \$9,690,000

Timeline: The project involves the complete replacement of the chlorine disinfection system at Water Works Park. The project began January 2018, is currently under construction, and has a substantial completion target date of January 10, 2020. Final completion is scheduled for April 10, 2020. Currently the project is running ahead of schedule at 37 percent complete versus an elapsed time of 22 percent, per contract timeline.

FY 2018 Last Pay Estimate Processed: June 30, 2018

Key Contracts/Vendors: CON-208 Detroit Contracting Inc. Design: SCP-CS-1721 CDM Smith Inc.

Project Description: The Water Works Park Chlorine System has experienced numerous issues with leaks and unreliable service. The project was initiated to replace the entire system with chlorine equipment that had been demonstrated effective at the other four water treatment plants.

Purpose: Replace the existing system that poses risks to human health and the environment. The leaks of highly hazardous chlorine gas pose unacceptable risks to GLWA staff and potentially the public.

Status: Project is proceeding ahead of schedule.

Additional Project Manager Comments: There are no additional comments to provide at this time.

Additional Construction Accounting & Financial Reporting Team Comments: There are no additional comments to provide at this time.

FY 2018-2022 CIP Page VI-70 for Project 115004 – Water Works Park WTP Chlorine System Upgrade

CIP Number: CIP 1410

Title: WATER WORKS PARK WTP CHLORINE SYSTEM UPGRADE

Classification: 115: Water > Treatment Plants & Facilities > Water Works Park

Managing Dept: WSO Engineering

RC Score: NA

Contract No.: NA

Significance: WWP Chlorine System suffered a major leak in 2014. Since that time, additional leaks and maintenance issues have occurred on a more frequent basis. Due to the toxicity of chlorine gas, this project is a high priority to protect worker safety and the general public.

Location: Water Works Park

Driver: 5 – Public Health & Safety

Explanation: The current system is experiencing leaks and must be replaced as soon as practicable.

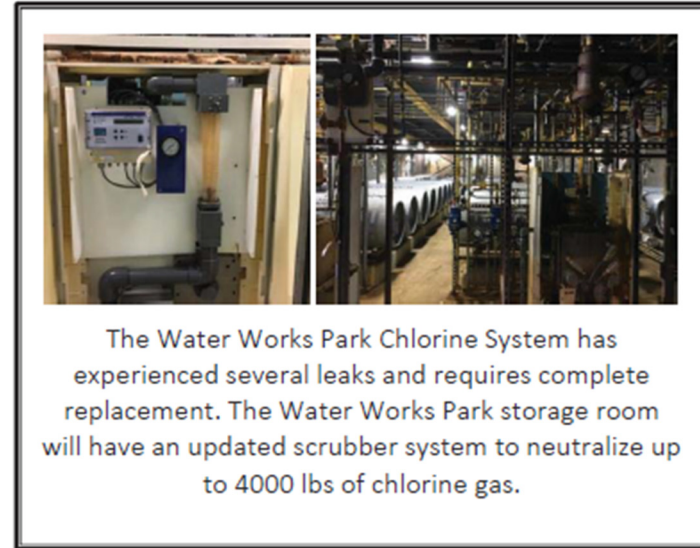
Preliminary Scope of Work:

Demolition and replacement of all mechanical systems, equipment and piping related to chlorine transport, vaporization and application. New chlorine system will be able to meet current dose rates and be able to meet future loadings estimated for WWP after the Northeast WTP treatment system is taken off line.

Challenges: It will be critical for the contractor to phase the work to provide ongoing chlorine application during the retrofit.

Initial Project Cost Estimates (in \$1000s)

Phase	Status	Start Date	End Date	Lifetime Actual Thru FY2016 (Unaudited)	Projected Expenditures FY2017	Projected Expenditures FY2018	Projected Expenditures FY2019	Projected Expenditures FY2020	Projected Expenditures FY2021	Projected Expenditures FY2022	Projected Expenditures FY2023 & Beyond	2018-2022 CIP Total	Phase Total
D	New	7/8/2016	1/25/2018	\$0	\$290	\$200	\$200	\$0	\$0	\$0	\$0	\$400	\$690
C	New	NA	NA	\$0	\$0	\$500	\$8500	\$0	\$0	\$0	\$0	\$9000	\$9000
Totals				\$0	\$290	\$700	\$8700	\$0	\$0	\$0	\$0	\$9400	\$9690



Project 116002 – PA, SW and NE Raw Water Tunnel Improvements

Water System Projects	Total Project Budget per CIP (Life of Projects)	Life-to-Date Through June 30, 2017	FY 2018 Requested Budget Per Realigned CIP	FY 2018 Pre-Close Activity (Unaudited)	FY 2018 Pre-Close as a Percent of Spend (Unaudited)
Project 116002- PA, SW and NE Raw Water Tunnel Improvements	32,400,000	10,401	3,625,000	2,167,584	5.9%

Project Engineer/Manger: Todd King

Manager: Grant Gartrell

Total Budget: \$32,400,000

Timeline: The detailed investigation and preliminary design work under this contract is scheduled to be completed by March 2019. Once the preliminary design is complete, the vendor will submit a guaranteed maximum price (GMP) for the construction of the raw water tunnel rehabilitation and improvements work which is tentatively scheduled to be completed by 2021.

FY 2018 Last Pay Estimate Processed: June 30, 2018

Key Contracts/Vendors: DB-150 / Ballard Marine Construction

Project Description: This is a progressive design build project delivery that involves the detailed inspection, design and construction of the improvements to the Pennsylvania, Northeast and Springwells raw water tunnels.

Purpose: Rehabilitate sections of the Pennsylvania, Northeast and Springwells raw water tunnels where substantial deterioration in the form of cracking and ovality have been observed.

Status: The contract started on January 29, 2018. The project kickoff workshop has been conducted and the vendor is currently preparing its implementation and safety plans for entering the raw water tunnels to conduct a detailed inspection. The results of the detailed inspection will be used to prepare the preliminary design documents for the project.

Additional Project Manager Comments: There are no additional comments to provide at this time.

Additional Construction Accounting & Financial Reporting Team Comments: There are no additional comments to provide at this time.

FY 2018-2022 CIP Page VI-55 for Project 116002 - PA, SW and NE Raw Water Tunnel Improvements

CIP Number: CIP 1327
Title: PENNSYLVANIA, SPRINGWELLS AND NORTHEAST RAW WATER SUPPLY TUNNEL IMPROVEMENTS BASED ON CONTRACT CS-1623 INSPECTION RESULTS

Classification: 116: Water > Treatment Plants & Facilities > General Purpose
Managing Dept: Water Eng
RC Score: 64.4
Contract No.: DB-150

Significance: Project critical to production at Springwells WTP during repurposing of Northeast WTP as recommended by the 2015 WMPU. Contract CS-1623 identified problem areas on the raw water supply system that compromised the system's ability to meet demands during the repurposing of Northeast WTP.

Location: Springwells, Northeast, & Pennsylvania raw water tunnels
Driver: 1 - Condition

Explanation: Failure of the affected raw water tunnels could impact as much as 50% of the GLWA customers.

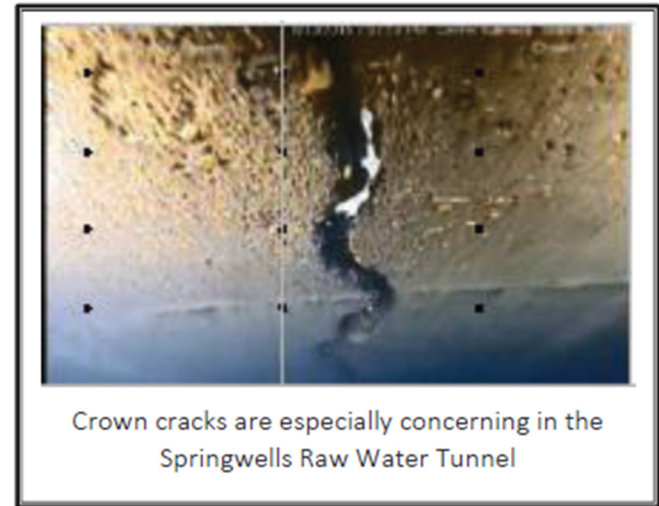
Preliminary Scope of Work:

The scope of work is to conduct supplemental investigations to design the repairs for the sections of tunnel identified in CS-1623 as having structural concerns. Three areas were identified with the highest concern being a portion of the Springwells Tunnel near the Springwells WTP.

Challenges: The tunnels are approximately 80 feet below the surface of the Detroit River. This poses challenges for assessing the extent of damage to the structures, as well as repair. Dewatering the tunnels to repair them will create extensive stresses that must be considered prior to performing the work.

Initial Project Cost Estimates (in \$1000s)

Phase	Status	Start Date	End Date	Lifetime Actual Thru FY2016 (Unaudited)	Projected Expenditures FY2017	Projected Expenditures FY2018	Projected Expenditures FY2019	Projected Expenditures FY2020	Projected Expenditures FY2021	Projected Expenditures FY2022	Projected Expenditures FY2023 & Beyond	2018-2022 CIP Total	Phase Total
DB	Not Yet Started	NA	NA	\$0	\$500	\$2000	\$10000	\$15000	\$4900	\$0	\$0	\$31900	\$32400
Totals				\$0	\$500	\$2000	\$10000	\$15000	\$4900	\$0	\$0	\$31900	\$32400



Crown cracks are especially concerning in the Springwells Raw Water Tunnel

Construction Work-in-Progress Rollforward

The purpose of the construction work-in-progress (CWIP) rollforward is to analyze the current year activity for each project in relation to the overall capital improvement program as well as the project portfolio overall.

The CWIP Rollforward provides a project status for each item.

Future Year:	Project that was included in the CIP with no expenditures (F)
Active:	Project in which procurement process has been initiated and expenditures incurred (A)
Pending Close:	Project that has no projected expenditures for the current fiscal year and has reached substantial completion (PC)
Closed:	Project that has been closed and capitalized (C)

As part of our project life cycle review the CA&FR team identifies when it is appropriate for projects to be capitalized. Projects are to be capitalized when they have been completed in totality or are inclusive of identifiable assets that have been placed in service. The following projects have been identified for FY 2018 capitalization:

- CIP 111002 CIP 111005 CIP 114001 CIP 114015 CIP 115002 CIP 122014
- CIP 122015 CIP 170103 CIP 170105 CIP 170107 CIP 170502 CIP 170701
- CIP 361001

\$150.6 million is in CWIP as of June 30, 2018 as shown in the table beginning on the next page.

The order of the report on the subsequent pages is in ascending order by CIP project number.

Status	Project Count	Total Project Estimated Budget	Percent of Total
Future	23	134,605,000	12%
Active	76	966,814,000	83%
Pending Close	12	65,919,000	5%
Closed	3	2,041,000	0%
Grand Total	114	1,169,379,000	100%

**Great Lakes Water Authority
Water System Construction Work-in-Progress (CWIP) FY 2018 Rollforward
Unaudited, Pre-Close Activity For the Fiscal Year Ended June 30, 2018**

CIP #	Brief Description	Funding Source	Status	Total Project Estimate from CIP	CWIP Balance July 1, 2017	FY 2018 Activity (Unaudited)							FY 2018 Activity (Unaudited), Pre-Close	Transfers Out of CWIP	Unaudited, Pre-Close CWIP Balance, June 30, 2018
						Construction: (616900)	Contractual Engineering Services (617950)	Capitalized Interest (703115)	Other Expenses (617900)	Capital Allocation: Non-Personnel (601998)	Capital Allocation: Personnel (601995)	Capital Allocation: Benefits (601997)			
004430	Project 004430-DWSD: Contract Replacement Water Main	B	A	-	75,804										75,804
007412	Project 007412- Water Main Repairs shared service with DWSD	SRF	A		536,930	2,854,044							2,854,044		3,390,974
111001	Project 111001-Energy Management: Lake Huron Water Treatment Plant Low Lift Pumping Improvements	B	F	5,700,000	-										-
111002	Project 111002 LHWTP Backflow Replacement	B	A	7,902,000	309,471	1,594,085	97,646			13,577	5,380		1,710,688		2,020,159
111003	Project 111003-Evaluation of Flocculation Improvement Alternatives at the LHWTP	B	F	125,000	-										-
111004	Project 111004-Electrical Tunnel Rehabilitation at Lake Huron WTP	B	A	5,600,000	-		62,215			337	133		62,685		62,685
111005	Project 111005-Miscellaneous Concrete Improvements at the Lake Huron WTP	B	PC	923,000	754,581					2,010	804		2,813		757,395
111006	Project 111006-Replacement of Filter Instrumentation and Raw Water Flow Metering Improvements at Lake Huron WTP	B	A	24,630,000	253,138		481,140			342	136		481,618		734,756
111007	Project 111007-Lake Huron WTP-Raw Sludge Clarifier and Raw Sludge Pumping System Improvements	B	A	7,133,000	9,332		274,362			212	84		274,657		283,989
112001	Project 112001-Yard Piping Replacement at Northeast Water Treatment Plant	B	A	800,000	-	256,582	41,648			8,325	3,314		309,868		309,868
112002	Project 112002-Low Lift Pumping Plant Caisson Rehabilitation at Northeast WTP	B	A	1,775,000	163,085										163,085
113001	Project 113001-Southwest Water Treatment Plant, Sludge Treatment & Waste Wash water Treatment Facilities	B	A	49,380,000	39,885										39,885
113002	Project 113002-High Lift Pump Discharge Valve Actuators Replacement at Southwest WTP	B	A	2,120,000	115,027		105,941			20,373	8,106		134,420		249,447
113003	Project 113003-Replacement of Butterfly Valves and Sluice Gates for Rapid Mix Chamber at Southwest WTP	B	F	2,940,000	-										-
113004	Project 113004-Residual Handling Facility's Decant Flow Modifications at Southwest WTP	B	A	5,509,000	141,675		37,157			14,024	5,574		56,756		198,431
114001	Project 114001-Springwells Water Treatment Plant 1958 Filter Rehabilitation and Auxiliary Facilities	B	A	\$ 78,312,000	\$ 82,884,422	\$ 5,333,025	\$ 867,897		\$ 100,380	\$ 88,739	\$ 35,111		6,425,152	(22,781,291)	66,528,283
114002	Project 114002-Springwells Water Treatment Plant - Low Lift and High Lift Pump Station	B	A	86,000,000	22,480		467,939			6,626	997		475,562		498,042

**Great Lakes Water Authority
Water System Construction Work-in-Progress (CWIP) FY 2018 Rollforward
Unaudited, Pre-Close Activity For the Fiscal Year Ended June 30, 2018**

CIP #	Brief Description	Funding Source	Status	Total Project Estimate from CIP	CWIP Balance July 1, 2017	FY 2018 Activity (Unaudited)							FY 2018 Activity (Unaudited), Pre-Close	FY 2018 Transfers Out of CWIP	Unaudited, Pre-Close CWIP Balance, June 30, 2018
						Construction: (616900)	Contractual Engineering Services (617950)	Capitalized Interest (703115)	Other Expenses (617900)	Capital Allocation: Non-Personnel (601998)	Capital Allocation: Personnel (601995)	Capital Allocation: Benefits (601997)			
114003	Project 114003-Water Production Flow Metering Improvements at NE, SW, and SPW WTP	B	A	12,900,000	184,952	3,019,631	186,236				39,897	14,098	3,259,862		3,444,814
114004	Project 114004-Miscellaneous Concrete Improvements at Springwells WTP	B	A	998,000	-	30,463	32,814				7,153	2,276	72,706		72,706
114005	Project 114005-Administration Building Improvements at Springwells WTP	B	F	2,000,000	-								-		-
114006	Project 114006-Replacement of Rapid Mix Units at Springwells WTP 1958 Process Train	B	A	1,250,000	104,286		120,856				14,296	5,668	140,820		245,106
114007	Project 114007-Powdered Activated Carbon System Improvements at Springwells WTP	B	F	2,900,000	-								-		-
114008	Project 114008-1930 Sedimentation Basin Sluice Gates, Guides & Hoists Improvements at Springwells WTP	B	F	7,500,000	-								-		-
114009	Project 114009-Springwells Water Treatment Plant Service Area Redundancy Study	B	A	450,000	193,332								-		193,332
114010	Project 114010-Yard Piping Improvements at Springwells WTP	B	F	25,000,000	-								-		-
114011	Project 114011-Steam, Condensate Return, and Compressed Air Piping Improvements at Springwells WTP	B	A	6,250,000	279,784		172,181				15,492	5,572	193,245		473,029
114012	Project 114012-Springwells Water Treatment Plant 1930 Filter Building-Roof Replacement	B	A	3,000,000	-	1,122,212					952	378	1,123,542		1,123,542
114013	Project 114013-Springwells Reservoir Fill Line Improvements	B	A	7,914,000	119,663		87,756				7,002	1,099	95,856		215,519
114014	Project 114014-Springwells WTP Underground Fire Protection Loop Improvements	B	F	3,289,000	-								-		-
114015	Project 114015-Emergency Grating Replacement at Springwells WTP	B	A	2,500,000	253,623	2,430,349	31,750				18,217	3,058	2,483,374	(2,523,156)	213,840
115001	Project 115001-Yard Piping, Valves and Venturi Meters Replacement at Water Works Park	B	A	53,900,000	8,977		655,460				12,298	4,892	672,649		681,626
115002	Project 115002-Miscellaneous Concrete and Road Improvements at Waterworks Park WTP	B	PC	3,036,000	1,951,164	16,102	9,676				4,750	1,900	32,428	(1,983,592)	(0)
115003	Project 115003-Comprehensive Condition Assessment at Waterworks Park WTP	B	A	575,000	-		430,024				6,995	2,587	439,606		439,606

**Great Lakes Water Authority
Water System Construction Work-in-Progress (CWIP) FY 2018 Rollforward
Unaudited, Pre-Close Activity For the Fiscal Year Ended June 30, 2018**

CIP #	Brief Description	Funding Source	Status	Total Project Estimate from CIP	CWIP Balance July 1, 2017	FY 2018 Activity (Unaudited)						FY 2018 Activity (Unaudited), Pre-Close	FY 2018 Transfers Out of CWIP	Unaudited, Pre-Close CWIP Balance, June 30, 2018
						Construction: (616900)	Contractual Engineering Services (617950)	Capitalized Interest (703115)	Other Expenses (617900)	Capital Allocation: Non-Personnel (601998)	Capital Allocation: Personnel (601995)			
115004	Project 115004 Water Works Park WTP Chlorine System Upgrade	B	A	9,690,000	370,797	2,013,343	134,720			5,929	1,964	2,155,956		2,526,753
116001	Project 116001-Miscellaneous Improvements to Raw Water Tunnels, Shafts and Related Structures	B	F	2,500,000	-									-
116002	Project 116002-Pennsylvania, Springwells and Northeast Raw Water Supply Tunnel Improvements based on Contract CS-1623 Inspection Results	B	A	32,400,000	10,401	2,162,622	-			3,554	1,408	2,167,584		2,177,985
116003	Project 116003-Genesee and Lapeer County Transmission System Improvements	B	F	6,800,000	-									-
122001	Project 122001-Parallel 42-Inch Main in 24 Mile Road from Rochester Station to Romeo Plank Road	B	A	30,008,000	32,570,891	862,447	130,751			1,232	488	994,917		33,565,809
122002	Project 122002-Replacement of Five (5) PRV Pits of Treated Water Transmission System	B	A	2,220,000	1,696,488		147,675			241	95	148,011		1,844,499
122003	Project 122003-New Waterworks Park to Northeast Transmission Main	B	A	130,000,000	19,372		1,612,428			16,647	6,557	1,635,632		1,655,004
122004	Project 122004-96-Inch Main Relocation, Isolation Valves Installations, and New Parallel Main	B	A	139,000,000	459,919		630,667			28,794	10,371	669,832		1,129,751
122005	Project 122005-Transmission System Water Main Work - Replacement of Schoolcraft Water Main	B	A	14,550,000	-					3,960	-	3,960		3,960
122006	Project 122006-Transmission System Water Main Work-Wick Road Parallel Water Main	B	A	19,350,000	23,300									23,300
122007	Project 122007-Design and Construction of a new Newburgh Road 24" Main along Newburgh Road between Cherry Hill and Glenwood Avenue	B	F	4,000,000	-									-
122009	Project 122009-Water System Improvements in Joy Road from Southfield Road to Trinity	B	A	8,423,000	106,881									106,881
122010	Project 122010-Water Main Replacement within the City of Detroit - Joy Rd from Greenfield to Schaefer and Davison Ave from Linwood to Livernois	B	F	3,128,000	-									-
122011	Project 122011-Park-Merriman Water Main-Final Phase	B	A	4,000,000	-		156,338					156,338		156,338
122012	Project 122012-36-inch Water Main in Telegraph Road	B	A	7,061,000	8,125,683	1,086,849	160,123			32,466	12,880	1,292,318		9,418,001
122013	Project 122013-Lyon Township Transmission Main Extension Project	B	F	29,800,000	-									-

**Great Lakes Water Authority
Water System Construction Work-in-Progress (CWIP) FY 2018 Rollforward
Unaudited, Pre-Close Activity For the Fiscal Year Ended June 30, 2018**

CIP #	Brief Description	Funding Source	Status	Total Project Estimate from CIP	CWIP Balance July 1, 2017	FY 2018 Activity (Unaudited)						FY 2018 Activity (Unaudited), Pre-Close	FY 2018 Transfers Out of CWIP	Unaudited, Pre-Close CWIP Balance, June 30, 2018
						Construction: (616900)	Contractual Engineering Services (617950)	Capitalized Interest (703115)	Other Expenses (617900)	Capital Allocation: Non-Personnel (601998)	Capital Allocation: Personnel (601995)			
122014	Project 122014-48-Inch Water Main Installation at Vining and Wick Roads in Romulus	B	A	4,535,000	3,839,433	110,084	61,341			161	64	171,651		4,011,084
122015	Project 122015-30-Inch Water Main	B	PC	2,327,000	2,345,314	115,459						115,459	(2,460,774)	(0)
132001	Project 132001-Wick Road Station Rehabilitation	B	A	13,702,000	85	129,995				123	49	130,168		130,253
132002	Project 132002-Replacement of Switchgear at Joy Road Pumping Station	B	C	612,000	-							-		-
132003	Project 132003-Isolation Gate Valves for Line Pumps for West Service Center Pumping Station	B	A	1,521,000	66,236	71,404				750		72,154		138,390
132004	Project 132004-Hydraulic Surge Control for North Service Center Pumping Station	B	A	2,800,000	75,075	129,540				7,266	2,890	139,696		214,771
132005	Project 132005-Energy Management: Evaluate Alternatives and Recommend Corrective Actions to Improve Power Factors (PF) at Various GLWA Booster Pumping Stations	B	F	250,000	-							-		-
132006	Project 132006-Pressure and Control Improvements at the Electric, Ford Road, Michigan, and West Chicago Water Booster Pumping Stations	B	A	3,000,000	7,524	146,307				5,455	2,174	153,937		161,460
132007	Project 132007-Energy Management: Freeze Protection Pump Installation at Imlay Pumping Station	B	A	1,000,000	-					6,569	2,601	9,170		9,170
132008	Project 132008-Needs Assessment Study for all Water Booster Pumping Stations	B	A	1,700,000	33,385	857,618				19,538	2,009	879,164		912,550
132009	Project 132009-Study Phase Services for Proposed East Service Center Booster Pumping Station and Reservoir	B	A	500,000	10,313							-		10,313
132010	Project 132010-West Service Center/Duval Rd Division Valve Upgrades	B	A	11,800,000	-	(23,023)						(23,023)		(23,023)
132011	Project 132011-Energy Management: West Service Center (WSC) VFD Installation	B	F	3,334,000	-							-		-
132012	Project 132012- Ypsilanti Pumping Station Improvements	B	A	-	-					2,613	1,035	3,648		3,648
161001	Project 161001-Comprehensive Water Master Plan Update	B	PC	290,000	-							-		-
170011	Project 170011-Miscellaneous Heating Improvements Southwest WTP	B	C	563,000	-	3,916						3,916		3,916
170100	Project 170100-Allowance: WTP/Pump Station	B	A	76,877,010	-							-		-
170101	Project 170101-Master Specs	B	C	300,000	-							-		-

**Great Lakes Water Authority
Water System Construction Work-in-Progress (CWIP) FY 2018 Rollforward
Unaudited, Pre-Close Activity For the Fiscal Year Ended June 30, 2018**

CIP #	Brief Description	Funding Source	Status	Total Project Estimate from CIP	CWIP Balance July 1, 2017	FY 2018 Activity (Unaudited)						FY 2018 Activity (Unaudited), Pre-Close	FY 2018 Transfers Out of CWIP	Unaudited, Pre-Close CWIP Balance, June 30, 2018	
						Construction: (616900)	Contractual Engineering Services (617950)	Capitalized Interest (703115)	Other Expenses (617900)	Capital Allocation: Non-Personnel (601998)	Capital Allocation: Personnel (601995)				Capital Allocation: Benefits (601997)
170102	Project 170102-Water Production Plant Flow Metering Improvements at NE, SP & SW WTP	B	A	1,989,000	269,071		63,830				1,644	651	66,126		335,197
170103	Project 17103-Belle Isle Water Supply Intake and Ice Boom Improvements	B	A	369,150	6,243	262,885	15,552				1,373	544	280,353		286,596
170104	Project 170104-Orion and Newburgh Pumping Stations Improvements	B	A	2,590,000	164,615	125,700	44,975				22,004	7,048	199,727		364,343
170105	Project 170105-Phosphoric Acid and Heating System and NE-WTP	B	PC	1,804,620	1,949,623	(22,519)	6,389				1,646	653	(13,831)	(1,935,792)	0
170106	Project 170106- Phosphoric Acid Tank Replacement LHWT	B	F	575,000									-		-
170107	Project 170107- Belle Isle Water Supply Intake Lagoon Main Entrance Bridge Pile Restoration	B	PC	358,500	12,041	259,431	15,346				8,234	3,293	286,304	(298,344)	0
170108	Project 170108- Adams Road Water Isolation Gate	B	A	1,092,500	625								-		625
170109	Project 170109-Inspection of Raw Water Intakes and Tunnels	B	A	2,076,120	2,920,548		131,744				1,392	557	133,693		3,054,241
170110	Project 170110- WWP WTP Raw Water Smapling Improvements	B	A	535,600							2,095	831	2,926		2,926
170113	Project 170113-Water Plant Automation	B	A	1,610,000	12,933								-		12,933
170117	Project 170117-Instrument Air Compressor Systems Replacement at NE-WTP	B	PC	230,000	226,483								-	(226,483)	0
170118	Project 170118-1958 Sedimentation Basin	B	C	866,000	-								-		-
170119	Project 170119- Belle Isle Water Supply Intake Lagoon	B	F	115,000									-		-
170120	Project 170120-Phosphoric Acid Feed System Improvements at Southwest WTP	B	A	207,500	87,031		27,337				11,677	4,643	43,658		130,688
170200	Project 170200-As Needed Construction Materials, Environmental Media and Special Testing Services, Construction Inspection, and Other Technical Services	B	A	-	-								-		-
170201	Project 170201- Job Order Contract for Construction, Environmental, Speical Testing, Inspection and Other Technical Services	B	A	1,500,000							1,152	457	1,609		1,609
170300	Project 170300-Water Treatment Plant Automation Program	B	A	5,890,000	-								-		-
170301	Water Plant Automation	B	A				1,363,814						1,363,814		1,363,814
170400	Project 170400-Water Transmission Improvement Program	B	A	45,666,500									-		-
170401	Project 170401-Emergency Bypass Around Ypsilanti Station	B	PC	1,150,000	373,858	(356,767)	(11,592)		(250)	(3,585)	(1,435)		(373,628)	(230)	-
170402	Project 170402-Emergency Manned Visual Inspection 84-Inch Transmission Main	B	A	163,500	121,400		34,620						34,620	-	156,020

**Great Lakes Water Authority
Water System Construction Work-in-Progress (CWIP) FY 2018 Rollforward
Unaudited, Pre-Close Activity For the Fiscal Year Ended June 30, 2018**

CIP #	Brief Description	Funding Source	Status	Total Project Estimate from CIP	CWIP Balance July 1, 2017	FY 2018 Activity (Unaudited)							FY 2018 Transfers Out of CWIP	Unaudited, Pre-Close CWIP Balance, June 30, 2018	
						Construction: (616900)	Contractual Engineering Services (617950)	Capitalized Interest (703115)	Other Expenses (617900)	Capital Allocation: Non-Personnel (601998)	Capital Allocation: Personnel (601995)	Capital Allocation: Benefits (601997)			FY 2018 Activity (Unaudited), Pre-Close
170403	Project 170403-Lapeer County Chlorine Booster Station	B	PC	3,020,000	579,723	(579,723)							(579,723)	-	-
170500	Project 170500-Transmission System Valve Assessment and Rehabilitation/Replacement	B	A	-	-								-		-
170502	Project 170502-Transmission System Valve Assessment and Rehabilitation/Replacement	B	A	15,330,000		3,429,582				653	259	3,430,494			3,430,494
170600	Project 170600-Water Transmission Main Asset Assessment Program	B	A	10,626,000	-								-		-
170701	Project 170701-Booster Station & Reservoirs Program Management	B	PC	11,975,000	12,913,885	62,814							62,814	(12,976,698)	0
170800	Project 170800-Reservoir Inspection, Design and Rehabilitation at Imlay Station, Adams Station, Haggerty Stations, LH-WTP, SP-WTP and SW-WTP	B	A	11,000,000	-								-		-
170900	Project 170900-Suburban Water Meter Pit Rehabilitation and Meter Replacement	B	A	20,500,000	-								-		-
171501	Project 171501 Roof Replacement various Water Facilities	B	A	-						50,420			50,420		50,420
331001	Project 331002-Roofing Replacement	B	F	11,500,000	-								-		-
351001	Project 351001-Water Facility Lighting Renovations	B	F	2,799,000	-								-		-
361001	Project 361001-Consolidated Process Control Systems	B	PC	4,237,000	146,482	166,250							166,250	(312,732)	(0)
361002	Project 361002-Data Control Reliab/Avail Improvements	B	A	2,851,000	16,080								-		16,080
361003	Project 361003-SCADA Radio Network Upgrade	B	PC	3,484,000	467,427								-		467,427
380401	Project 380400-As-Needed CIP Implementation Assistance and Related Services	B	A	-	105,339	(105,339)							(105,339)	-	-
380500	Project 380500-Department-Wide General Engineering Services on an As-Needed Basis	B	A	-	-								-		-
380501	Project 380501-Department-Wide General Engineering Services on an As-Needed Basis	B	A	5,260,000	132,282	(132,282)							(132,282)	-	-
380600	Project 380600-General Engineering Services	B	A	-	-								-		-
380601	Project 380601-General Engineering Services	B	A	8,014,000	157,971								-		157,971
380701	Project 380701-Engineering Services for Concrete Testing, Geotechnical Soil Borings and Services	B	A	2,556,000	115,418	(12,572)							(12,572)	-	102,846
380800	Project 380800-Geotechnical and Related Services on an As-Needed Basis	B	A	2,573,000	-								-		-
380801	Project 380801-Geotechnical and Related Services on an As-Needed Basis	B	A	-	82,476								-		82,476

Great Lakes Water Authority
Water System Construction Work-in-Progress (CWIP) FY 2018 Rollforward
Unaudited, Pre-Close Activity For the Fiscal Year Ended June 30, 2018

CIP #	Brief Description	Funding Source	Status	Total Project Estimate from CIP	CWIP Balance July 1, 2017	FY 2018 Activity (Unaudited)							FY 2018 Activity (Unaudited), Pre-Close	FY 2018 Transfers Out of CWIP	Unaudited, Pre-Close CWIP Balance, June 30, 2018	
						Construction: (616900)	Contractual Engineering Services (617950)	Capitalized Interest (703115)	Other Expenses (617900)	Capital Allocation: Non-Personnel (601998)	Capital Allocation: Personnel (601995)	Capital Allocation: Benefits (601997)				
380900	Project 390900-General Engineering Services	B	A	1,513,000	-											
380901	Project 380901- General Engineering Services	B	A	-	74,791		(74,791)					(74,791)				
381000	Project 381000-Energy Management: Electric Metering Improvement Program	B	A	3,000,000	-											
Total # of Projects and Dollars				112	\$ 1,169,379,000	\$ 159,099,050	\$ 26,488,861	\$ 9,807,631	\$ (11,592)	\$ -	\$ 100,130	\$ 465,201	\$ 163,251	\$ 37,013,482	\$ (45,499,092)	\$ 150,613,440
FY 2018 - 2022 Water CIP Total (Page IV-2)					\$ 1,169,378,000	\$ 159,099,050								37,013,482		
Difference due to rounding					(1,000)											
Items to be reclassified to Capital Outlay FY 2018						287,488										
Total CWIP Reported on FY 2017 Financial Statements						159,386,538										

Funding Source
B- Bonds
SRF - State Revolving Funds

CIP Allowance and Program Summary

Within the FY 2018 – 2022 CIP, GLWA has developed budgets for allowances and programs that provide GLWA flexibility in capital development and improvements.

Allowances are established to provide funding related to unanticipated pipeline and equipment failures that require immediate repair and rehabilitation to continuously meet level of service requirements. Allowances can also be allocated to projects with anticipated or actual spend in excess of CIP budget.

Programs are established to provide funding related to specific capital improvements that are system specific, reoccurring, and vary from year to year.

Below are the allowances and programs within the Water System.

Allowance

170100: Water Treatment Plant / Pump Station Allowance

Programs

170200: As Needed Construction Materials, Environmental Media and Special Testing, Construction Inspection, and Other Technical Services

170300: Water Treatment Plant Automation Program

170400: Water Transmission Improvement Program

170500: Transmission System Valve Rehabilitation and Replacement Program

170600: Water Transmission Main Asset Assessment Program

170700: Reservoirs Inspection, Repair and Rehabilitation Program

170800: Reservoir Inspection, Design and Rehabilitation at Imlay Station, Adams Station, Haggerty Station, LH-WTP, SPW-WTP and SW-WTP

170900: Suburban Water Meter Pit Rehabilitation and Meter Replacement

Great Lakes Water Authority
Board Approved CIP Allowance/Program Summary
Allowance: 170100 Water Treatment / Pump Station

CIP#	Contract Number	Description	Current Year Budget Amendment	Board /Administrative Approved	FY2018 Estimate	FY 2019 Estimate	FY 2020 Estimate	FY 2021 Estimate	FY 2022 Estimate
170100		Water Treatment / Pump Station Allowance			19,650,000	20,000,000	20,000,000	10,000,000	10,000,000
		Lake Huron Treatment Plant Mechanical Improvements	9410	Board	(381,000)	(579,000)			
112002	CON-215	Low Lift Chaisson Rehabilitation at NEWTP	6857	Administrative	(247,000)	(195,000)	0	0	0
114001	CS-200	Resident Project Representative and O&M for SP-564	6904	Administrative	(890,000)	0	0	0	0
114013	SCP-CS-038	Professional Engineering Services Springwell WTP	6905	Administrative	(207,000)	(172,500)	(34,500)	0	0
170011	SCP-SW-011	Miscellaneous Heating Improvements at Southwest WTP			0	0	0	0	0
170101	SCP-CS-1630	Water Transmission Pipeline Improvements			0	0	0	0	0
170102	SCP-CS-1656	Water Production Plant Flow Meter	6859	Administrative	(105,000)	0	0	0	0
170103	SCP-CON-094	Belle Isle Ice Boom Replacement & Reinforcement Upgrade			0	0	0	0	0
170104	CON-225	Orion Pumping Station Improvements	6923	Board	(500,000)	(1,800,000)	0	0	0
170105	SCP-NE-017	Phosphoric Acid and Heating System Improvements			0	0	0	0	0
170106	SCP-LH-398	Phosphoric Acid Tank Replacement LHWT			0	0	0	0	0
170107	SCP-DWS-059	Belle Isle Water Intake Bridge Improvements	6862	Administrative	(358,500)	0	0	0	0
170108	SCP-DWS-063	Adams Rd Water Booster Isolation Gate	6900	Administrative	(192,500)	0	0	0	0
170109	SCP-CS-1623	Inspection of Three Water Intakes	6864	Board	(500,000)	(3,000)	0	0	0
170110	CON-153	WWPWP Raw Water Sampling Improvements			0	0	0	0	0
170117	SCP-NE-007A	Instrument Air Compressor NEWTP			0	0	0	0	0
170118	SCP-SP-009	Sedimentation Basin Sludge Removal			0	0	0	0	0
170119	SCP-CS-1685	Belle Isle Water Supply Intake Lagoon			0	0	0	0	0
170120	SCP-CS-1692	Acid and Chlorine Feed Improvements SWWP			0	0	0	0	0
		Available Balance			16,269,000	17,250,500	19,965,500	10,000,000	10,000,000

Great Lakes Water Authority
Board Approved CIP Allowance/Program Summary
Program: 170200 As Needed Construction Materials, Environmental Media and Special Testing Services
Construction Inspection, and other Technical Services

CIP#	Contract Number	Description	Current Year Budget Amendment	Board /Administrative Approved	FY2018 Estimate	FY 2019 Estimate	FY 2020 Estimate	FY 2021 Estimate	FY 2022 Estimate
170200		As Needed Materials and Services			500,000	500,000	500,000	0	0
		Available Balance			500,000	500,000	500,000	0	0

Great Lakes Water Authority
Board Approved CIP Allowance/Program Summary
Program: 170300 Water Treatment Plant Automation

CIP#	Contract Number	Description	Current Year Budget Amendment	Board /Administrative Approved	FY2018 Estimate	FY 2019 Estimate	FY 2020 Estimate	FY 2021 Estimate	FY 2022 Estimate
170300		Water Treatment Plant Automation Program			1,500,000	1,500,000	1,500,000	1,500,000	1,500,000
170113	CS-108	Water Plant Automation Needs Assessment	6867	Board	(1,090,000)				
Total		Available Balance			410,000	1,500,000	1,500,000	1,500,000	1,500,000

Great Lakes Water Authority
Board Approved CIP Allowance/Program Summary
Program: 170400 Water Transmission Improvement

CIP#	Contract Number	Description	Current Year Budget Amendment	Board /Administrative Approved	FY2018 Estimate	FY 2019 Estimate	FY 2020 Estimate	FY 2021 Estimate	FY 2022 Estimate
170400		Water Transmission Improvements Program			10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
170402	PO# 0004292	84" Transmission Water Main Assessment in Troy							
170403	GLWA-DBW-070	Lapeer County Chlorine Booster Stations	6932	Board	(2,900,000)	(120,000)			
Available Balance					7,100,000	9,880,000	10,000,000	10,000,000	10,000,000

Great Lakes Water Authority
Board Approved CIP Allowance/Program Summary
Program: 170500 Transmission System Valve Rehabilitation and Replacement

CIP#	Contract Number	Description	Current Year Budget Amendment	Board /Administrative Approved	FY2018 Estimate	FY 2019 Estimate	FY 2020 Estimate	FY 2021 Estimate	FY 2022 Estimate
170500		Transmission System Valve Assessment and Rehabilitation / Replacement			2,930,000	3,100,000	3,100,000	3,100,000	3,100,000
170502	CON-181	Transmission System Valve Assessment and Rehabilitation and Replacement	6977	Board	(2,930,000)	(3,100,000)	(3,100,000)	(870,000)	
Available Balance					0	0	0	2,230,000	3,100,000

Great Lakes Water Authority
Board Approved CIP Allowance/Program Summary
Program: 170600 Water Transmission Main Asset Assessment

CIP#	Contract Number	Description	Current Year Budget Amendment	Board /Administrative Approved	FY2018 Estimate	FY 2019 Estimate	FY 2020 Estimate	FY 2021 Estimate	FY 2022 Estimate
170600		Water Transmission Main Asset Assessment Program			2,626,000	2,000,000	2,000,000	2,000,000	2,000,000
		Available Balance			2,626,000	2,000,000	2,000,000	2,000,000	2,000,000

Great Lakes Water Authority
Board Approved CIP Allowance/Program Summary
Program: 170700 Reservoirs Inspection, Repair and Rehabilitation

CIP#	Contract Number	Description	Current Year Budget Amendment	Board /Administrative Approved	FY2018 Estimate	FY 2019 Estimate	FY 2020 Estimate	FY 2021 Estimate	FY 2022 Estimate
170700		Booster Stations and Reservoirs Inspection, Rehabilitation and Inspection Repair Program			88,000				
170701	DWS-874	Booster Stations & Reservoirs Inspection	N/A		(88,000)	0	0	0	0
		Available Balance			0	0	0	0	0

Great Lakes Water Authority
Board Approved CIP Allowance/Program Summary
Program: 170800 Reservoir Inspection, Design and Rehabilitation at Implay Station, Adams Station
Haggerty Station, LH-WTP, SPW-WTP and SW-WTP

CIP#	Contract Number	Description	Current Year Budget Amendment	Board /Administrative Approved	FY2018 Estimate	FY 2019 Estimate	FY 2020 Estimate	FY 2021 Estimate	FY 2022 Estimate
170800		Reservoir Inspection, Design and Rehabilitation at Implay Station, Adams Station, Haggerty Station, LH-WTP, SP-WTP and SW-WTP Program			3,300,000	2,550,000	2,550,000	2,550,000	
Available Balance					3,300,000	2,550,000	2,550,000	2,550,000	0

Great Lakes Water Authority
Board Approved CIP Allowance/Program Summary
Program: 170900 Suburban Water Meter Pit Rehabilitation and Meter Replacement

CIP#	Contract Number	Description	Current Year Budget Amendment	Board /Administrative Approved	FY2018 Estimate	FY 2019 Estimate	FY 2020 Estimate	FY 2021 Estimate	FY 2022 Estimate
170900		Suburban Water Meter Pit Rehabilitation and Meter Replacement Program			4,000,000	4,000,000	4,000,000	4,000,000	4,000,000
Available Balance					4,000,000	4,000,000	4,000,000	4,000,000	4,000,000

Budget Amendment Reporting

Scope: Budget amendments seek to properly allocate funds from the allowance and programs within the Capital Improvement Plan (CIP) for the budgeted years by the reallocation of funds from the budgeted allowance or programs level to the actual project level.

Process: Steps are listed below.

- 1) Properly identify projects that utilize funds from the allowance or programs
- 2) Reallocate the funds from the budgeted allowance or programs level through a journal entry
- 3) Attach documents that support the reallocation (CIP funding request, contract transmittal, or change orders)
- 4) Create, review, and approve budget amendment journal entry

Water - Summary Budget Amendments

CIP Project	FY 2018					FY 2018
	Original Budget	Q1 Amendments	Q2 Amendments	Q3 Amendments	Q4 Amendments	Amended Budget
111001						
Project 111001-Energy Management: Lake Huron Water Treatment Plant Low Lift Pumping Improvements	\$ 2,500,000	\$ -	\$ -	\$ -	\$ (2,500,000)	\$ -
111002						
Project 111002 LHWTP Backflow Replacement	1,030,000	-	-	381,000	(630,000)	781,000
111003						
Project 111003-Evaluation of Flocculation Improvement Alternatives at the LHWTP	125,000	-	-	-	(125,000)	-
111004						
Project 111004-Electrical Tunnel Rehabilitation at Lake Huron WTP	1,000,000	-	-	-	(882,520)	117,480
111005						
Project 111005-Miscellaneous Concrete Improvements at the Lake Huron WTP	323,000	-	-	-	(323,000)	-
111006						
Project 111006-Replacement of Filter Instrumentation and Raw Water Flow Metering Improvements at Lake Huron WTP	600,000	-	-	-	43,000	643,000
111007						
Project 111007-Lake Huron WTP-Raw Sludge Clarifier and Raw Sludge Pumping System Improvements	50,000	-	-	-	372,000	422,000
112001						
Project 112001-Yard Piping Replacement at Northeast Water Treatment Plant	800,000	-	-	-	(800,000)	-
112002						
Project 112002-Low Lift Pumping Plant Caisson Rehabilitation at Northeast WTP	1,183,000	247,000	-	-	(1,360,000)	70,000
113001						
Project 113001-Southwest Water Treatment Plant, Sludge Treatment & Waste Wash water Treatment Facilities	1,793,000	-	-	-	(1,793,000)	-
113002						
Project 113002-High Lift Pump Discharge Valve Actuators Replacement at Southwest WTP	160,000	-	-	-	26,000	186,000
113004						
Project 113004-Residual Handling Facility's Decant Flow Modifications at Southwest WTP	3,100,000	-	-	-	(2,935,000)	165,000
114001						
Project 114001-Springwells Water Treatment Plant 1958 Filter Rehabilitation and Auxiliary Facilities	310,000	890,000	-	-	6,081,000	7,281,000
114002						
Project 114002-Springwells Water Treatment Plant - Low Lift and High Lift Pump Station	1,500,000	-	-	-	(1,037,000)	463,000

Water - Summary Budget Amendments

CIP Project	FY 2018					FY 2018
	Original Budget	Q1 Amendments	Q2 Amendments	Q3 Amendments	Q4 Amendments	Amended Budget
114003						
Project 114003-Water Production Flow Metering Improvements at NE, SW, and SPW WTP	8,800,000	-	-	-	(8,096,000)	704,000
114006						
Project 114006-Replacement of Rapid Mix Units at Springwells WTP 1958 Process Train	875,000	-	-	-	(752,000)	123,000
114008						
Project 114008-1930 Sedimentation Basin Sluice Gates, Guides & Hoists Improvements at Springwells WTP	1,200,000	-	-	-	(1,200,000)	-
114009						
Project 114009-Springwells Water Treatment Plant Service Area Redundancy Study	-	-	-	-	145,000	145,000
114011						
Project 114011-Steam, Condensate Return, and Compressed Air Piping Improvements at Springwells WTP	3,450,000	-	-	-	(3,000,000)	450,000
114012						
Project 114012-Springwells Water Treatment Plant 1930 Filter Building-Roof Replacement	-	-	-	-	486,000	486,000
114013						
Project 114013-Springwells Reservoir Fill Line Improvements	3,300,000	207,000	-	-	(3,326,000)	181,000
114014						
Project 114014-Springwells WTP Underground Fire Protection Loop Improvements	380,000	-	-	-	(380,000)	-
114015						
Project 114015-Emergency Grating Replacement at Springwells WTP	2,000,000	-	-	-	763,213	2,763,213
115001						
Project 115001-Yard Piping, Valves and Venturi Meters Replacement at Water Works Park	5,500,000	-	-	-	(5,088,000)	412,000
115002						
Project 115002-Miscellaneous Concrete and Road Improvements at Waterworks Park WTP	-	-	-	-	9,676	9,676
115003						
Project 115003-Comprehensive Condition Assessment at Waterworks Park WTP	375,000	-	-	-	(244,000)	131,000
115004						
Project 115004-Water Works Park WTP Chlorine System Upgrade	700,000	-	-	-	(28,000)	672,000
116001						
Project 116001-Miscellaneous Improvements to Raw Water Tunnels, Shafts and Related Structures	1,000,000	-	-	-	(1,000,000)	-

Water - Summary Budget Amendments

CIP Project	FY 2018					FY 2018
	Original Budget	Q1 Amendments	Q2 Amendments	Q3 Amendments	Q4 Amendments	Amended Budget
116002						
Project 116002-Pennsylvania, Springwells and Northeast Raw Water Supply Tunnel Improvements based on Contract CS-1623 Inspection Results	2,000,000	-	-	-	1,625,000	3,625,000
116003						
Project 116003-Genesee and Lapeer County Transmission System Improvements	400,000	-	-	-	(400,000)	-
122001						
Project 122001-Parallel 42-Inch Main in 24 Mile Road from Rochester Station to Romeo Plank Road	715,000	-	-	-	2,103,400	2,818,400
122002						
Project 122002-Replacement of Five (5) PRV Pits of Treated Water Transmission System	-	-	-	-	670,000	670,000
122003						
Project 122003-New Waterworks Park to Northeast Transmission Main	1,500,000	-	-	-	(195,000)	1,305,000
122004						
Project 122004-96-inch Main Relocation, Isolation Valves Installations, and New Parallel Main	1,500,000	-	-	-	(930,000)	570,000
122005						
Project 122005-Transmission System Water Main Work - Replacement of Schoolcraft Water Main	-	-	-	-	19,960	19,960
122006						
Project 122006-Transmission System Water Main Work-Wick Road Parallel Water Main	9,350,000	-	-	-	(9,334,000)	16,000
122007						
Project 122007-Design and Construction of a new Newburgh Road 24" Main along Newburgh Road between Cherry Hill and Glenwood Avenue	1,800,000	-	-	-	(1,794,000)	6,000
122010						
Project 122010-Water Main Replacement within the City of Detroit - Joy Rd from Greenfield to Schaefer and Davison Ave from Linwood to Livernois	1,106,000	-	-	-	(1,090,000)	16,000
122011						
Project 122011-Park-Merriman Water Main-Final Phase	1,800,000	-	-	-	(1,735,675)	64,325
122012						
Project 122012-36-inch Water Main in Telegraph Road	5,061,000	-	-	-	(2,724,878)	2,336,122
122013						
Project 122013-Lyon Township Transmission Main Extension Project	10,500,000	-	-	-	(10,500,000)	-

Water - Summary Budget Amendments

CIP Project	FY 2018					FY 2018
	Original Budget	Q1 Amendments	Q2 Amendments	Q3 Amendments	Q4 Amendments	Amended Budget
122014						
Project 122014-48-Inch Water Main Installation at Vining and Wick Roads in Romulus	-	-	-	-	410,512	410,512
122015						
Project 122015-30-Inch Water Main	-	-	-	-	398,000	398,000
122016						
Downriver Transmission Main Loop	-	-	-	-	-	-
132001						
Project 132001-Wick Road Station Rehabilitation	-	-	-	-	186,655	186,655
132003						
Project 132003-Isolation Gate Valves for Line Pumps for West Service Center Pumping Station	521,000	-	-	-	(374,000)	147,000
132004						
Project 132004-Hydraulic Surge Control for North Service Center Pumping Station	500,000	-	-	-	(343,000)	157,000
132005						
Project 132005-Energy Management: Evaluate Alternatives and Recommend Corrective Actions to Improve Power Factors (PF) at Various GLWA Booster Pumping Stations	125,000	-	-	-	(125,000)	-
132006						
Project 132006-Pressure and Control Improvements at the Electric, Ford Road, Michigan, and West Chicago Water Booster Pumping Stations	200,000	-	-	-	(94,000)	106,000
132007						
Project 132007-Energy Management: Freeze Protection Pump Installation at Imlay Pumping Station	200,000	-	-	-	(200,000)	-
132008						
Project 132008-Needs Assessment Study for all Water Booster Pumping Stations	1,200,000	-	-	-	(478,000)	722,000
132009						
Project 132009-Study Phase Services for Proposed East Service Center Booster Pumping Station and Reservoir	100,000	-	-	-	(100,000)	-
132010						
Project 132010-West Service Center/Duval Rd Division Valve Upgrades	4,200,000	-	-	-	(4,200,000)	-
132011						
Project 132011-Energy Management: West Service Center (WSC) VFD Installation	1,667,000	-	-	-	(1,667,000)	-
170100						

Water - Summary Budget Amendments

CIP Project	FY 2018					FY 2018
	Original Budget	Q1 Amendments	Q2 Amendments	Q3 Amendments	Q4 Amendments	Amended Budget
Project 170100-Allowance: WTP/Pump Station 170102	19,650,000	(3,000,000)	-	(381,000)	(14,926,000)	1,343,000
Project 170102-Water Production Plant Flow Metering Improvements at NE, SP & SW WTP 170103	-	105,000	-	-	(90,178)	14,822
Project 17103-Belle Isle Water Supply Intake and Ice Boom Improvements 170104	-	-	-	-	17,162	17,162
Project 170104-Orion and Newburgh Pumping Stations Improvements 170105	-	500,000	-	-	(500,000)	-
Project 170105-Phosphoric Acid and Heating System and NE-WTP 170107	-	-	-	-	6,389	6,389
Project 170107- Belle Isle Water Supply Intake Lagoon Main Entrance Bridge Pile Restoration 170108	-	358,500	-	-	(358,500)	-
Project 170108- Adams Road Water Isolation Gate 170109	-	192,500	-	-	(192,500)	-
Project 170109-Inspection of Raw Water Intakes and Tunnels 170120	-	500,000	-	-	(500,000)	-
Project 170120-Phosphoric Acid Feed System Improvements at Southwest WTP 170200	-	-	-	-	54,000	54,000
Project 170200-As Needed Construction Materials, Environmental Media and Special Testing Services, Construction Inspection, and Other Technical Services 170201	500,000	-	-	-	(514,000)	(14,000)
Project 170201- Job Order Contract for Construction, Environmental, Speical Testing, Inspection and Other Technical Services 170300	-	-	-	-	186,000	186,000
Project 170300-Water Treatment Plant Automation Program 170301	1,500,000	(1,090,000)	-	-	1,015,000	1,425,000
Water Plant Automation 170400	-	1,090,000	-	-	(1,090,000)	-
Project 170400-Water Transmission Improvement Program 170403	10,000,000	(2,900,000)	-	-	(6,871,000)	229,000
Project 170403-Lapeer County Chlorine Booster Station 170500	-	2,900,000	-	-	(2,900,000)	-

Water - Summary Budget Amendments

CIP Project	FY 2018					FY 2018
	Original Budget	Q1 Amendments	Q2 Amendments	Q3 Amendments	Q4 Amendments	Amended Budget
Project 170500-Transmission System Valve Assessment and Rehabilitation/Replacement 170502	2,930,000	(2,930,000)	-	-	2,000,000	2,000,000
Project 170502-Transmission System Valve Assessment and Rehabilitation/Replacement 170600	-	2,930,000	-	-	(2,930,000)	-
Project 170600-Water Transmission Main Asset Assessment Program 170700	2,626,000	-	-	-	1,000	2,627,000
Booster Station and Reservoir Inspection 170701	-	-	-	-	1,417,000	1,417,000
Project 170701-Booster Station & Reservoirs Program Management 170800	88,000	-	-	-	(88,000)	-
Project 170800-Reservoir Inspection, Design and Rehabilitation at Imlay Station, Adams Station, Haggerty Stations, LH-WTP, SP-WTP and SW-WTP 170900	3,300,000	-	-	-	(3,261,000)	39,000
Project 170900-Suburban Water Meter Pit Rehabilitation and Meter Replacement 171100	4,000,000	-	-	-	(3,590,000)	410,000
NE Santuary Survey Improvements 331001	-	-	-	-	6,000	6,000
Project 331002-Roofing Replacement 351001	3,000,000	-	-	-	(3,000,000)	-
Project 351001-Water Facility Lighting Renovations 361001	933,000	-	-	-	(931,000)	2,000
Project 361001: Consolidated Process Control System Upgrades 361002	-	-	-	-	-	-
Project 361002: Data Center Reliability/Availability Improvements 361003	-	-	-	-	-	-
Project 361003: SCADA Radio Network Upgrade 380400	-	-	-	-	60,000	60,000
Project 380400: As-need CIP Implementation Assistance and Related Services NNB 380500	-	-	-	-	250,000	250,000
Project 380500: Bpartment-wiB General Engineering Services on an As-need Basis 380600	114,000	-	-	-	(114,000)	-
Project 380600: General Engineering Services 380700	336,000	-	-	-	(184,531)	151,470

Water - Summary Budget Amendments

CIP Project	FY 2018					FY 2018
	Original Budget	Q1 Amendments	Q2 Amendments	Q3 Amendments	Q4 Amendments	Amended Budget
Project 380700: As-need Engineering Services for Concrete Testing, Geotechnical Soil Borings, other Testing Services, and Related Services 380900	907,000	-	-	-	(860,796)	46,204
Project 380900: General Engineering Services 380901	772,000	-	-	-	(1,544,000)	(772,000)
Project 380901: CS-1481:Sigma Assoc: General Engineering 381000	-	-	-	-	765,611	765,611
Project 381000: Energy Management: Electric Metering Improvement Program	500,000	-	-	-	(500,000)	-
Grand Total	\$ 137,655,000	\$ -	\$ -	\$ -	\$ (97,612,000)	\$ 40,043,000

*Budget amendment entry for \$97,612,000 applied to CIP Reserve

WASTEWATER SYSTEM

Percent of Spend Compared to Annual Budget and Capital Improvement Plan (CIP) Requests

The rate of spend of is a key performance indicator. The development of the FY 2019-2023 CIP included a realignment of projected spend for FY 2018 and forward to accurately forecast planned spend. The Water system spend is 98.5% of the FY 2018 realigned budget. While the ratios for FY 2017 of 55% and for FY 2018 of 38.1% are lower than a simple benchmark of 80% the FY 2019 CIP Net Budget is funded at 100% and anticipated to achieve spending in full. Numerous project designs have already and/or will soon complete that will allow for increased construction spend to occur in FY 2019. The effort associated with the development of new spend projections and ongoing effort of monitoring spend are anticipated to result in 100% spend in FY19.

Wastewater System Projects	FY 2017 Original Plan and Budget (Twelve Months)	FY 2017 Activity	FY 2017 Activity as a Percent of Budget	FY 2018 Amended Budget	FY 2018 Pre-Close Activity (Unaudited)	FY 2018 Pre-Close Activity as a Percent of Budget (Unaudited)
FY 2017 CIP Project Requests @ 100%	\$ 128,973,000	56,788,123	44.0%			
FY 2017 CIP Net Budget (approx. 80% of request)	103,178,400	56,788,123	55.0%			
FY 2018 CIP Project Requests @ 100%				\$ 160,746,000	49,043,353	30.5%
FY 2018 CIP Net Budget (approx. 80% of request)				128,596,800	49,043,353	38.1%
FY 2018 CIP Realigned Forecast as per 2019 CIP				70,632,000	69,567,318	98.5%

It should be noted that these interim reports have been prepared on a modified cash basis. This means that expenses may lag in vendor invoice receipt and posting. Known expenses, material in nature, have been accrued.

Analysis of Projects with Largest Percent of Spend and Otherwise Noteworthy Project

Of the total Water System Construction Bond spend for FY 2018 to date, **four projects account for \$49.5 million or 71.2% of the total spend.** Those projects are summarized in the following table. An analysis of each project and its related CIP summary follow the table. Note that the last page of this report provides a Glossary of Acronyms.

Wastewater System Projects	Total Project Budget per CIP (Life of Projects)	Life-to-Date Through June 30, 2017 (Unaudited)	FY 2018 Requested Budget per Realigned CIP	FY 2018 Pre-Close Activity (Unaudited)	FY 2018 Pre-Close as a Percent of Spend (Unaudited)
Project 211001: Rehabilitation of Primary Clarifiers Rectangular Tanks, Drain Lines, Electrical/Mechanical Building and Pipe Gallery	\$ 51,903,000	\$ 10,243,275	\$ 12,986,310	\$ 13,124,165	18.9%
Project 212003: Aeration System Improvements	\$ 16,203,000	\$ 3,804,993	\$ 9,273,000	\$ 8,045,551	11.6%
Project 212006: PC-797 Rouge River Outfall Disinfection and CS-1781 Oversight Consulting Services Contract	\$ 47,599,000	\$ 6,872,993	\$ 20,619,000	\$ 19,567,615	28.1%
Project 260201: CON-149 Emergency Sewer Repair	\$ 14,880,000	\$ 90,500.00	\$ 7,751,000	\$ 8,822,192	12.7%
Selected Projects as a Percentage of the Total	\$ 130,585,000	\$ 21,011,761	\$ 50,629,310	\$ 49,559,523	71.2%
Total			\$ 70,632,000	\$ 69,567,318	100%

The following analysis provides brief highlights related to these projects.

Project 211001–Rehabilitation of Primary Rectangular Clarifiers

Wastewater System Projects	Total Project Budget per CIP (Life of Projects)	Life-to-Date Through June 30, 2017 (Unaudited)	FY 2018 Requested Budget per Realigned CIP	FY 2018 Pre-Close Activity (Unaudited)	FY 2018 Pre-Close as a Percent of Spend (Unaudited)
Project 211001: Rehabilitation of Primary Clarifiers Rectangular Tanks, Drain Lines, Electrical/Mechanical Building and Pipe Gallery	\$ 51,903,000	\$ 10,243,275	\$ 12,986,310	\$ 13,124,165	18.9%

Project Engineer/Manager: Nicolas Nicolas

Manager: Philip Kora

Total Project Budget: \$51,903,000

Timeline: To be completed by May 2020

FY 2018 Last Pay Estimate Processed: June 30, 2018

Key Contracts/Vendors: PC-757 Toolles Contracting Group

Project Description: The Rehabilitation of Primary Rectangular Clarifiers Tanks, Drain Lines, Electrical/Mechanical Building, Pipe Gallery, and Replacement of Rake Arm assembly for Circular Primary Clarifiers 15 and 16 at the Water Resource Recovery Facility (WRRF).

Purpose: To improve the operating and maintenance efficiencies that meets the regulatory National Pollution Discharge Elimination (NPDES) Permit and National Electrical code (NEC) requirements.

Status: Rehabilitation of primary rectangular clarifiers 11 and 12 has been completed and returned to operation. Primary circular clarifier 15 rehabilitation has also been completed and returned to operation. Rehabilitation of primary rectangular clarifiers 9 and 10 is complete and the 30-day commissioning test is scheduled to begin in the week of 7/23/18. Circular clarifier 16 is undergoing contract rehabilitation work. Parts and equipment for four more clarifiers are being delivered to the site. Exploratory excavation is being conducted to determine locations of underground valves necessary to isolate seal water feed pipes to the pipe gallery so contract work on the seal water piping can proceed.

Additional Project Manager Comments: As of June 30, 2018, 51% of contract time (Final Completion) has elapsed and 43% of funds have been spent.

Additional Construction Accounting & Financial Reporting Team Comments: There are no additional comments to provide at this time.

FY 2018-2022 CIP Page VI-73 for Project 211001–Rehabilitation of Primary Rectangular Clarifiers

CIP Number: CIP 291

Title: REHABILITATION OF PRIMARY CLARIFIERS RECTANGULAR TANKS, DRAIN LINES, ELECTRICAL/MECHANICAL BUILDING AND PIPE GALLERY

Classification: 211: Wastewater > WRRF > Primary Treatment

Managing Dept: WW Eng

RC Score: NA

Contract No.: PC-757

Significance: Rehabilitation for meeting NPDES Permit and NEC requirements

Location: WRRF

Driver: N/A - Active

Explanation: N/A - Active

Preliminary Scope of Work:



Pipe gallery

The work to be completed under this project will include installing ventilation and atmospheric control for the pipe gallery; providing new lights and emergency lights, etc.. This work also includes rehabilitation of 12 drain lines from rectangular clarifiers 3-12, circular clarifiers 16 and 16, installation of large manhole with sump pumps to collect drainage and discharge to clarifier, and concrete crack repairs, and rehabilitation work in Electrical/Mechanical Building.

Challenges: N/A - Active

Initial Project Cost Estimates (in \$1000s)

Phase	Status	Start Date	End Date	Lifetime Actual Thru FY2016 (Unaudited)	Projected Expenditures FY2017	Projected Expenditures FY2018	Projected Expenditures FY2019	Projected Expenditures FY2020	Projected Expenditures FY2021	Projected Expenditures FY2022	Projected Expenditures FY2023 & Beyond	2018-2022 CIP Total	Phase Total
C	Active	TBD	TBD	\$0	\$10848	\$12097	\$20990	\$7968	\$0	\$0	\$0	\$41055	\$51903
Totals				\$0	\$10848	\$12097	\$20990	\$7968	\$0	\$0	\$0	\$41055	\$51903

Project 212003-Aeration System Improvements

Wastewater System Projects	Total Project Budget per CIP (Life of Projects)	Life-to-Date Through June 30, 2017 (Unaudited)	FY 2018 Requested Budget per Realigned CIP	FY 2018 Pre-Close Activity (Unaudited)	FY 2018 Pre-Close as a Percent of Spend (Unaudited)
Project 212003: Aeration System Improvements	\$ 16,203,000	\$ 3,804,993	\$ 9,273,000	\$ 8,045,551	11.6%

Project Engineer/Manager: Vinod Sharma

Manager: Philip Kora

Total Project Budget: \$15,985,000

Timeline: To be completed by September 2018

FY 2018 Last Pay Estimate Processed: June 30, 2018

Key Contracts/Vendors: CS-1498, CS-157-Metco Services, PC-796-Weiss Construction

Project Description: The Aeration System Improvements will improve the aeration system and provide necessary inter-connections.

Purpose: To increase the efficiency of oxygen used in the High Purity Oxygen (HPO) activated sludge process, reduce the risk of mechanical failures with the replacement/rehabilitation of the Influent and Return Activated Sludge(RAS) valves/pipeline would meet regulatory guidelines to comply with NPDES Permit.

Status: The rehabilitation work associated with Aeration Basin No. 3 is complete and the basin is put back into operation. The rehabilitation work associated with Aeration Basin No.2 is ongoing.

Additional Project Manager Comments: This project is behind schedule and a change order will be processed soon to extend the contract completion time by 180 calendar days.

Additional Construction Accounting & Financial Reporting Team Comments: There are no additional comments to provide at this time.

FY 2018-2022 CIP Page VI-83 for Project 212003-Aeration System Improvements

CIP Number: CIP 1194

Title: AERATION SYSTEM IMPROVEMENTS

Classification: 212: Wastewater > WRRF > Secondary Treatment & Disinfection

Managing Dept: WW Eng

RC Score: NA

Contract No.: CS-1498, PC-796

Significance: Improve aeration system and provide necessary inter-connections

Location: WRRF

Driver: N/A - Under Procurement

Explanation: N/A - Under Procurement

Preliminary Scope of Work:

The scope of work includes study, design, and construction assistance for the oxygen baffle on Bay 10 of A1 & A2 decks, replacement of influent, Return Activated Sludge (RAS) piping, isolation gate and valves for decks Nos. 3 & 4, replace RAS and influent magmeters for Intermediate Lift Pumps (ILP) Nos. 3, 4 & 7. The work also includes replacement of influent gates and operators on Aeration Deck No. 1 & 2.

Challenges: N/A - Under Procurement

Initial Project Cost Estimates (in \$1000s)

Phase	Status	Start Date	End Date	Lifetime Actual Thru FY2016 (Unaudited)	Projected Expenditures FY2017	Projected Expenditures FY2018	Projected Expenditures FY2019	Projected Expenditures FY2020	Projected Expenditures FY2021	Projected Expenditures FY2022	Projected Expenditures FY2023 & Beyond	2018-2022 CIP Total	Phase Total
S/D/CA	Active	2/21/2012	2/28/2018	\$0	\$106	\$97	\$16	\$0	\$0	\$0	\$0	\$113	\$219
C	Under Procurement	TBD	TBD	\$0	\$2242	\$11100	\$2642	\$0	\$0	\$0	\$0	\$13742	\$15984
Totals				\$0	\$2348	\$11197	\$2658	\$0	\$0	\$0	\$0	\$13855	\$16203



Equipment for aeration system

Project 212006-Rouge River Outfall Project

Wastewater System Projects	Total Project Budget per CIP (Life of Projects)	Life-to-Date Through June 30, 2017 (Unaudited)	FY 2018 Requested Budget per Realigned CIP	FY 2018 Pre-Close Activity (Unaudited)	FY 2018 Pre-Close as a Percent of Spend (Unaudited)
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Project 212006: PC-797 Rouge River Outfall Disinfection and CS-1781 Oversight Consulting Services Contract	\$ 47,599,000	\$ 6,872,993	\$ 20,619,000	\$ 19,567,615	28.1%
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Project Engineer/ Manager: Philip Kora and Darrel Field (PMA)

Manager: Philip Kora

Total Project Budget: \$47,599,000

Timeline: To be substantially complete by April 2019

FY 2018 Last Pay Estimate Processed: June 30, 2018

Key Contracts/Vendors: CS-1781- PMA Consultants and PC-797-CDM Construction

Project Description/Purpose: The Rouge River Outfall Disinfection Project (Phase 2) is MDEQ approved to provide chlorination and de-chlorination to the Rouge River Outfall (RRO) effluent during wet weather events.

Status: Current work efforts include the installation of equipment, piping, ductwork and wiring within both the new hypo building and the sampling building. Flow meters and diffusers are being installed in the primary effluent conduits. Diffuser installation has been completed at the RRO conduit and the east chlorine contact conduit. Site piping and electrical duct bank installation is continuing.

Additional Project Manager Comments: Significant contractor claims, and changes have been resolved including the phase I chlorine contact conduits dewatering and sludge removal issue, the GLWA 42" water main tie-in change, and addition of green infrastructure at the administration parking area.

Additional Construction Accounting & Financial and Reporting Team Comments: There are no additional comments to provide at this time.

FY 2018-2022 CIP Page VI-98 for 212006-Rouge River Outfall Project

CIP Number: CIP 1302
Title: ROUGE RIVER OUTFALL (RRO) DISINFECTION (ALTERNATIVE)
Classification: 212: Wastewater > WRRF > Secondary Treatment & Disinfection
Managing Dept: WW Eng
RC Score: NA
Contract No.: PC-797, CS-1781
Significance: Provide project oversight and design build services for alternative disinfection services to meet NPDES Permit requirements at existing Rouge River Outfall
Location: Rouge River Outfall
Driver: 3 – Regulatory (Environmental/Legal)



Plan view of RRO location

Explanation: In order to be in compliance with its NPDES permit, GLWA’s WRRF must provide disinfection to all effluent flows from the DRO and RRO by April 2019. Only the DRO currently has disinfection; this project will provide chlorination and de-chlorination for RRO effluent during wet weather events.

Preliminary Scope of Work:

The consultant shall provide comprehensive professional services for project oversight and Owner’s representation for the PC-797 RRO Disinfection Progressive Design-Build Contract. The scope of work consists of completing basis of design, design and construction services to develop and implement a solution that will result in 100% disinfection of wet weather flow discharged from WRRF to Detroit River outfall and Rouge River Outfall in order to meet NPDES Permit requirements.

Challenges: N/A - Under Procurement

Initial Project Cost Estimates (in \$1000s)

Phase	Status	Start Date	End Date	Lifetime Actual Thru FY2016 (Unaudited)	Projected Expenditures FY2017	Projected Expenditures FY2018	Projected Expenditures FY2019	Projected Expenditures FY2020	Projected Expenditures FY2021	Projected Expenditures FY2022	Projected Expenditures FY2023 & Beyond	2018-2022 CIP Total	Phase Total
S/D/C	Under Procure.	2/19/2016	12/31/2019	\$729	\$2690	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3419
CM	Under Procure.	TBD	TBD	\$0	\$1000	\$800	\$520	\$100	\$0	\$0	\$0	\$1420	\$2420
C	Not Yet Started	2/19/2016	12/31/2019	\$0	\$2840	\$15000	\$15000	\$8920	\$0	\$0	\$0	\$38920	\$41760
Totals				\$729	\$6530	\$15800	\$15520	\$9020	\$0	\$0	\$0	\$40340	\$47599

Project 260201-Emergency Sewer Repair

Wastewater System Projects	Total Project Budget per CIP (Life of Projects)	Life-to-Date Through June 30, 2017 (Unaudited)	FY 2018 Requested Budget per Realigned CIP	FY 2018 Pre-Close Activity (Unaudited)	FY 2018 Pre-Close as a Percent of Spend (Unaudited)
Project 260201: CON-149 Emergency Sewer Repair	\$ 14,880,000	\$ 90,500.00	\$ 7,751,000	\$ 8,822,192	12.7%

Project Engineer/Manager: Mini Panicker/Todd King

Manager: Biren Saparia

Total Project Budget: \$14,880,000

Timeline: Estimated Completion July 2019

FY 2018 Last Pay Estimate Processed: June 30, 2018

Key Contract/Vendor: Inland Waters CON-149

Project Description: Emergency repair/ rehabilitation/replacement of sanitary sewer mains, sewer manholes and sewer structures.

Purpose: To provide sewer inspections to locate defects and perform sewer lining and open cut repair of failed sewers for the in-place rehabilitation of sewers on an as needed basis.

Status: The rehabilitation of the Northwest Interceptor at Joy Rd and Trinity located in Detroit, Lynch Sewer in Detroit, and the Cured in Place Pipe Lining (CIPP) and EcoCasting of portions of the B-54 sewer outfall located at Warren & Pierson in Detroit are complete. Currently, the ongoing rehabilitation of Fox Creek Relief Sewer and Cadieux Sewer in Detroit are progressing.

Additional Project Manager Comments: There are no additional comments to provide at this time.

Additional Construction Accounting & Financial and Reporting Team Comments: There are no additional comments to provide at this time.

FY 2018-2022 CIP Page VI-93 for 260201-Emergency Sewer Repair

CIP Number: CIP 1263

Title: SEWER AND INTERCEPTOR EVALUATION AND REHABILITATION PROGRAM

Classification: 2602: Wastewater > Programs > Programs

Managing Dept: WW Eng

RC Score: NA

Contract No.: CS-068, PO-005030

Significance: Evaluation of the existing condition of the sewers and interceptors, cleaning and rehabilitating are essential to optimize the transportation capacity of the GLWA collection system and to increase its life expectancy.

Location: Sewers and Interceptors

Driver: 1 - Condition

Explanation: Some sewers have sediment deposits that results in transportation capacity limitation. Some have deterioration.

Preliminary Scope of Work:

Provide CCTV and or sonar inspection of the GLWA Collection System Interceptors and Trunk Sewers to reveal the existing conditions as per the National Association of Sewer Service Companies' (NASSCO) Pipeline Assessment Certification Program (PACP) standards, evaluate the existing conditions, and provide the necessary cleaning/rehabilitation/replace to optimize the design capacity of the collection system and to minimize the inflow and infiltration into the collection system.

Challenges: Very large sewers and interceptors may have flow control challenges for both inspection and rehabilitation.

Initial Project Cost Estimates (in \$1000s)

Phase	Status	Start Date	End Date	Lifetime Actual Thru FY 2016 (Unaudited)	Projected Expenditures FY 2017	Projected Expenditures FY 2018	Projected Expenditures FY 2019	Projected Expenditures FY 2020	Projected Expenditures FY 2021	Projected Expenditures FY 2022	Projected Expenditures FY 2023 & Beyond	2018-2022 CIP Total	Phase Total
S,D,C	Not Yet Started	NA	NA	\$0	\$2464	\$2000	\$0	\$0	\$0	\$0	\$0	\$2000	\$4464
S,D,CA	Under Procure.	NA	NA	\$0	\$148	\$22	\$0	\$0	\$0	\$0	\$0	\$22	\$170
S	Not Yet Started	NA	NA	\$0	\$0	\$218	\$240	\$600	\$600	\$600	\$0	\$2258	\$2258
D	Not Yet Started	NA	NA	\$0	\$0	\$400	\$400	\$1000	\$1000	\$1000	\$0	\$3800	\$3800
C	Not Yet Started	NA	NA	\$0	\$0	\$5360	\$7360	\$18400	\$18400	\$18400	\$0	\$67920	\$67920
Totals				\$0	\$2612	\$8000	\$8000	\$20000	\$20000	\$20000	\$0	\$76000	\$78612



An example interceptor.

Construction Work-in-Progress Rollforward

The purpose of the construction work-in-progress (CWIP) rollforward is to analyze the current year activity for each project in relation to the overall capital improvement program as well as the project portfolio overall.

The CWIP Rollforward provides a project status for each item.

Future Year:	Project that was included in the CIP with no expenditures (F)
Active:	Project in which procurement process has been initiated and expenditures incurred (A)
Pending Close :	Project that has no projected expenditures for the current fiscal year and has reached substantial completion (PC)
Closed:	Project that has been closed and capitalized (C)

As part of our project life cycle review the CA&FR team identifies when it is appropriate for projects to be capitalized. Projects are to be capitalized when they have been completed in totality or are inclusive of identifiable assets that have been placed in service. The following projects have been identified for FY 2018 capitalization:

- CIP 213003 CIP 216007 CIP 260301
- CIP 213004 CIP 260301 CIP 361001
- CIP 215001 CIP 260113 CIP 361002
- CIP 260101 CIP 361003 CIP 232002

\$126.8 million is in CWIP as of June 30, 2018 as shown in the table beginning on the next page.

The order of the report on the subsequent pages is in ascending order by CIP project number.

Status	Project Count	Total Project Estimated Budget	Percent of Total
Future	22	277,660,000	25%
Active	34	527,148,000	47%
Pending Close	1		
Closed	32	310,412,000	28%
Grand Total	89	\$ 1,115,220,000	100%

Great Lakes Water Authority
Wastewater Construction Work-on-Progress (CWIP) FY 2018 Rollforward
(Unaudited), Pre-Close Activity For the Fiscal Year End June 30, 2018

CIP #	Brief Description Description	Funding Source	Status	Total Project Estimate from CIP	CWIP Balance July 1, 2017	FY 2018 Activity (Unaudited) Pre-Close						FY 2018 Activity (Unaudited), Pre-Close	FY 2018 Transfers Out of CWIP	(Unaudited), Pre-Close CWIP Balance, as of June 30, 2018
						Construction (616900)	Contractual Engineering Services (617950)	Other Expenses (617900)	Capital Allocation: Salary & Wages-Direct (601995)	Capital Allocation: Non-Personnel (601998)	Capital Allocation: Employee Benefits (601997)			
4824	DWSD-Reha/Replacement Existing Sewer		PC	-	56,280	-	-	-	-	-	-	-	(56,280)	-
211001	Project 211001: Rehabilitation of Primary Clarifiers Rectangular Tanks, Drain Lines, Electrical/Mechanical Building and Pipe Gallery	SRF	A	51,903,000	10,243,275	12,725,967	188,222	-	150,211	-	59,765	13,124,165	1,701,631	25,069,071
211002	Project 211002: Pump Station No. 2 Pumping Improvements	SRF	A	3,533,000	108,416	141,688	42,517	-	21,347	-	8,468	214,021	-	322,437
211003	Project 211003: Rehabilitation of Primary Clarifiers: Moved to 211001	SRF	C	581,000	1,701,631	-	-	-	-	-	-	-	(1,701,631)	-
211004	Project 211004: Pump Station 1 Rack & Grit and MPI Sampling Station 1 Improvements	B	A	21,494,000	20,944,123	3,068,018	216,470	-	185,001	-	73,693	3,543,182	-	24,487,305
211005	Project 211005: Pump Station No. 2 Improvements	B	F	10,800,000	-	-	-	-	-	-	-	-	-	-
211006	Project 211006: Pump Station No. 1 Improvements	B	A	13,129,000	88	-	-	-	-	-	-	-	-	88
211007	Project 211007: Replacement of Bar Racks and Grit Collection System at Pump Station No. 2	B	F	9,667,000	-	-	-	-	-	-	-	-	-	-
211008	Project 211008: Rehabilitation of Ferric Chloric Feed systems at the Pump Station -1 and Complex B Sludge Lines	SRF	A	9,633,000	-	-	12,386	-	-	-	-	12,386	-	12,386
211009	Project 211009: Rehabilitation of the Circular Primary Clarifier Scum Removal System	B	F	10,480,000	-	-	-	-	-	-	-	-	-	-
212001	Project 212001: Returned Activated Sludge (RAS) Pumps, Influent Mixed Liquor System and Motor Control Centers (MCC) Improvements for Secondary Clarifiers	B	C	24,175,000	-	-	-	-	-	-	-	-	-	-
212002	Project 212002: Study, Design, & Construction, Management Services for Modified Detroit River Outfall No. 2 - WRRF	B	A	8,482,000	10,818,870	-	-	-	-	-	-	-	-	10,818,870
212003	Project 212003: Aeration System Improvements	SRF	A	16,203,000	3,804,993	7,766,819	171,416	-	76,767	-	30,549	8,045,551	-	11,850,544
212004	Project 212004: Chlorination/Chlorination Process Equipment Improvements	B	A	5,000,000	85,850	-	29,915	-	855	-	307	31,076	-	116,926
212005	Project 212005: WRRF Rouge River Outfall No. 2(RRO-2) Segment 1	SRF	C	12,187,000	-	-	-	-	-	-	-	-	-	-
212006	Project 212006:WRRF Rouge River Outfall No. 2 (RRO-2) Disinfection (Alternative)	SRF	A	47,599,000	6,872,993	18,801,513	660,478	-	75,931	-	29,693	19,567,615	-	26,440,608
212007	Project 212007: Rehabilitation of the Secondary Clarifiers	B	F	30,999,000	-	-	-	-	-	-	-	-	-	-
213001	Project 213001: Replacement of Belt Filter Presses for Complex I and Upper Level Complex II	B	C	1,901,000	-	-	(4,328)	-	-	-	-	(4,328)	-	(4,328)
213002	Project 213002: Rehabilitation of Central Offload Facility	SRF	A	17,750,000	202,142	-	742,069	-	27,453	-	10,638	780,159	-	982,301
213003	Project 213003: Sewage Sludge Incinerator Air Quality Improvements at WRRF	SRF	C	36,043,000	36,153,036	436,443	55,744	-	21,908	-	8,740	522,835	(36,675,871)	-
213004	Project 213004: Biosolids Dryer Facility at WRRF	SRF	C	135,968,000	2,023,774	185,798	191,824	-	5,059	-	2,015	384,696	(2,408,470)	-

Great Lakes Water Authority
Wastewater Construction Work-in-Progress (CWIP) FY 2018 Rollforward
(Unaudited), Pre-Close Activity For the Fiscal Year End June 30, 2018

CIP #	Brief Description Description	Funding Source	Status	Total Project Estimate from CIP	CWIP Balance July 1, 2017	FY 2018 Activity (Unaudited) Pre-Close						FY 2018 Activity (Unaudited), Pre-Close	FY 2018 Transfers Out of CWIP	(Unaudited), Pre-Close CWIP Balance, as of June 30, 2018
						Construction (616900)	Contractual Engineering Services (617950)	Other Expenses (617900)	Capital Allocation: Salary & Wages-Direct (601995)	Capital Allocation: Non-Personnel (601998)	Capital Allocation: Employee Benefits (601997)			
213005	Project 213005: Complex I Incinerators Decommissioning and Reusability	B	A	1,100,000	-	-	34,077	-	6,352	-	2,521	42,950	-	42,950
213006	Project 213006: Improvements to Sludge Feed Pumps at Dewatering Facilities		A	1,185,000	4,856	-	-	-	-	-	-	-	-	4,856
213007	Project 213007: Construction of the Improved Sludge Conveyance and Lighting System at the WWTP	B	A	18,922,000	-	398,958	400,213	-	51,803	-	20,161	871,135	1,458,339	2,329,474
213008	Project 213008: Rehabilitation of the Wet and Dry Ash Handling Systems	B	F	18,316,000	-	-	-	-	-	-	-	-	-	-
213009	Project 213009: Phosphorous Recovery Facility at the WRRF	B	A	15,000,000	-	-	3,536	-	-	-	-	3,536	-	3,536
214001	Project 214001: Relocation of Industrial Waste Division and Analytical Laboratory Operations	B	A	7,000,000	181,500	-	385,256	-	4,361	-	1,728	391,345	-	572,845
215001	Project 215001: Rehabilitation of Combined Sewer Overflow (CSO) Retention Treatment Basins (RTB), Screening and Disinfection Facilities (SDF)	B	C	31,977,000	763,690	1,024,214	(107,140)	-	13,381	-	5,344	935,799	(1,699,489)	-
216001	Project 216001: Underground Electrical Duct Bank Repair and EB-1, EB-2, and EB-10 Primary Power Service Improvements - WRRF	B	C	27,144,000	31,636,300	988,905	39,167	-	15,362	-	6,138	1,049,571	(32,685,871)	-
216002	Project 216002: Plant-wide Fire Alarm Systems Upgrade/ Integration and Fire Protection Improvements	B	A	6,014,000	-	-	-	-	-	-	(72)	(72)	72	-
216003	Project 216003: Repair Potable Water, Screened Final Effluent, natural Gas, and Compressed Air Pipelines at the WWTP	B	F	5,000,000	-	-	-	-	-	-	-	-	-	-
216004	Project 216004: Rehabilitation of Various Sampling Sites and PS# 2 Ferric Chloric System at WWTP	B	A	5,000,000	311,736	-	123,220	-	3,052	-	1,031	127,304	-	439,040
216005	Project 216005: Rehabilitation of the Main Plant Maintenance Building, Replacement of various Plant Maintenance Areas and Work Environment Improvement	B	F	12,900,000	-	-	-	-	-	-	-	-	-	-
216006	Project 216006: Rehabilitation of the Screened Final Effluent (SFE) Pump Station and Secondary Water System	B	F	50,000,000	-	-	-	-	-	-	-	-	-	-
216007	Project 216007: DTE Primary Electric 3rd Feed Supply Line to the WRRF	B	A	7,000,000	15,074	292,200	25,112	251,300	-	-	-	568,612	(543,500)	40,186
222001	Project 222001: Intercommunity Relief Sewer Modifications in Detroit Oakwood District	B	F	11,000,000	-	-	-	-	-	-	-	-	-	-
222002	Project 222002: Detroit River Interceptor Evaluation and Rehabilitation	B	A	20,321,000	5,380	2,634,648	-	-	5,112	-	2,034	2,641,794	-	2,647,174
222003	Project 222003:North Interceptor East Arm (NBA) Evaluation and Rehabilitation	B	F	26,000,000	-	-	-	-	-	-	-	-	-	-
222004	Project 222004:Collection System Valve Remote Operation Structures Improvements	B	F	2,763,000	-	-	-	-	-	-	-	-	-	-
222005	Project 222005: Collection System Access Hatch Improvements	B	F	7,197,000	-	-	-	-	-	-	-	-	-	-
222006	Project 222006: GLWA CSO Outfalls Rehabilitation	B	A	36,000,000	-	-	-	-	-	-	-	-	-	-
222007	Project 222007: North Interceptor East Arm (NIEA) Evaluation and Rehabilitation from WRRF to Gratiot Ave. and Sylvester St.	B	F	21,000,000	-	-	-	-	-	-	-	-	-	-

Great Lakes Water Authority
Wastewater Construction Work-in-Progress (CWIP) FY 2018 Rollforward
(Unaudited), Pre-Close Activity For the Fiscal Year End June 30, 2018

CIP #	Brief Description Description	Funding Source	Status	Total Project Estimate from CIP	CWIP Balance July 1, 2017	FY 2018 Activity (Unaudited) Pre-Close						FY 2018 Activity (Unaudited), Pre-Close	FY 2018 Transfers Out of CWIP	(Unaudited), Pre-Close CWIP Balance, as of June 30, 2018
						Construction (616900)	Contractual Engineering Services (617950)	Other Expenses (617900)	Capital Allocation: Salary & Wages-Direct (601995)	Capital Allocation: Non-Personnel (601998)	Capital Allocation: Employee Benefits (601997)			
232001	Project 232001: Fairview Pumping Station - Replace Four Sanitary Pumps	B	A	32,400,000	778,162	-	751,043	-	15,879	-	5,520	772,442	-	1,550,604
232002	Project 232002: Freud and Connor Creek Pump Station Improvements	B	A	22,500,000	2,100,803	2,287,837	708,838	-	9,119	-	3,628	3,009,422	(57,734)	5,052,490
232003	Project 232003: Northeast Pump Station Improvements	B	F	26,328,000	-	-	-	-	-	-	-	-	-	-
233001	Project 233001: Collection System Backwater Gates and Regulator Gates Rehabilitation	B	F	9,301,000	-	-	-	-	-	-	-	-	-	-
233002	Project 233002: Collection System In System Storage Devices(ISDs) Improvements	B	F	3,550,000	-	-	-	-	-	-	-	-	-	-
251002	Project 251002: Wastewater System Wide Instrumentation & Controls Software and Hardware Upgrade	B	F	5,862,000	-	-	-	-	-	-	-	-	-	-
260100	Project 260100: Water Resource Recovery Facility (WRRF), Lift Station & Wastewater Collection System Allowance	B	A	52,843,000	-	-	-	-	-	-	-	-	-	-
260101	Project 260101: Plant-Wide Replacement of Emergency Lighting	B	C	1,680,000	289,743	900,277	-	-	40,012	-	15,940	956,228	(1,245,971)	-
260102	Project 260102: Replace Stairs - WWTP	B	C	500,000	-	-	-	-	-	-	-	-	-	-
260103	Project 260103: Replace 4 DS-706 Centrifuges WWTP	B	C	600,000	-	-	-	-	-	-	-	-	-	-
260104	Project 260104: Pur Installation of EB-25 Unit WWTP	B	C	1,195,000	-	-	-	-	-	-	-	-	-	-
260105	Project 260105: Replace Various Air Distribution Equip	B	C	286,000	-	-	-	-	64	-	26	90	(90)	-
260107	Project 260107: Pump Station 2 Replacement	B	F	331,000	-	-	-	-	-	-	-	-	-	-
260108	Project 260108: Sanitary Meter Replacement: Neff Road	B	C	448,000	-	-	-	-	-	-	-	-	-	-
260110	Project 260110: CS060: Black& Veatch: Moved to 213007	B	C	2,266,000	1,458,339	-	-	-	-	-	-	-	(1,458,339)	-
260111	Project 260111: SCP-PC-015: W-3 Construct: Overhead Door	B	C	593,000	-	-	-	-	-	-	-	-	-	-
260112	Project 260112: DWS-065: Tooles: Connor Creek	B	C	345,000	-	-	-	-	1,005	-	402	1,407	(1,407)	-
260113	Project 260113: Fire Remediation	B	C	10,500,000	17,005,859	-	-	-	-	-	-	-	(17,005,859)	-
260200	Project 260200: Sewer and Interceptor Evaluation and Rehabilitation Program NNB	B	A	72,320,000	-	-	-	-	-	-	-	-	-	-
260201	Project 260201: Conveyance System Interceptor Rehab	B	A	1,828,000	90,500	7,822,319	982,853	-	12,174	-	4,845	8,822,192	-	8,912,692
260203	Project 260203: SCP-CON-068: Inland: Sewer Inspection	B	A	4,464,000	3,306,028	1,323,946	-	-	8,657	-	3,435	1,336,038	-	4,642,066
260300	Project 260300: Schedule Replacement Program of Critical Assets NNB	B	A	23,519,000	-	-	-	-	-	-	-	-	-	-

Great Lakes Water Authority
Wastewater Construction Work-in-Progress (CWIP) FY 2018 Rollforward
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CIP #	Brief Description Description	Funding Source	Status	Total Project Estimate from CIP	CWIP Balance July 1, 2017	FY 2018 Activity (Unaudited) Pre-Close						FY 2018 Activity (Unaudited), Pre-Close	FY 2018 Transfers Out of CWIP	(Unaudited), Pre-Close CWIP Balance, as of June 30, 2018
						Construction (616900)	Contractual Engineering Services (617950)	Other Expenses (617900)	Capital Allocation: Salary & Wages-Direct (601995)	Capital Allocation: Non-Personnel (601998)	Capital Allocation: Employee Benefits (601997)			
260301	Project 260301: Roof Replacement of Complex II	B	A	1,871,000	-	1,672,747	-	-	-	-	1,672,747	(1,672,747)	0	
260302	Project 260302: CON 127: Repair HVAC	B	C	110,000	56,282	(13,671)	(37,466)	-	(3,675)	-	(1,470)	(56,282)	-	
260400	Project 260400: Sewage Meter Design, Installation, Replacement and Rehabilitation Program	B	F	3,000,000	-	-	-	-	-	-	-	-	-	
260502	Project 260502 - CSO Outfall Rehabilitation	B	A	-	-	-	-	-	6,293	-	2,506	8,799	-	8,799
260600	Project 260600 CSO Facilities Improvement	B	A	-	-	-	191,848	-	-	-	-	191,848	-	191,848
260603	Project 260603 - Conner Creek CSO Basin Rehab	B	A	-	-	-	243,224	-	-	-	-	243,224	-	243,224
260604	Project 260604 - Baby Creek CSO Rehab	B	A	-	-	43,125	-	-	1,910	-	756	45,791	-	45,791
331002	Project 331002: Roofing Systems Replacement at GLWA Wastewater Treatment Plant, CSO Retention Treatment Basins (RTB) and Screening/Disinfection Facilities (SDF)	B	F	9,050,000	-	-	-	-	-	-	-	-	-	
361001	Project 361001: Consolidated Process Control System Upgrades	B	C	331,000	173,127	142,500	-	-	-	-	-	142,500	(315,627)	-
361002	Project 361002: Data Center Reliability/Availability Improvements	B	C	3,163,000	17,253	-	-	-	-	-	-	-	(17,253)	-
361003	Project 361003: SCADA Radio Network Upgrade	B	C	2,955,000	852,872	-	-	-	-	-	-	-	(852,872)	-
380400	Project 380400: As-need CIP Implementation Assistance and Related Services NNB	B	A	3,135,000	-	-	-	-	-	-	-	-	-	-
380401	Project 380401: CS-1433: PMA: As Need CIP Services	B	C	3,135,000	105,279	-	(105,279)	-	-	-	-	(105,279)	-	-
380500	Project 380500: Bpartment-wiB General Engineering Services on an As-need Basis	B	C	4,960,000	-	-	-	-	-	-	-	-	-	-
380501	Project 380501: CS-1499:MetcoServices:General Engineer	B	C	300,000	148,366	-	(148,366)	-	-	-	-	(148,366)	-	-
380600	Project 380600: General Engineering Services	B	C	7,016,000	-	-	-	-	-	-	-	-	-	-
380601	Project 380601: CS-1432A:Alfred Benesh:General Engineer	B	C	250,000	157,929	-	-	-	-	-	-	-	(157,929)	-
380700	Project 380700: As-need Engineering Services for Concrete Testing, Geotechnical Soil Borings, other Testing Services, and Related Services	B	C	-	-	-	-	-	-	-	-	-	-	-
380701	Project 380701: Engineering Svc Concrete Testing, Soil Borings	B	A	-	115,388	-	(115,388)	-	-	-	-	(115,388)	-	-
380800	Project 380800: Geotechnical and Related Services on an As- Need Basis	B	F	1,116,000	-	-	-	-	-	-	-	-	-	-
380800	Project 380800: Geotechnical and Related Services on an As- Need Basis	B	C	(1,201,000)	-	-	-	-	-	-	-	-	-	-
380801	Project 380801: CS-1490: Nth Consultants: As need GIS	B	C	85,000	82,476	-	-	-	-	-	-	-	(82,476)	-

Great Lakes Water Authority
Wastewater Construction Work-on-Progress (CWIP) FY 2018 Rollforward
(Unaudited), Pre-Close Activity For the Fiscal Year End June 30, 2018

CIP #	Brief Description Description	Funding Source	Status	Total Project Estimate from CIP	CWIP Balance July 1, 2017	FY 2018 Activity (Unaudited) Pre-Close						FY 2018 Activity (Unaudited), Pre-Close	FY 2018 Transfers Out of CWIP	(Unaudited), Pre-Close CWIP Balance, as of June 30, 2018
						Construction (616900)	Contractual Engineering Services (617950)	Other Expenses (617900)	Capital Allocation: Salary & Wages-Direct (601995)	Capital Allocation: Non-Personnel (601998)	Capital Allocation: Employee Benefits (601997)			
380900	Project 380900: General Engineering Services	B	C	649,000	-	-	-	-	-	-	-	-	-	-
380901	Project 380901: CS-1481:Sigma Assoc: General Engineering	B	C	270,000	63,426	-	(63,426)	-	-	-	-	(63,426)	-	-
381000	Project 381000: Energy Management: Electric Metering Improvement Program	B	F	3,000,000	-	-	-	-	-	-	-	-	-	-

Total # of Projects and Dollars	89	<u>1,115,220,000</u>	<u>152,735,840</u>	<u>62,644,250</u>	<u>5,618,033</u>	<u>251,300</u>	<u>755,392</u>	-	<u>298,343</u>	<u>69,567,318</u>	<u>(95,479,374)</u>	<u>126,823,783</u>
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FY 2018 - 2022 Wastewater CIP Total (Page IV-3)		<u>1,115,218,000</u>										
Difference due to Rounding		<u>(2,000)</u>										
Items to be reclassified to Capital Outlay FY 2018			<u>605,618</u>									
Total CWIP Reported on FY 2017 Financial Statements			<u>153,341,458</u>									

Funding Sources
B- Bonds
SRF- State Revolving Funds

CIP Allowance and Program Summary

Within the FY 2018 - 2022 CIP, GLWA has developed budgets for allowances and programs that provide GLWA flexibility in capital development and improvements.

Allowances are established to provide funding related to unanticipated nature of pipeline and equipment failures that require immediate repair and rehabilitation to continuously meet level of service requirement. Allowances can also be allocated to projects with anticipated or actual spend in excess of the CIP budget.

Programs are established to provide funding related to specific capital improvements that are systemic, reoccurring, and vary from year to year.

Below are the allowances and programs within the Wastewater System.

Allowance

260100: WRRF, Lift Station and Wastewater System Structure Allowance

Programs

260200: Sewer and Interceptor Evaluation and Rehabilitation

260300: Scheduled Replacement of Program of Critical Assets

260400: Sewage Meter Design, Installation, Replacement and Rehabilitation Program

Great Lakes Water Authority
Board Approved CIP Allowance/Program Summary
Allowance: 260100 Water Resource Recovery Facility, Lift Station, and Wastewater Collection System Structures

CIP#	Contract Number	Description	Board/Administrative Approved	Current Budget Amendment	FY2018 Estimate	FY 2019 Estimate	FY 2020 Estimate	FY 2021 Estimate	FY 2022 Estimate
260100		WRRF, Lift Station and Wastewater Collection System Structures Allowance	Board		12,000,000	12,000,000	15,000,000	15,000,000	12,000,000
260300	Fire Remediation Project at WRRF	Fire Remediation	Board	6992	2,000,000				
260110	CS-060	Study and Design for Modification of Sludge Feeds Systems	Board	6920	(174,000)				
260113	Fire Remediation Project at WRRF	Fire Remediation	Board	9383	(2,000,000)				
211004	CON-250	Rack and Grit at Pump Station No. 1	Board	9023	(1,740,000)				
213007	CON-197	Modify Sludge Feeds Systems in Complex II	Board	9024	(1,709,083)				
260602	DB-261	CSO Facilities Fire Alarm	Administrative	9374	(834,788)				
215001	CON-234	Effluent Gates	Board	9025	(500,000)				
260601	CON-254	Oakwood CSO Control Facility Rehabilitation	Administrative	9373	(200,000)				
213007	CS-060	Study and Design for Modification of Sludge Feeds Systems	Board	Pending	(96,404)				
232002	CON-109	Emergency Refurbishment of Storm Pump #5 and #7, Upgrade of Pump #5 and Motor Control Center Upgrade for Eight Storm Pumps for Freud Pumping Station	Board	9372	(886,684)				
214001	CS-262	Engineer Services for IWCD Relocation	Administrative	9370	(154,040)				
211004	CS-1432A	Rack and Grit at Pump Station No. 1 Design	Administrative	9371	(153,899)				
Total		12 Available Balance			5,551,102	12,000,000	15,000,000	15,000,000	12,000,000

Great Lakes Water Authority
Board Approved CIP Allowance/Program Summary
Program: 260200 Sewer and Interceptor Evaluation and Rehabilitation Program

CIP#	Contract Number	Description	Board/Administrative Approved	Current Year Budget Amendment	FY2018	FY 2019	FY 2020	FY 2021	FY 2022
260200		Sewer and Interceptor Evaluation and Rehabilitation Program			8,000,000	8,000,000	20,000,000	20,000,000	20,000,000
260201	PO 5030	DRI Section Inspection, Evaluation, Design							
260201	CS-168	Conveyance Sstem Interceptor Rehab	Board	7013	(1,000,000)	(1,000,000)	(1,000,000)		
260201	CON-149	CON-149 Inland: DRI, Sec Insl, Evaluation, Design	Board	7013	(4,795,540)	(6,600,000)	(3,404,460)		
260203	CS-068	CON-068 Inland: Sewer Inspection	Board	7011	(2,140,460)				
Total	4 Available Balance				64,000	400,000	15,595,540	20,000,000	20,000,000

Great Lakes Water Authority
Board Approved CIP Allowance /Program Summary
Allowance: 260300 Scheduled Replacement of Program of Critical Assets

CIP#	Contract Number	Description	Board/Administrative Approved	Current Year Budget Amendment	FY2018	FY 2019	FY 2020	FY 2021	FY 2022
260300		Schedule Replacement Program of Critical Assets			5,000,000	5,000,000	5,000,000	5,000,000	5,000,000
260301	CON-143	Complex II Roof Replacement	Board	6990	(1,567,400)				
260113	Fire Remediation Project at WRRF	Fire Remediation	Board	6992	(2,000,000)				
Total	2 Available Balance				1,432,600	5,000,000	5,000,000	5,000,000	5,000,000

Great Lakes Water Authority
Board Approved CIP Allowance/Program Summary
Program: 260400 Sewage Meter Design, Installation, Replacement and Rehabilitation

CIP#	Contract Number	Description	Board/Administrative Approved	FY2018	FY 2019	FY 2020	FY 2021	FY 2022
260400		Sewage Meter Design, Installation, Replacement and Rehabilitation Program		500,000	500,000	500,000	500,000	500,000
Total	0 Available Balance			500,000	500,000	500,000	500,000	500,000

Budget Amendment Reporting

Scope: Budget amendments seek to properly allocate funds from the allowance and programs within the Capital Improvement Plan (CIP) for the budgeted years by the reallocation of funds from the budgeted allowance or programs level to the actual project level.

Process: Steps are listed below.

- 1) Properly identify projects that utilize funds from the allowance or programs
- 2) Reallocate the funds from the budgeted allowance or programs level through a journal entry
- 3) Attach documents that support the reallocation (CIP funding request, contract transmittal, or change orders)
- 4) Create, review, and approve budget amendment journal entry

Wastewater - Summary Budget Amendments

CIP Project	FY 2018					FY 2018
	Original Budget	Q1 Amendments	Q2 Amendments	Q3 Amendments	Q4 Amendments	Amended Budget
211001						
Project 211001: Rehabilitation of Primary Clarifiers Rectangular Tanks, Drain Lines, Electrical/Mechanical Building and Pipe Gallery	\$ 12,097,000	\$ -	\$ -	\$ -	\$ 889,310	\$ 12,986,310
211002						
Project 211002: Pump Station No. 2 Pumping Improvements	1,304,000	-	-	-	(705,000)	599,000
211003						
Project 211003: Rehabilitation of Primary Clarifiers: Moved to 211001	240,000	-	-	-	32,000	272,000
211004						
Project 211004: Pump Station 1 Rack & Grit and MPI Sampling Station 1 Improvements	2,652,000	-	-	1,740,000	(490,101)	3,901,899
211005						
Project 211005: Pump Station No. 2 Improvements	600,000	-	-	-	(593,000)	7,000
211006						
Project 211006: Pump Station No. 1 Improvements	600,000	-	-	-	(600,000)	-
211007						
Project 211007: Replacement of Bar Racks and Grit Collection System at Pump Station No. 2	650,000	-	-	-	(650,000)	-
211008						
Project 211008: Rehabilitation of Ferric Chloric Feed systems at the Pump Station -1 and Complex B Sludge Lines	400,000	-	-	-	(400,000)	-
211009						
Project 211009: Rehabilitation of the Circular Primary Clarifier Scum Removal System	266,000	-	-	-	(266,000)	-
212003						
Project 212003: Aeration System Improvements	11,197,000	-	-	-	(1,924,000)	9,273,000
212004						
Project 212004: Chlorination/Chlorination Process Equipment Improvements	400,000	-	-	-	(391,280)	8,720
212006						
Project 212006:WRRF Rouge River Outfall No. 2 (RRO-2) Disinfection (Alternative)	15,800,000	-	-	-	4,819,000	20,619,000
212007						
Project 212007: Rehabilitation of the Secondary Clarifiers	301,000	-	-	-	(301,000)	-
213002						
Project 213002: Rehabilitation of Central Offload Facility	5,850,000	-	-	-	(5,185,000)	665,000
213003						

Wastewater - Summary Budget Amendments

CIP Project	FY 2018					FY 2018
	Original Budget	Q1 Amendments	Q2 Amendments	Q3 Amendments	Q4 Amendments	Amended Budget
Project 213003: Sewage Sludge Incinerator Air Quality Improvements at WRRF 213004	-	-	-	-	459,000	459,000
Project 213004: Biosolids Dryer Facility at WRRF 213005	60,000	-	-	-	175,640	235,640
Project 213005: Complex I Incinerators Decommissioning and Reusability 213006	900,000	-	-	-	(900,000)	-
Project 213006: Improvements to Sludge Feed Pumps at Dewatering Facilities 213007	402,000	-	-	-	(402,000)	-
Project 213007: Construction of the Improved Sludge Conveyance and Lighting System at the WWTP 213008	9,600,000	-	-	1,709,083	(10,636,947)	672,136
Project 213008: Rehabilitation of the Wet and Dry Ash Handling Systems 213009	530,000	-	-	-	(530,000)	-
Project 213009: Phosphorous Recovery Facility at the WRRF 214001	-	-	-	-	21,905	21,905
Project 214001: Relocation of Industrial Waste Division and Analytical Laboratory Operations 215001	5,000,000	-	-	-	(5,000,000)	-
Project 215001: Rehabilitation of Combined Sewer Overflow (CSO) Retention Treatment Basins (RTB), Screening and Disinfection Facilities (SDF) 216001	-	-	-	500,000	(500,000)	-
Project 216001: Underground Electrical Duct Bank Repair and EB-1, EB-2, and EB-10 Primary Power Service Improvements - WRRF 216003	1,532,000	-	-	-	(499,000)	1,033,000
Project 216003: Repair Potable Water, Screened Final Effluent, natural Gas, and Compressed Air Pipelines at the WWTP 216004	690,000	-	-	-	(690,000)	-
Project 216004: Rehabilitation of Various Sampling Sites and PS# 2 Ferric Chloric System at WWTP 216005	2,500,000	-	-	-	(2,441,631)	58,369
Project 216005: Rehabilitation of the Main Plant Maintenance Building, Replacement of various Plant Maintenance Areas and Work Environment Improvement	1,500,000	-	-	-	(1,500,000)	-

Wastewater - Summary Budget Amendments

CIP Project	FY 2018					FY 2018
	Original Budget	Q1 Amendments	Q2 Amendments	Q3 Amendments	Q4 Amendments	Amended Budget
216006						
Project 216006: Rehabilitation of the Screened Final Effluent (SFE) Pump Station and Secondary Water System	1,700,000	-	-	-	(1,700,000)	-
216007						
Project 216007: DTE Primary Electric 3rd Feed Supply Line to the WRRF	3,500,000	-	-	-	(3,500,000)	-
222002						
Project 222002: Detroit River Interceptor Evaluation and Rehabilitation	10,000,000	-	-	-	(7,768,000)	2,232,000
222003						
Project 222003: North Interceptor East Arm (NBA) Evaluation and Rehabilitation	11,000,000	-	-	-	(11,000,000)	-
222004						
Project 222004: Collection System Valve Remote Operation Structures Improvements	341,000	-	-	-	-	341,000
222007						
Project 222007: North Interceptor East Arm (NIEA) Evaluation and Rehabilitation from WRRF to Gratiot Ave. and Sylvester St.	7,000,000	-	-	-	(7,000,000)	-
232001						
Project 232001: Fairview Pumping Station - Replace Four Sanitary Pumps	2,100,000	-	-	-	(1,592,000)	508,000
232002						
Project 232002: Freud and Connor Creek Pump Station Improvements	5,900,000	-	-	-	(3,629,316)	2,270,684
232003						
Project 232003: Northeast Pump Station Improvements	2,408,000	-	-	-	(2,408,000)	-
233002						
Project 233002: Collection System In System Storage Devices (ISDs) Improvements	86,000	-	-	-	-	86,000
260100						
Project 260100: Water Resource Recovery Facility (WRRF), Lift Station & Wastewater Collection System Allowance	12,000,000	1,826,000	-	(3,949,083)	(12,163,692)	(2,286,775)
260109						
Rehab Valve: RFB-46533	-	-	-	-	-	-
260110						
Project 260110: CS060: Black& Veatch: Moved to 213007	-	174,000	-	-	(174,000)	-
260113						

Wastewater - Summary Budget Amendments

CIP Project	FY 2018					FY 2018
	Original Budget	Q1 Amendments	Q2 Amendments	Q3 Amendments	Q4 Amendments	Amended Budget
Project 260113: Fire Remediation 260200	-	-	-	-	2,000,000	2,000,000
Project 260200: Sewer and Interceptor Evaluation and Rehabilitation Program NNB 260201	8,000,000	(7,936,000)	-	-	7,687,000	7,751,000
Project 260201: Conveyance System Interceptor Rehab 260202 Program 260203	-	5,795,540	-	-	(5,795,540)	-
Project 260203: SCP-CON-068: Inland: Sewer Inspection 260204 Energy Svcs for rehab of convey sewer systm 260300	-	2,140,460	-	-	(2,140,460)	-
Project 260300: Schedule Replacement Program of Critical Assets NNB 260301	5,000,000	(3,567,400)	-	-	739,400	2,172,000
Project 260301: Roof Replacement of Complex II 260302	-	1,567,400	-	-	(1,567,400)	-
Project 260302: CON 127: Repair HVAC 260400	-	-	-	-	-	-
Project 260400: Sewage Meter Design, Installation, Replacement and Rehabilitation Program 260501	500,000	-	-	-	-	500,000
Collection System Access Hatch Improveme 260502	3,196,000	-	-	-	(2,855,000)	341,000
Project 260502 - CSO Outfall Rehabilitation 260503	6,000,000	-	-	-	(6,000,000)	-
Collection System Backwater Gates 260600	1,301,000	-	-	-	(1,301,000)	-
Project 260600 CSO Facilities Improvement 260601	2,247,000	-	-	-	(589,000)	1,658,000
Oakwood Drain Valve Improvement 260602	-	-	-	-	510,000	510,000
CSO 260603	-	-	-	-	834,788	834,788
Project 260603 - Conner Creek CSO Basin Rehab 331002	-	-	-	-	-	-

Wastewater - Summary Budget Amendments

CIP Project	FY 2018					FY 2018
	Original Budget	Q1 Amendments	Q2 Amendments	Q3 Amendments	Q4 Amendments	Amended Budget
Project 331002: Roofing Systems Replacement at GLWA Wastewater Treatment Plant, CSO Retention Treatment Basins (RTB) and Screening Disinfection Facilities (SDF) 361001	2,200,000	-	-	-	(2,200,000)	-
Project 361001: Consolidated Process Control System Upgrades 361003	-	-	-	-	-	-
Project 361003: SCADA Radio Network Upgrade 380400	-	-	-	-	-	-
Project 380400: As-need CIP Implementation Assistance and Related Services NNB 380401	100,000	-	-	-	107,360	207,360
Project 380401: CS-1433: PMA: As Need CIP Services 380500	-	-	-	-	-	-
Project 380500: Bpartment-wiB General Engineering Services on an As-need Basis 380501	114,000	-	-	-	-	114,000
Project 380501: CS-1499:MetcoServices:General Engineer 380600	-	-	-	-	-	-
Project 380600: General Engineering Services 380900	100,000	-	-	-	(42,043)	57,957
Project 380900: General Engineering Services 380901	382,000	-	-	-	(192,000)	190,000
Project 380901: CS-1481:Sigma Assoc: General Engineering 381000	-	-	-	-	333,006	333,006
Project 381000: Energy Management: Electric Metering Improvement Program	500,000	-	-	-	(500,000)	-
Grand Total	\$ 160,746,000	\$ -	\$ -	\$ -	\$ (90,114,000)	\$ 70,632,000

*Budget amendment entry for \$90,114,000 applied to CIP Reserve

Glossary of Acronyms

ACRONYM	DEFINITION	ACRONYM	DEFINITION
CCD	Construction Change Directive	NPDES	National Pollution Discharge Elimination System
CSO	Combined Sewer Overflow	RAS	Return Activated Sludge
CIPP	Cured in Place Pipe Lining	RRO	River Rouge Outfall
DCB	Detailed Cost Breakdown	RTB	Retention Treatment Basin
ECR	Equipment Shutdown Request	SDF	Screening and Disinfection Facility
HPO	High Purity Oxygen	SFE	Screened Final Effluent
ISDs	In System Storage Devices	SPW	Springwells Water Treatment Plant
IWC	Industrial Waste Control	VFD	Variable Frequency Drive
MCC	Motor Control Centers	WRRF	Water Resource Recovery Facility
MDEQ	Michigan Department of Environmental Quality	WTP	Water Treatment Plant
NAB	New Administration Building	WWTP	Wastewater Treatment Plant
NIEA	North Interceptor East Arm		



Financial Services Audit Committee Communication

Date: September 21, 2018
To: Great Lakes Water Authority Audit Committee
From: Jon Wheatley, Public Finance Manager
Re: Monthly Revenue & Collections Report for August 2018

The *Monthly Revenue & Collections Report* includes the following.

1. FY 2018 Retail and Wholesale Sewer Revenue
2. FY 2018 Retail and Wholesale Water Revenue
3. City of Highland Park Billings and Collections
4. Water & Sewer System Wholesale Accounts Receivable Aging Report

Note: Wholesale customer revenues are billed by the Great Lakes Water Authority (GLWA). Pursuant to the terms of the lease agreement between the City of Detroit and the Great Lakes Water Authority, the Detroit Water & Sewerage Department (DWSD) serves as GLWA's agent for billing activities for the City of Detroit retail customer class. All revenues collected by both GLWA and DWSD are deposited in a trust account in accordance with the GLWA Master Bond Ordinance.

1. FY 2018 Retail and Wholesale Sewer Revenue Report

Table 1A summarizes the unaudited FY 2018 billed revenues through June 30, 2018 and do not reflect collections of those revenues. It should also be noted that the revenues are shown in the month that the billed flow was accrued and not the following month when the bills are usually sent out to customers.

DWSD Retail Billings: **Table 1A** also shows the FY 2018 sewer usage and billed revenue which are provided by DWSD staff. As of June 30, 2018, the DWSD usage was at 100.15% of the budget and billed revenue was at 99.46% of budget.

GLWA Wholesale Customer Billings: **Table 1A** shows the FY 2018 sewer billed revenue. As a result of the sewer rate simplification which provides a more stable revenue stream, the wholesale sewer customers are billed a fixed monthly fee. The results of this effort can be seen as the billed revenue is at 100.00% of budget through June 30, 2018. **Table 1A** shows the FY 2018 combined DWSD and GLWA Wholesale sewer billed usage and billed revenue. Based on the combined, the GLWA Sewer System had billed revenues of 99.73% of budget as of June 30, 2018. **Table 1A** summarizes the unaudited FY 2018 sewer revenues billed through June 30, 2018.

Table 1A – Combined DWSJ and GLWA Wholesale FY 2018 Sewer Revenue Report

RETAIL SEWER CUSTOMERS						
<u>Month</u>	<u>FY 2018 - Budget</u>		<u>FY 2018 - Actual</u>		<u>Variance</u>	
	<u>Volume</u>	<u>Revenue</u>	<u>Volume</u>	<u>Revenue</u>	<u>Volume</u>	<u>Revenue</u>
	<i>Mcf</i>	\$	<i>Mcf</i>	\$	<i>Mcf</i>	\$
July	260,000	24,615,100	244,512	24,624,820	(15,488)	9,720
August	260,600	24,754,400	239,911	24,348,011	(20,689)	(406,389)
September	222,800	22,752,800	228,122	23,517,204	5,322	764,404
October	205,500	22,717,800	224,159	23,573,505	18,659	855,705
November	189,900	21,987,300	188,312	22,084,385	(1,588)	97,085
December	204,400	22,774,800	190,811	21,937,291	(13,589)	(837,509)
January	195,300	22,296,100	213,373	22,944,848	18,073	648,748
February	198,300	23,060,600	193,452	21,926,685	(4,848)	(1,133,915)
March	203,000	23,026,900	196,148	22,043,574	(6,852)	(983,326)
April	189,300	22,215,900	213,393	21,824,269	24,093	(391,631)
May	219,400	23,798,700	237,626	24,270,646	18,226	471,946
June	251,500	24,635,500	234,144	24,041,457	(17,356)	(594,043)
Total	2,600,000	278,635,900	2,603,964	277,136,694	3,964	(1,499,206)
<i>Subtotals ytd</i>	2,600,000	278,635,900	2,603,964	277,136,694	3,964	(1,499,206)
<i>Achievement of Budget</i>			100.15%	99.46%		

WHOLESALE SEWER CUSTOMERS						
<u>Month</u>	<u>FY 2018 - Budget</u>		<u>FY 2018 - Actual</u>		<u>Variance</u>	
	<u>Volume</u>	<u>Revenue</u>	<u>Volume</u>	<u>Revenue</u>	<u>Volume</u>	<u>Revenue</u>
	<i>Mcf</i>	\$	<i>Mcf</i>	\$	<i>Mcf</i>	\$
July	N/A	22,619,300	N/A	22,619,300	N/A	-
August	N/A	22,619,300	N/A	22,619,300	N/A	-
September	N/A	22,619,300	N/A	22,619,300	N/A	-
October	N/A	22,619,300	N/A	22,619,300	N/A	-
November	N/A	22,619,300	N/A	22,619,300	N/A	-
December	N/A	22,619,300	N/A	22,619,300	N/A	-
January	N/A	22,619,300	N/A	22,619,300	N/A	-
February	N/A	22,619,300	N/A	22,619,300	N/A	-
March	N/A	22,619,300	N/A	22,619,300	N/A	-
April	N/A	22,619,300	N/A	22,619,300	N/A	-
May	N/A	22,619,300	N/A	22,619,300	N/A	-
June	N/A	22,619,300	N/A	22,619,300	N/A	-
Total		271,431,600		271,431,600		0
<i>Subtotals ytd</i>		271,431,600		271,431,600		0
<i>Achievement of Budget</i>				100.00%		

TOTAL - ALL CUSTOMERS						
<u>Month</u>	<u>FY 2018 - Budget</u>		<u>FY 2018 - Actual</u>		<u>Variance</u>	
	<u>Volume</u>	<u>Revenue</u>	<u>Volume</u>	<u>Revenue</u>	<u>Volume</u>	<u>Revenue</u>
	<i>Mcf</i>	\$	<i>Mcf</i>	\$	<i>Mcf</i>	\$
July	260,000	47,234,400	244,512	47,244,120	(15,488)	9,720
August	260,600	47,373,700	239,911	46,967,311	(20,689)	(406,389)
September	222,800	45,372,100	228,122	46,136,504	5,322	764,404
October	205,500	45,337,100	224,159	46,192,805	18,659	855,705
November	189,900	44,606,600	188,312	44,703,685	(1,588)	97,085
December	204,400	45,394,100	190,811	44,556,591	(13,589)	(837,509)
January	195,300	44,915,400	213,373	45,564,148	18,073	648,748
February	198,300	45,679,900	193,452	44,545,985	(4,848)	(1,133,915)
March	203,000	45,646,200	196,148	44,662,874	(6,852)	(983,326)
April	189,300	44,835,200	213,393	44,443,569	24,093	(391,631)
May	219,400	46,418,000	237,626	46,889,946	18,226	471,946
June	251,500	47,254,800	234,144	46,660,757	(17,356)	(594,043)
Total	2,600,000	550,067,500	2,603,964	548,568,294	3,964	(1,499,206)
<i>Subtotals ytd</i>	2,600,000	550,067,500	2,603,964	548,568,294	3,964	(1,499,206)
<i>Achievement of Budget</i>			100.15%	99.73%		

DWSD Retail Billings: **Table 1B** shows the FY 2019 sewer usage and billed revenue which are provided by DWSD staff. *Due to DWSD's reporting software transition, the updated DWSD billed usage and billed revenue information for July 2018 were not available. The July 2018 numbers will be included in next report provided at the October 2018 Audit Committee meeting.*

GLWA Wholesale Customer Billings: **Table 1B** shows the FY 2019 sewer billed revenue. As a result of the sewer rate simplification which provides a more stable revenue stream, the wholesale sewer customers are billed a fixed monthly fee. The results of this effort can be seen as the billed revenue is at 100.00% of budget through July 31, 2018.

Total System Billings: **Table 1B** shows the FY 2019 combined DWSD and GLWA Wholesale sewer billed usage and billed revenue. Based on the combined, the GLWA Sewer System had billed revenues of 100.0% of budget without the July 2018 DWSD billings.

Table 1B – Combined DWS and GLWA Wholesale FY 2019 Sewer Revenue Report

RETAIL SEWER CUSTOMERS						
Month	FY 2019 - Budget		FY 2019 - Actual		Variance	
	<u>Volume</u>	<u>Revenue</u>	<u>Volume</u>	<u>Revenue</u>	<u>Volume</u>	<u>Revenue</u>
	<i>Mcf</i>	\$	<i>Mcf</i>	\$	<i>Mcf</i>	\$
July	242,100	24,615,100				
August	244,200	24,754,400				
September	239,600	22,752,800				
October	211,000	22,717,800				
November	197,600	21,987,300				
December	182,400	22,774,800				
January	198,600	22,296,100				
February	191,600	23,060,600				
March	191,000	23,026,900				
April	197,300	22,215,900				
May	187,300	23,798,700				
June	210,300	24,635,500				
Total	2,493,000	278,635,900	-	-	-	-
<i>Subtotals ytd</i>	-	-	-	-	-	-
<i>Achievement of Budget</i>			0.00%	0.00%		

WHOLESALE SEWER CUSTOMERS						
Month	FY 2019 - Budget		FY 2019 - Actual		Variance	
	<u>Volume</u>	<u>Revenue</u>	<u>Volume</u>	<u>Revenue</u>	<u>Volume</u>	<u>Revenue</u>
	<i>Mcf</i>	\$	<i>Mcf</i>	\$	<i>Mcf</i>	\$
July	N/A	22,912,800	N/A	22,912,800	N/A	-
August	N/A	22,912,800	N/A		N/A	
September	N/A	22,912,800	N/A		N/A	
October	N/A	22,912,800	N/A		N/A	
November	N/A	22,912,800	N/A		N/A	
December	N/A	22,912,800	N/A		N/A	
January	N/A	22,912,800	N/A		N/A	
February	N/A	22,912,800	N/A		N/A	
March	N/A	22,912,800	N/A		N/A	
April	N/A	22,912,800	N/A		N/A	
May	N/A	22,912,800	N/A		N/A	
June	N/A	22,912,800	N/A		N/A	
Total		274,953,600		22,912,800		0
<i>Subtotals ytd</i>		22,912,800		22,912,800		0
<i>Achievement of Budget</i>				100.00%		

TOTAL - ALL CUSTOMERS						
Month	FY 2019 - Budget		FY 2019 - Actual		Variance	
	<u>Volume</u>	<u>Revenue</u>	<u>Volume</u>	<u>Revenue</u>	<u>Volume</u>	<u>Revenue</u>
	<i>Mcf</i>	\$	<i>Mcf</i>	\$	<i>Mcf</i>	\$
July	242,100	47,527,900	-	22,912,800		-
August	244,200	47,667,200				
September	239,600	45,665,600				
October	211,000	45,630,600				
November	197,600	44,900,100				
December	182,400	45,687,600				
January	198,600	45,208,900				
February	191,600	45,973,400				
March	191,000	45,939,700				
April	197,300	45,128,700				
May	187,300	46,711,500				
June	210,300	47,548,300				
Total	2,493,000	553,589,500	-	22,912,800	-	-
<i>Subtotals ytd</i>	-	22,912,800	-	22,912,800	-	-
<i>Achievement of Budget</i>			0.00%	100.00%		

2. FY 2018 Retail and Wholesale Water Revenue Report

Table 2A summarizes the unaudited FY 2018 billed revenues through June 30, 2018 and do not reflect collections of those revenues. It should also be noted that the revenues are shown in the month that the billed flow was accrued and not the following month when the bills are usually sent out to customers.

DWSD Retail Billings: Table 2A also shows the FY 2018 water usage and billed revenue which are provided by DWSD staff. As of June 30, 2018, the DWSD usage was at 96.36% of the budget and billed revenue was at 96.09% of budget.

GLWA Wholesale Customer Billings: Table 2A shows the FY 2018 water billed usage and billed revenues. Starting FY 2016, wholesale water charges were re-structured to create a more stable revenue stream by using a historical rolling average to project customer volumes and allocating 60% of the customer revenue requirement to the monthly fixed charge. As of June 30, 2018, the billed usage was at 101.77% of budget and billed revenue at 102.98% of budget. As noted in **Table 2A**, revenues and usage from the City of Flint *are* included as they were assumed in the FY 2018 Budget.

Table 2A shows the FY 2018 combined DWSD and GLWA Wholesale sewer billed usage and billed revenue. Based on the combined, the GLWA Sewer System had billed revenues of 101.31% of budget as of June 30, 2018.

Table 2A – Combined DWSD and GLWA Wholesale FY 2018 Water Revenue Report

RETAIL WATER CUSTOMERS								
Month	FY 2018 - Budget			FY 2018 - Actual			Variance	
	Volume	Revenue	Unit Revenue	Volume	Revenue	Unit Revenue	Volume	Revenue
	Mcf	\$	\$/Mcf	Mcf	\$	\$/Mcf	Mcf	\$
July	295,700	9,332,300	31.56	274,267	8,813,936	32.14	(21,433)	(518,364)
August	303,100	9,517,000	31.40	269,802	8,631,595	31.99	(33,298)	(885,405)
September	248,900	8,393,900	33.72	259,341	8,463,041	32.63	10,441	69,141
October	236,100	7,947,500	33.66	247,700	8,187,943	33.06	11,600	240,443
November	218,400	7,585,100	34.73	208,783	7,276,521	34.85	(9,617)	(308,579)
December	238,500	8,008,200	33.58	213,026	7,333,094	34.42	(25,474)	(675,106)
January	224,700	7,673,100	34.15	235,142	7,873,651	33.48	10,442	200,551
February	224,700	7,813,100	34.77	235,436	7,879,874	33.47	10,736	66,774
March	235,700	7,944,800	33.71	216,866	7,410,681	34.17	(18,834)	(534,119)
April	217,700	7,529,200	34.59	215,643	7,525,093	34.90	(2,057)	(4,107)
May	256,700	8,946,300	34.85	241,641	8,050,604	33.32	(15,059)	(895,696)
June	284,800	9,089,900	31.92	258,608	8,432,057	-	(26,192)	(657,843)
Total	2,985,000	99,780,400	33.43	2,876,255	95,878,089	33.33	(108,745)	(3,902,311)
<i>Subtotals ytd</i>	<i>2,985,000</i>	<i>99,780,400</i>	<i>33.43</i>	<i>2,876,255</i>	<i>95,878,089</i>	<i>33.33</i>	<i>(108,745)</i>	<i>(3,902,311)</i>
<i>Achievement of Budget</i>				<i>96.36%</i>	<i>96.09%</i>			

WHOLESALE WATER CUSTOMERS*								
Month	FY 2018 - Budget			FY 2018 - Actual			Variance	
	Volume	Revenue	Unit Revenue	Volume	Revenue	Unit Revenue	Volume	Revenue
	Mcf	\$	\$/Mcf	Mcf	\$	\$/Mcf	Mcf	\$
July	1,712,100	31,705,800	18.52	1,721,500	32,819,241	19.06	9,400	1,113,441
August	1,615,000	30,914,600	19.14	1,573,478	31,520,853	20.03	(41,522)	606,253
September	1,420,900	28,619,700	20.14	1,421,715	29,686,522	20.88	815	1,066,822
October	1,064,900	25,002,100	23.48	1,158,883	26,949,856	23.26	93,983	1,947,756
November	892,000	23,038,000	25.83	958,686	25,146,717	26.23	66,686	2,108,717
December	946,600	23,392,700	24.71	1,024,164	24,434,241	23.86	77,564	1,041,541
January	972,400	23,676,000	24.35	1,067,591	24,810,289	23.24	95,191	1,134,289
February	893,000	23,017,200	25.78	894,635	23,326,980	26.07	1,635	309,780
March	988,100	23,781,500	24.07	1,017,632	24,299,625	23.88	29,532	518,125
April	997,900	23,859,300	23.91	958,319	23,588,340	24.61	(39,581)	(270,960)
May	1,155,100	25,576,800	22.14	1,133,774	25,419,719	22.42	(21,326)	(157,081)
June	1,472,900	28,727,800	19.50	1,450,232	28,597,602	19.72	(22,668)	(130,198)
Total	14,130,900	311,311,500	22.03	14,380,610	320,599,985	22.29	249,710	9,288,485
<i>Subtotals ytd</i>	<i>14,130,900</i>	<i>311,311,500</i>	<i>22.03</i>	<i>14,380,610</i>	<i>320,599,985</i>	<i>22.29</i>	<i>249,710</i>	<i>9,288,485</i>
<i>Achievement of Budget</i>				<i>101.77%</i>	<i>102.98%</i>			

* Includes Revenues and Usage from the City of Flint.

TOTAL - ALL CUSTOMERS								
Month	FY 2018 - Budget			FY 2018 - Actual			Variance	
	Volume	Revenue	Unit Revenue	Volume	Revenue	Unit Revenue	Volume	Revenue
	Mcf	\$	\$/Mcf	Mcf	\$	\$/Mcf	Mcf	\$
July	2,007,800	41,038,100	20.44	1,995,768	41,633,177	20.86	(12,032)	595,077
August	1,918,100	40,431,600	21.08	1,843,280	40,152,447	21.78	(74,820)	(279,153)
September	1,669,800	37,013,600	22.17	1,681,056	38,149,562	22.69	11,256	1,135,962
October	1,301,000	32,949,600	25.33	1,406,583	35,137,799	24.98	105,583	2,188,199
November	1,110,400	30,623,100	27.58	1,167,469	32,423,237	27.77	57,069	1,800,137
December	1,185,100	31,400,900	26.50	1,237,190	31,767,335	25.68	52,090	366,435
January	1,197,100	31,349,100	26.19	1,302,733	32,683,940	25.09	105,633	1,334,840
February	1,117,700	30,830,300	27.58	1,130,072	31,206,854	27.61	12,372	376,554
March	1,223,800	31,726,300	25.92	1,234,498	31,710,306	25.69	10,698	(15,994)
April	1,215,600	31,388,500	25.82	1,173,962	31,113,432	26.50	(41,638)	(275,068)
May	1,411,800	34,523,100	24.45	1,375,415	33,470,323	24.33	(36,385)	(1,052,777)
June	1,757,700	37,817,700	21.52	1,708,840	37,029,659	21.67	(48,860)	(788,041)
Total	17,115,900	411,091,900	24.02	17,256,865	416,478,073	24.13	140,965	5,386,173
<i>Subtotals ytd</i>	<i>17,115,900</i>	<i>411,091,900</i>	<i>24.02</i>	<i>17,256,865</i>	<i>416,478,073</i>	<i>24.13</i>	<i>140,965</i>	<i>5,386,173</i>
<i>Achievement of Budget</i>				<i>100.82%</i>	<i>101.31%</i>			

DWSD Retail Billings: **Table 2B** shows the FY 2019 water billed usage and billed revenue which are provided by the DWSD staff. *Due to DWSD's reporting software transition, the updated DWSD billed usage and billed revenue information for July 2018 were not available. The July 2018 numbers will be included in next report provided at the October 2018 Audit Committee meeting.*

GLWA Wholesale Customer Billings: **Table 2B** shows the FY 2019 water billed usage and billed revenues. Starting FY 2016, wholesale water charges were re-structured to create a more stable revenue stream by using a historical rolling average to project customer volumes and allocating 60% of the customer revenue requirement to the monthly fixed charge. As of July 31, 2018, the billed usage was at 110.30% of budget and billed revenue at 105.85% of budget. As noted in **Table 2B**, revenues and usage from the City of Flint *are* included as they were assumed in the FY 2019 Budget.

Total System Billings: **Table 2B** shows the FY 2019 combined DWSD and GLWA Wholesale water billed usage and billed revenue. Based on the combined Retail and Wholesale Water billings, the GLWA Water System had billed usage of 110.30% of budget and billed revenues of 105.85% of budget without the July 2018 DWSD billings.

Table 2B – Combined DWS and GLWA Wholesale FY 2019 Water Revenue Report

RETAIL WATER CUSTOMERS								
Month	FY 2019 - Budget			FY 2019 - Actual			Variance	
	Volume	Revenue	Unit Revenue	Volume	Revenue	Unit Revenue	Volume	Revenue
	Mcf	\$	\$/Mcf	Mcf	\$	\$/Mcf	Mcf	\$
July	269,000	9,590,500	35.65					
August	273,100	9,542,900	34.94					
September	270,500	8,644,100	31.96					
October	233,800	8,309,800	35.54					
November	224,500	7,886,600	35.13					
December	206,500	8,369,800	40.53					
January	226,600	8,119,400	35.83					
February	216,400	8,120,800	37.53					
March	213,300	8,307,700	38.95					
April	223,100	7,995,400	35.84					
May	211,000	9,269,700	43.93					
June	240,200	9,223,300	38.40					
Total	2,808,000	103,380,000	36.82	-	-	-	-	-
Subtotals ytd	-	-	-	-	-	-	-	-

Achievement of Budget

0.00% 0.00%

WHOLESALE WATER CUSTOMERS*								
Month	FY 2019 - Budget			FY 2019 - Actual			Variance	
	Volume	Revenue	Unit Revenue	Volume	Revenue	Unit Revenue	Volume	Revenue
	Mcf	\$	\$/Mcf	Mcf	\$	\$/Mcf	Mcf	\$
July	1,632,120	30,347,500	18.59	1,800,256	32,122,653	17.84	168,136	1,775,153
August	1,518,130	29,405,800	19.37					
September	1,354,440	27,424,800	20.25					
October	1,091,580	24,826,000	22.74					
November	912,260	23,273,500	25.51					
December	1,002,110	23,912,600	23.86					
January	1,019,240	24,133,400	23.68					
February	885,170	23,021,600	26.01					
March	1,000,060	23,933,100	23.93					
April	952,450	23,568,200	24.74					
May	1,116,620	25,296,500	22.65					
June	1,557,060	29,624,900	19.03					
Total	14,041,240	308,767,900	21.99	1,800,256	32,122,653	17.84	168,136	1,775,153
Subtotals ytd	1,632,120	30,347,500	18.59	1,800,256	32,122,653	17.84	168,136	1,775,153

Achievement of Budget

110.30% 105.85%

* Includes Revenues and Usage from the City of Flint.

TOTAL - ALL CUSTOMERS								
Month	FY 2019 - Budget			FY 2019 - Actual			Variance	
	Volume	Revenue	Unit Revenue	Volume	Revenue	Unit Revenue	Volume	Revenue
	Mcf	\$	\$/Mcf	Mcf	\$	\$/Mcf	Mcf	\$
July	1,901,120	39,938,000	21.01	1,800,256	32,122,653	17.84	(100,864)	(7,815,347)
August	1,791,230	38,948,700	21.74					
September	1,624,940	36,068,900	22.20					
October	1,325,380	33,135,800	25.00					
November	1,136,760	31,160,100	27.41					
December	1,208,610	32,282,400	26.71					
January	1,245,840	32,252,800	25.89					
February	1,101,570	31,142,400	28.27					
March	1,213,360	32,240,800	26.57					
April	1,175,550	31,563,600	26.85					
May	1,327,620	34,566,200	26.04					
June	1,797,260	38,848,200	21.62					
Total	16,849,240	412,147,900	24.46	1,800,256	32,122,653	17.84	(100,864)	(7,815,347)
Subtotals ytd	1,632,120	30,347,500	18.59	1,800,256	32,122,653	17.84	168,136	1,775,153

Achievement of Budget

110.30% 105.85%

3. City of Highland Park Billings and Collections

As of August 31, 2018, Highland Park had a delinquent balance of \$39.4 million, including \$31.4 million for wastewater treatment services, \$1.6 million for industrial waste control services, and \$6.3 million for water supply services. **Table 3** provides a summary of the billing and collection history for Highland Park from June 30, 2012 to August 31, 2018 in the table below. Please note the numbers below reflect the month the invoice was sent and not the month the service was provided.

Table 3 - City of Highland Park Billings and Collections

	<u>Water</u>	<u>Sewer</u>	<u>IWC</u>	<u>Cumulative Total</u>
June 30, 2012 Balance	\$ -	\$ 10,207,956	\$ 852,987	\$ 11,060,943
FY 2013 Billings	485,887	4,987,635	154,444	5,627,966
FY 2013 Payments	<u>(65,652)</u>	<u>(2,206,211)</u>	<u>-</u>	<u>(2,271,863)</u>
June 30, 2013 Balance	\$ 420,235	\$ 12,989,380	\$ 1,007,431	\$ 14,417,046
FY 2014 Billings	1,004,357	6,980,442	161,951	8,146,750
FY 2014 Payments	<u>-</u>	<u>(1,612,633)</u>	<u>-</u>	<u>(1,612,633)</u>
June 30, 2014 Balance	\$ 1,424,592	\$ 18,357,189	\$ 1,169,382	\$ 20,951,163
FY 2015 Billings	1,008,032	5,553,123	165,739	6,726,894
FY 2015 Payments	<u>-</u>	<u>(1,444,623)</u>	<u>-</u>	<u>(1,444,623)</u>
June 30, 2015 Balance	\$ 2,432,625	\$ 22,465,689	\$ 1,335,121	\$ 26,233,435
FY 2016 Billings	1,157,178	5,612,167	106,431	6,875,776
FY 2016 Payments	<u>-</u>	<u>(2,022,335)</u>	<u>-</u>	<u>(2,022,335)</u>
June 30, 2016 Balance	\$ 3,589,803	\$ 26,055,521	\$ 1,441,551	\$ 31,086,875
FY 2017 Billings	1,245,267	5,802,000	101,999	7,149,265
FY 2017 Payments	<u>-</u>	<u>(2,309,186)</u>	<u>-</u>	<u>(2,309,186)</u>
June 30, 2017 Balance	\$ 4,835,070	\$ 29,548,335	\$ 1,543,550	\$ 35,926,954
FY 2018 Billings (12 Months)	1,277,179	5,657,101	80,472	7,014,752
FY 2018 Payments (12 Months)	<u>-</u>	<u>(4,108,108)</u>	<u>-</u>	<u>(4,108,108)</u>
June 30, 2018 Balance	\$ 6,112,248	\$ 31,097,327	\$ 1,624,022	\$ 38,833,597
FY 2019 Billings (2 Months)	218,219	938,100	10,986	1,167,305
FY 2019 Payments (2 Months)	<u>-</u>	<u>(629,017)</u>	<u>-</u>	<u>(629,017)</u>
Balance as of August 31, 2018	<u>\$ 6,330,467</u>	<u>\$ 31,406,410</u>	<u>\$ 1,635,009</u>	<u>\$ 39,371,886</u>

4. Water & Sewer System Wholesale Accounts Receivable Aging Report

Table 4 is a summary of the total, current and non-current receivables by category as of August 31, 2018. **Table 5** is the same summary *without* the past due balances for the City of Highland Park. The detailed accounts receivable aging is attached to this report. This report reflects the wholesale receivables only and do not include DWSD. (Note: percentages vary from 100% due to rounding.)

Table 4 - Wholesale Accounts Receivable Aging Report

	Total	Current	46-74 Days	75-104 Days	>105 Days
Water	\$ 45,094,133.76	\$ 38,954,410.27	\$ 133,423.84	\$ 101,149.16	\$ 5,905,150.49
Sewer	\$ 47,102,010.28	\$ 14,110,399.50	\$ 2,523,300.00	\$ 470,200.00	\$ 29,998,110.78
IWC	\$ 2,898,694.39	\$ 502,738.94	\$ 132,867.60	\$ 64,840.04	\$ 2,198,247.81
Pollutant Surcharge	\$ 1,775,826.63	\$ 1,398,181.97	\$ 55,223.31	\$ 38,701.70	\$ 283,719.65
Total	\$ 96,870,665.06	\$ 54,965,730.68	\$ 2,844,814.75	\$ 674,890.90	\$ 38,385,228.73
	<u>100.0%</u>	<u>56.7%</u>	<u>2.9%</u>	<u>0.7%</u>	<u>39.6%</u>

Table 5 - Wholesale Accounts Receivable Aging Report, Net of Highland Park

	Total	Current	46-74 Days	75-104 Days	>105 Days
Water	\$ 38,763,666.87	\$ 38,736,191.34	\$ 27,475.53	\$ -	\$ -
Sewer	\$ 15,695,599.50	\$ 13,642,499.50	\$ 2,053,100.00	\$ -	\$ -
IWC	\$ 1,263,685.48	\$ 498,506.08	\$ 126,114.08	\$ 58,109.24	\$ 580,956.08
Pollutant Surcharge	\$ 1,775,826.63	\$ 1,398,181.97	\$ 55,223.31	\$ 38,701.70	\$ 283,719.65
Total	\$ 57,498,778.48	\$ 54,275,378.89	\$ 2,261,912.92	\$ 96,810.94	\$ 864,675.73
	<u>100.00%</u>	<u>94.39%</u>	<u>3.93%</u>	<u>0.168%</u>	<u>1.50%</u>

GLWA Aged Accounts Receivable- WATER ACCOUNTS

Balances as of 8/31/2018

Customer Name	Total Due	Current	46 - 74 Days	75 - 104 Days	>105 Days
ALLEN PARK	\$220,330.25	\$220,330.25	\$0.00	\$0.00	\$0.00
ASH TOWNSHIP	\$74,473.25	\$74,473.25	\$0.00	\$0.00	\$0.00
BELLEVILLE	\$29,464.00	\$29,464.00	\$0.00	\$0.00	\$0.00
BERLIN TOWNSHIP	\$73,083.12	\$73,083.12	\$0.00	\$0.00	\$0.00
BROWNSTOWN TOWNSHIP	\$397,109.59	\$397,109.59	\$0.00	\$0.00	\$0.00
BRUCE TOWNSHIP	\$22,572.01	\$22,572.01	\$0.00	\$0.00	\$0.00
BURTCHVILLE TOWNSHIP	\$68,468.02	\$68,468.02	\$0.00	\$0.00	\$0.00
CANTON TOWNSHIP	\$2,291,441.80	\$2,291,441.80	\$0.00	\$0.00	\$0.00
CENTER LINE	\$39,815.19	\$39,815.19	\$0.00	\$0.00	\$0.00
CHESTERFIELD TOWNSHIP	\$430,912.09	\$430,912.09	\$0.00	\$0.00	\$0.00
CLINTON TOWNSHIP	\$825,548.87	\$825,548.87	\$0.00	\$0.00	\$0.00
COMMERCE TOWNSHIP	\$427,758.97	\$427,758.97	\$0.00	\$0.00	\$0.00
DEARBORN	\$1,823,570.62	\$1,823,570.62	\$0.00	\$0.00	\$0.00
DEARBORN HEIGHTS	\$330,582.47	\$330,582.47	\$0.00	\$0.00	\$0.00
EASTPOINTE	\$133,445.34	\$133,445.34	\$0.00	\$0.00	\$0.00
ECORSE	\$136,263.12	\$136,263.12	\$0.00	\$0.00	\$0.00
FARMINGTON	\$95,764.49	\$95,764.49	\$0.00	\$0.00	\$0.00
FARMINGTON HILLS	\$969,793.33	\$969,793.33	\$0.00	\$0.00	\$0.00
FERNDALE	\$174,372.10	\$174,372.10	\$0.00	\$0.00	\$0.00
FLAT ROCK	\$114,681.85	\$114,681.85	\$0.00	\$0.00	\$0.00
FLINT	\$313,464.33	\$313,464.33	\$0.00	\$0.00	\$0.00
FRASER	\$114,711.78	\$114,711.78	\$0.00	\$0.00	\$0.00
GARDEN CITY	\$156,878.70	\$156,878.70	\$0.00	\$0.00	\$0.00

GLWA Aged Accounts Receivable- WATER ACCOUNTS

Balances as of 8/31/2018

Customer Name	Total Due	Current	46 - 74 Days	75 - 104 Days	>105 Days
GENESEE COUNTY DRAIN COMM	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
GIBRALTAR	\$29,024.74	\$29,024.74	\$0.00	\$0.00	\$0.00
GREENWOOD TOWNSHIP	\$67,733.21	\$67,733.21	\$0.00	\$0.00	\$0.00
GROSSE ILE TOWNSHIP	\$143,609.44	\$143,609.44	\$0.00	\$0.00	\$0.00
GROSSE POINTE PARK	\$157,681.71	\$157,681.71	\$0.00	\$0.00	\$0.00
GROSSE POINTE SHORES	\$80,281.05	\$80,281.05	\$0.00	\$0.00	\$0.00
GROSSE POINTE WOODS	\$155,108.63	\$155,108.63	\$0.00	\$0.00	\$0.00
HAMTRAMCK	\$61,653.19	\$61,653.19	\$0.00	\$0.00	\$0.00
HARPER WOODS	\$80,425.66	\$80,425.66	\$0.00	\$0.00	\$0.00
HARRISON TWP	\$153,533.37	\$153,533.37	\$0.00	\$0.00	\$0.00
HAZEL PARK	\$62,265.22	\$62,265.22	\$0.00	\$0.00	\$0.00
HIGHLAND PARK	\$6,330,466.89	\$218,218.93	\$105,948.31	\$101,149.16	\$5,905,150.49
HURON TOWNSHIP	\$145,880.40	\$145,880.40	\$0.00	\$0.00	\$0.00
IMLAY CITY	\$131,660.64	\$131,660.64	\$0.00	\$0.00	\$0.00
IMLAY TOWNSHIP	\$1,368.32	\$1,368.32	\$0.00	\$0.00	\$0.00
INKSTER	\$105,853.32	\$105,853.32	\$0.00	\$0.00	\$0.00
KEEGO HARBOR	\$30,421.76	\$30,421.76	\$0.00	\$0.00	\$0.00
LAPEER	\$130,240.26	\$130,240.26	\$0.00	\$0.00	\$0.00
LENOX TOWNSHIP	\$27,056.13	\$27,056.13	\$0.00	\$0.00	\$0.00
LINCOLN PARK	\$210,984.95	\$210,984.95	\$0.00	\$0.00	\$0.00
LIVONIA	\$1,543,640.97	\$1,543,640.97	\$0.00	\$0.00	\$0.00
MACOMB TWP	\$1,362,970.13	\$1,362,970.13	\$0.00	\$0.00	\$0.00

GLWA Aged Accounts Receivable- WATER ACCOUNTS

Balances as of 8/31/2018

Customer Name	Total Due	Current	46 - 74 Days	75 - 104 Days	>105 Days
MADISON HEIGHTS	\$183,477.52	\$183,477.52	\$0.00	\$0.00	\$0.00
MAYFIELD TOWNSHIP	\$5,616.29	\$5,616.29	\$0.00	\$0.00	\$0.00
MELVINDALE	\$109,918.60	\$109,918.60	\$0.00	\$0.00	\$0.00
NEW HAVEN	\$66,403.84	\$66,403.84	\$0.00	\$0.00	\$0.00
NOCWA	\$2,493,966.48	\$2,493,966.48	\$0.00	\$0.00	\$0.00
NORTHVILLE	\$76,398.99	\$76,398.99	\$0.00	\$0.00	\$0.00
NORTHVILLE TOWNSHIP	\$694,235.99	\$694,235.99	\$0.00	\$0.00	\$0.00
NOVI	\$1,083,535.80	\$1,083,535.80	\$0.00	\$0.00	\$0.00
OAK PARK	\$233,615.44	\$233,615.44	\$0.00	\$0.00	\$0.00
OAKLAND CO DR COM	\$5,002.05	\$5,002.05	\$0.00	\$0.00	\$0.00
PLYMOUTH	\$107,896.21	\$107,896.21	\$0.00	\$0.00	\$0.00
PLYMOUTH TOWNSHIP	\$493,273.72	\$493,273.72	\$0.00	\$0.00	\$0.00
REDFORD TOWNSHIP	\$282,781.05	\$282,781.05	\$0.00	\$0.00	\$0.00
RIVER ROUGE	\$61,329.29	\$61,329.29	\$0.00	\$0.00	\$0.00
RIVERVIEW	\$169,616.89	\$169,616.89	\$0.00	\$0.00	\$0.00
ROCKWOOD	\$30,022.32	\$30,022.32	\$0.00	\$0.00	\$0.00
ROMEO	\$25,036.25	\$25,036.25	\$0.00	\$0.00	\$0.00
ROMULUS	\$386,029.67	\$386,029.67	\$0.00	\$0.00	\$0.00
ROSEVILLE	\$464,794.68	\$464,794.68	\$0.00	\$0.00	\$0.00
ROYAL OAK TOWNSHIP	\$20,715.51	\$20,715.51	\$0.00	\$0.00	\$0.00
SHELBY TOWNSHIP	\$1,644,164.56	\$1,644,164.56	\$0.00	\$0.00	\$0.00
SOCWA	\$4,599,107.86	\$4,599,107.86	\$0.00	\$0.00	\$0.00
SOUTH ROCKWOOD	\$9,113.42	\$9,113.42	\$0.00	\$0.00	\$0.00

GLWA Aged Accounts Receivable- WATER ACCOUNTS

Balances as of 8/31/2018

Customer Name	Total Due	Current	46 - 74 Days	75 - 104 Days	>105 Days
SOUTHGATE	\$209,004.27	\$209,004.27	\$0.00	\$0.00	\$0.00
ST. CLAIR SHORES	\$266,066.74	\$266,066.74	\$0.00	\$0.00	\$0.00
STERLING HEIGHTS	\$1,550,916.10	\$1,550,916.10	\$0.00	\$0.00	\$0.00
SUMPTER TOWNSHIP	\$64,154.90	\$64,154.90	\$0.00	\$0.00	\$0.00
SYLVAN LAKE	\$23,304.93	\$23,304.93	\$0.00	\$0.00	\$0.00
TAYLOR	\$433,678.15	\$433,678.15	\$0.00	\$0.00	\$0.00
TRENTON	\$393,698.44	\$393,698.44	\$0.00	\$0.00	\$0.00
TROY (SEOC)	\$1,518,019.41	\$1,518,019.41	\$0.00	\$0.00	\$0.00
UTICA	\$56,833.87	\$56,833.87	\$0.00	\$0.00	\$0.00
VAN BUREN TOWNSHIP	\$642,516.66	\$615,041.13	\$27,475.53	\$0.00	\$0.00
VILLAGE OF ALMONT	\$21,454.13	\$21,454.13	\$0.00	\$0.00	\$0.00
WALLED LAKE	\$91,302.65	\$91,302.65	\$0.00	\$0.00	\$0.00
WARREN	\$998,542.35	\$998,542.35	\$0.00	\$0.00	\$0.00
WASHINGTON TOWNSHIP	\$278,150.22	\$278,150.22	\$0.00	\$0.00	\$0.00
WAYNE	\$261,232.20	\$261,232.20	\$0.00	\$0.00	\$0.00
WEST BLOOMFIELD TWP (C-O)	\$2,126,222.97	\$2,126,222.97	\$0.00	\$0.00	\$0.00
WESTLAND	\$1,168,991.19	\$1,168,991.19	\$0.00	\$0.00	\$0.00
WIXOM	\$275,484.38	\$275,484.38	\$0.00	\$0.00	\$0.00
WOODHAVEN	\$165,229.11	\$165,229.11	\$0.00	\$0.00	\$0.00
YCUA	\$1,026,913.38	\$1,026,913.38	\$0.00	\$0.00	\$0.00
TOTAL WATER ACCOUNTS	\$45,094,133.76	\$38,954,410.27	\$133,423.84	\$101,149.16	\$5,905,150.49

GLWA Aged Accounts Receivable- SEWER ACCOUNTS

Balances as of 8/31/2018

Customer Name	Total Due	Current	46 - 74 Days	75 - 104 Days	>105 Days
ALLEN PARK	\$70,600.00	\$70,600.00	\$0.00	\$0.00	\$0.00
CENTER LINE	\$85,599.50	\$85,599.50	\$0.00	\$0.00	\$0.00
DEARBORN	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
EVERGREEN-FARMINGTON	\$2,881,500.00	\$2,881,500.00	\$0.00	\$0.00	\$0.00
FARMINGTON	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
GROSSE POINTE	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
GROSSE POINTE FARMS	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
GROSSE POINTE PARK	\$150,100.00	\$150,100.00	\$0.00	\$0.00	\$0.00
HAMTRAMCK	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
HARPER WOODS	\$18,200.00	\$18,200.00	\$0.00	\$0.00	\$0.00
HIGHLAND PARK	\$31,406,410.78	\$467,900.00	\$470,200.00	\$470,200.00	\$29,998,110.78
MELVINDALE	\$126,900.00	\$126,900.00	\$0.00	\$0.00	\$0.00
OAKLAND COUNTY GWK DD	\$3,747,700.00	\$3,747,700.00	\$0.00	\$0.00	\$0.00
OMID	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
REDFORD TOWNSHIP	\$21,700.00	\$21,700.00	\$0.00	\$0.00	\$0.00
ROUGE VALLEY	\$4,480,100.00	\$4,480,100.00	\$0.00	\$0.00	\$0.00
WAYNE COUNTY N.E.	\$4,109,100.00	\$2,056,000.00	\$2,053,100.00	\$0.00	\$0.00
WAYNE COUNTY-AREA #3	\$4,100.00	\$4,100.00	\$0.00	\$0.00	\$0.00
TOTAL SEWER ACCOUNTS	\$47,102,010.28	\$14,110,399.50	\$2,523,300.00	\$470,200.00	\$29,998,110.78

GLWA Aged Accounts Receivable- IWC ACCOUNTS

Balances as of 8/31/2018

Customer Name	Total Due	Current	46 - 74 Days	75 - 104 Days	>105 Days
ALLEN PARK	\$1,612.35	\$1,612.35	\$0.00	\$0.00	\$0.00
AUBURN HILLS (C-O)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
AUBURN HILLS (E-F)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
BERKLEY	\$2,901.33	\$2,901.33	\$0.00	\$0.00	\$0.00
BEVERLY HILLS	\$999.14	\$999.14	\$0.00	\$0.00	\$0.00
BINGHAM FARMS	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
BIRMINGHAM (E-F)	\$2,376.69	\$2,376.69	\$0.00	\$0.00	\$0.00
BIRMINGHAM (SEOC)	\$14,503.48	\$5,588.72	\$8,914.76	\$0.00	\$0.00
BLOOMFIELD HILLS	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
BLOOMFIELD TOWNSHIP	\$7,351.35	\$7,351.35	\$0.00	\$0.00	\$0.00
CANTON TOWNSHIP	\$384,472.22	\$19,066.46	\$30,461.84	\$30,461.84	\$304,482.08
CENTER LINE	\$3,683.10	\$3,683.10	\$0.00	\$0.00	\$0.00
CHESTERFIELD TOWNSHIP	\$12,152.47	\$12,152.47	\$0.00	\$0.00	\$0.00
CITY OF FARMINGTON (E-F)	\$279.12	\$279.12	\$0.00	\$0.00	\$0.00
CITY OF ROCHESTER	\$3,725.23	\$3,725.23	\$0.00	\$0.00	\$0.00
CLARKSTON	\$307.71	\$307.71	\$0.00	\$0.00	\$0.00
CLAWSON	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
CLINTON TOWNSHIP	\$25,553.79	\$25,445.87	\$107.92	\$0.00	\$0.00
DEARBORN	\$36,586.53	\$36,586.53	\$0.00	\$0.00	\$0.00
DEARBORN HEIGHTS	\$9,462.92	\$9,462.92	\$0.00	\$0.00	\$0.00
DETROIT METRO WC AIRPORT	\$106.64	\$106.64	\$0.00	\$0.00	\$0.00
EASTPOINTE	\$6,355.09	\$6,355.09	\$0.00	\$0.00	\$0.00
FARMINGTON	\$2,886.83	\$2,886.83	\$0.00	\$0.00	\$0.00

GLWA Aged Accounts Receivable- IWC ACCOUNTS

Balances as of 8/31/2018

Customer Name	Total Due	Current	46 - 74 Days	75 - 104 Days	>105 Days
FARMINGTON HILLS	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
FERNDALE	\$8,904.91	\$8,904.91	\$0.00	\$0.00	\$0.00
FRASER	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
GARDEN CITY	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
GROSSE POINTE	\$1,580.76	\$1,580.76	\$0.00	\$0.00	\$0.00
GROSSE POINTE FARMS	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
GROSSE POINTE PARK	\$1,182.65	\$1,182.65	\$0.00	\$0.00	\$0.00
GROSSE POINTE SHORES	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
GROSSE POINTE WOODS	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
HAMTRAMCK	\$4,175.13	\$4,175.13	\$0.00	\$0.00	\$0.00
HARPER WOODS	\$1,892.64	\$1,892.64	\$0.00	\$0.00	\$0.00
HARRISON TWP	\$8,150.92	\$3,138.32	\$5,012.60	\$0.00	\$0.00
HAZEL PARK	\$3,390.73	\$3,390.73	\$0.00	\$0.00	\$0.00
HIGHLAND PARK	\$1,635,008.91	\$4,232.86	\$6,753.52	\$6,730.80	\$1,617,291.73
HUNTINGTON WOODS	\$286.18	\$286.18	\$0.00	\$0.00	\$0.00
INDEPENDENCE	\$4,791.68	\$4,791.68	\$0.00	\$0.00	\$0.00
INKSTER	\$5,559.87	\$5,559.87	\$0.00	\$0.00	\$0.00
KEEGO HARBOR	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
LAKE ORION	\$803.30	\$803.30	\$0.00	\$0.00	\$0.00
LATHRUP	\$1,406.81	\$1,406.81	\$0.00	\$0.00	\$0.00
LENOX TOWNSHIP	\$488.87	\$488.87	\$0.00	\$0.00	\$0.00
LIVONIA	\$40,179.29	\$40,179.29	\$0.00	\$0.00	\$0.00

GLWA Aged Accounts Receivable- IWC ACCOUNTS

Balances as of 8/31/2018

Customer Name	Total Due	Current	46 - 74 Days	75 - 104 Days	>105 Days
MACOMB TWP	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
MADISON HEIGHTS	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
MELVINDALE	\$9,429.27	\$3,629.99	\$5,799.28	\$0.00	\$0.00
NEW HAVEN	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
NORTHVILLE	\$2,160.97	\$2,160.97	\$0.00	\$0.00	\$0.00
NORTHVILLE TOWNSHIP	\$92,261.87	\$4,574.03	\$7,307.32	\$7,307.32	\$73,073.20
NOVI	\$17,256.62	\$17,256.62	\$0.00	\$0.00	\$0.00
OAK PARK	\$17,848.54	\$6,769.70	\$11,078.84	\$0.00	\$0.00
OAKLAND TOWNSHIP	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
ORCHARD LAKE VILLAGE	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
ORION TOWNSHIP (C-O)	\$5,424.95	\$5,424.95	\$0.00	\$0.00	\$0.00
OXFORD TOWNSHIP	\$961.69	\$961.69	\$0.00	\$0.00	\$0.00
OXFORD VILLAGE	\$1,259.16	\$1,259.16	\$0.00	\$0.00	\$0.00
PLEASANT RIDGE	\$273.77	\$273.77	\$0.00	\$0.00	\$0.00
PLYMOUTH	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
PLYMOUTH TOWNSHIP	\$256,812.23	\$12,731.27	\$20,340.08	\$20,340.08	\$203,400.80
REDFORD TOWNSHIP	\$12,612.40	\$12,440.96	\$171.44	\$0.00	\$0.00
ROCHESTER HILLS	\$18,292.48	\$18,292.48	\$0.00	\$0.00	\$0.00
ROMULUS	\$926.07	\$926.07	\$0.00	\$0.00	\$0.00
ROSEVILLE	\$14,195.09	\$14,195.09	\$0.00	\$0.00	\$0.00
ROYAL OAK	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
ROYAL OAK TOWNSHIP	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
SHELBY TOWNSHIP	\$12,007.58	\$12,007.58	\$0.00	\$0.00	\$0.00

GLWA Aged Accounts Receivable- IWC ACCOUNTS

Balances as of 8/31/2018

Customer Name	Total Due	Current	46 - 74 Days	75 - 104 Days	>105 Days
SOUTHFIELD (E-F)	\$28,230.26	\$28,230.26	\$0.00	\$0.00	\$0.00
SOUTHFIELD (SEOC)	\$3,798.88	\$3,798.88	\$0.00	\$0.00	\$0.00
ST. CLAIR SHORES	\$12,146.92	\$12,146.92	\$0.00	\$0.00	\$0.00
STERLING HEIGHTS	\$31,212.30	\$31,212.30	\$0.00	\$0.00	\$0.00
TROY (E-F)	\$384.09	\$384.09	\$0.00	\$0.00	\$0.00
TROY (SEOC)	\$37,013.43	\$37,013.43	\$0.00	\$0.00	\$0.00
UTICA	\$2,938.01	\$2,938.01	\$0.00	\$0.00	\$0.00
VAN BUREN TOWNSHIP	\$2,044.19	\$2,044.19	\$0.00	\$0.00	\$0.00
VILLAGE OF FRANKLIN	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
WASHINGTON TOWNSHIP	\$1,381.10	\$1,381.10	\$0.00	\$0.00	\$0.00
WATERFORD TOWNSHIP	\$12,382.30	\$12,382.30	\$0.00	\$0.00	\$0.00
WAYNE	\$5,017.87	\$5,017.87	\$0.00	\$0.00	\$0.00
WEST BLOOMFIELD TWP (C-O)	\$944.01	\$944.01	\$0.00	\$0.00	\$0.00
WEST BLOOMFIELD TWP (E-F)	\$6,307.99	\$6,307.99	\$0.00	\$0.00	\$0.00
WESTLAND	\$60,051.71	\$23,131.71	\$36,920.00	\$0.00	\$0.00
TOTAL IWC ACCOUNTS	\$2,898,694.39	\$502,738.94	\$132,867.60	\$64,840.04	\$2,198,247.81

GLWA Aged Accounts Receivable- POLLUTANT SURCHARGE ACCOUNTS

Balances as of 8/31/2018

Customer Name	Total Due	Current	46 - 74 Days	75 - 104 Days	>105 Days
A & R PACKING CO., LLC	\$5,269.94	\$5,269.94	\$0.00	\$0.00	\$0.00
AACTRON	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
ACADEMY PACKING CO.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
ACME RUSTPROOF	\$92.87	\$92.87	\$0.00	\$0.00	\$0.00
ADVANCED RESOURCE RECOVERY	\$999.83	\$999.83	\$0.00	\$0.00	\$0.00
AEVITAS SPECIALITY SERVICES	\$32,959.50	\$20,733.32	\$12,226.18	\$0.00	\$0.00
ALEXANDER & HORNING	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
ALEXANDER & HORNING	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
ALEXANDER & HORNING	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
ALGAL SCIENTIFIC CORPORATION	\$16,533.05	\$2,989.64	\$1,516.53	\$1,266.73	\$10,760.15
ALL CHEM CORP, LLC.	\$ (126.78)	\$0.00	\$0.00	\$0.00	\$ (126.78)
ALPHA STAMPING COMPANY	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
AMERICAN WASTE TECH INC.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
ATWATER BREWERY	\$72.56	\$72.56	\$0.00	\$0.00	\$0.00
AUTOMOTIVE FINISH	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
AXLE BREWING COMPANY, LLC	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
BAFFIN BREWING COMPANY	\$528.31	\$0.00	\$0.00	\$0.00	\$528.31
BARON INDUSTRIES	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
BARTZ BAKERY	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
BASTONE BREWERY	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
BATCH BREWING COMPANY	\$ (502.36)	\$0.00	\$0.00	\$0.00	\$ (502.36)
BAYS MICHIGAN CORPORATION	\$319.63	\$319.63	\$0.00	\$0.00	\$0.00
BEIRUT BAKERY, INC.	\$65.41	\$0.00	\$0.00	\$65.41	\$0.00

GLWA Aged Accounts Receivable- POLLUTANT SURCHARGE ACCOUNTS

Balances as of 8/31/2018

Customer Name	Total Due	Current	46 - 74 Days	75 - 104 Days	>105 Days
BETTER MADE SNACK FOOD	\$27,274.58	\$27,274.58	\$0.00	\$0.00	\$0.00
BLACK LOTUS BREWING CO.	\$102.13	\$72.91	\$0.00	\$0.00	\$29.22
BOZEK'S MARKET	\$72.73	\$72.73	\$0.00	\$0.00	\$0.00
BREW DETROIT	\$5,569.46	\$5,569.46	\$0.00	\$0.00	\$0.00
BROADWAY MKT CORNED BEEF	\$ (109.87)	\$0.00	\$0.00	\$0.00	\$ (109.87)
BROOKS BREWING, LLC.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
CANTON BREW WORKS	\$70.31	\$70.31	\$0.00	\$0.00	\$0.00
CAPITAL REPRODUCTIONS	\$3.54	\$0.00	\$2.04	\$0.00	\$1.50
CF BURGER CREAMERY	\$18,879.14	\$18,879.14	\$0.00	\$0.00	\$0.00
CHILANGO'S BAKERY	\$2,023.21	\$44.47	\$27.12	\$22.34	\$1,929.28
CINTAS CORP. - MACOMB TWP.	\$58,446.30	\$58,446.30	\$0.00	\$0.00	\$0.00
CINTAS CORPORATION	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
CINTAS CORPORATION	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
CITY LAUNDRY, INC.	\$14.27	\$14.27	\$0.00	\$0.00	\$0.00
CLASSIC CONTAINER CORP.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
COCA-COLA REFRESHMENTS USA,	\$2,510.87	\$2,510.87	\$0.00	\$0.00	\$0.00
COSTCO WHOLESALE STORE	\$6,732.97	\$6,732.97	\$0.00	\$0.00	\$0.00
COSTCO WHOLESALE STORE	\$2,481.59	\$2,481.59	\$0.00	\$0.00	\$0.00
COSTCO WHOLESALE STORE	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
COUNTRY FRESH DAIRY CO.	\$63,319.21	\$63,319.21	\$0.00	\$0.00	\$0.00
CROSS CHEMICAL COMPANY, INC.	\$913.53	\$0.00	\$913.53	\$0.00	\$0.00
DARLING INGREDIENTS, INC.	\$6,527.19	\$6,527.19	\$0.00	\$0.00	\$0.00

GLWA Aged Accounts Receivable- POLLUTANT SURCHARGE ACCOUNTS

Balances as of 8/31/2018

Customer Name	Total Due	Current	46 - 74 Days	75 - 104 Days	>105 Days
DAVE'S SAUSAGE FACTORY 2	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
DEARBORN BREWING	\$56.14	\$56.14	\$0.00	\$0.00	\$0.00
DEARBORN SAUSAGE	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
DEARBORN SAUSAGE CO., INC.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
DETROIT BEER	\$123.65	\$123.65	\$0.00	\$0.00	\$0.00
DETROIT LINEN SERVICE	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
DETROIT METRO WC AIRPORT	\$603,467.18	\$603,467.18	\$0.00	\$0.00	\$0.00
DETROIT RIVERTOWN BREWERY CC	\$1,252.62	\$1,252.62	\$0.00	\$0.00	\$0.00
DETROIT SAUSAGES CO INC	\$16.78	\$16.78	\$0.00	\$0.00	\$0.00
DETRONIC INDUSTRIES, INC.	\$127.12	\$127.12	\$0.00	\$0.00	\$0.00
DIFCO LABORATORIES, INC.	\$10,576.77	\$10,576.77	\$0.00	\$0.00	\$0.00
DIVERSIFIED CHEM TECH. INC.	\$154.95	\$154.95	\$0.00	\$0.00	\$0.00
DOMESTIC UNIFORM RENTAL	\$1,022.62	\$1,022.62	\$0.00	\$0.00	\$0.00
DOMESTIC UNIFORM RENTAL	\$1,669.44	\$1,669.44	\$0.00	\$0.00	\$0.00
E.W. GROBBEL'S SONS, INC.	\$3,200.39	\$3,200.39	\$0.00	\$0.00	\$0.00
ENVIROSOLIDS, L.L.C.	\$161,320.77	\$161,320.77	\$0.00	\$0.00	\$0.00
EQ DETROIT, INC.	\$1,558.55	\$1,558.55	\$0.00	\$0.00	\$0.00
EQ DETROIT, INC.	\$11,216.84	\$11,216.84	\$0.00	\$0.00	\$0.00
EQ DETROIT, INC.	\$ (1,238.68)	\$0.00	\$0.00	\$0.00	\$ (1,238.68)
EQ DETROIT, INC.	\$ (4,588.68)	\$0.00	\$0.00	\$0.00	\$ (4,588.68)
ETON ST BREWERY- GRIFFIN CLF	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
EXTRUDE HONE CORPORATION	\$156.04	\$156.04	\$0.00	\$0.00	\$0.00
EXTRUDEHODE	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

GLWA Aged Accounts Receivable- POLLUTANT SURCHARGE ACCOUNTS

Balances as of 8/31/2018

Customer Name	Total Due	Current	46 - 74 Days	75 - 104 Days	>105 Days
FARMINGTON BREWING COMPANY	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
FAYGO BEVERAGES, INC.	\$340,510.46	\$69,969.97	\$32,235.09	\$30,509.90	\$207,795.50
FORD NEW MODEL PROGRAM	\$1,145.79	\$1,145.79	\$0.00	\$0.00	\$0.00
FRESH-PAK	\$1,464.38	\$1,464.38	\$0.00	\$0.00	\$0.00
FRESH-PAK	\$3,920.54	\$3,920.54	\$0.00	\$0.00	\$0.00
GENERAL LINEN SUPPLY CO.	\$63,296.20	\$12,404.62	\$5,900.00	\$5,959.07	\$39,032.51
GLOBAL TITANIUM, INC.	\$4,785.50	\$4,785.50	\$0.00	\$0.00	\$0.00
GLOBAL TITANIUM, INC.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
GRANITE CITY FOOD & BREWERY	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
GRANITE CITY FOOD & BREWERY	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
GRANITE CITY FOOD & BREWERY	\$478.37	\$129.33	\$0.00	\$137.02	\$212.02
GREAT BARABOO BREWING CO.	\$ (2,319.23)	\$0.00	\$0.00	\$0.00	\$ (2,319.23)
HACIENDA MEXICAN FOODS	\$4,561.27	\$1,193.36	\$694.54	\$590.50	\$2,082.87
HENKEL CORPORATION	\$543.19	\$0.00	\$151.94	\$0.00	\$391.25
HOME STYLE FOOD INC.	\$6,130.26	\$6,130.26	\$0.00	\$0.00	\$0.00
HOOD CLEANERS	\$210.36	\$0.00	\$0.00	\$0.00	\$210.36
HOUGHTON INTERNATIONAL INC.	\$402.80	\$402.80	\$0.00	\$0.00	\$0.00
HOUGHTON INTERNATIONAL INC.	\$275.99	\$275.99	\$0.00	\$0.00	\$0.00
HOUGHTON INTERNATIONAL INC.	\$3,878.84	\$3,878.84	\$0.00	\$0.00	\$0.00
HUNTINGTON CLEANERS	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
INDUSTRIAL METAL COATING	\$651.55	\$651.55	\$0.00	\$0.00	\$0.00
ISLAMIC SLAUGHTER HOUSE	\$1,075.76	\$1,075.76	\$0.00	\$0.00	\$0.00

GLWA Aged Accounts Receivable- POLLUTANT SURCHARGE ACCOUNTS

Balances as of 8/31/2018

Customer Name	Total Due	Current	46 - 74 Days	75 - 104 Days	>105 Days
ITALIAN BUTTER BREAD STICKS	\$11.08	\$11.08	\$0.00	\$0.00	\$0.00
J & G FOOD PRODUCTS, INC.	\$58.75	\$58.75	\$0.00	\$0.00	\$0.00
KAR NUT PRODUCTS	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
KOWALSKI SAUSAGES, CO.	\$764.25	\$764.25	\$0.00	\$0.00	\$0.00
LA MICHOACANA FLOUR TORTILLA	\$1,251.43	\$1,251.43	\$0.00	\$0.00	\$0.00
LA MICHOACANA FLOUR TORTILLA	\$64.06	\$0.00	\$64.06	\$0.00	\$0.00
LEAR CORPORATION DBA EAGLE C	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
LIBERTY STREET PROD. BREWERY	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
LILY'S SEAFOOD GRILL & BREWE	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
MACDERMID, INC.	\$4,516.40	\$4,516.40	\$0.00	\$0.00	\$0.00
MCNICHOLS POLISHING & ANODIZ	\$29.81	\$0.00	\$0.00	\$29.81	\$0.00
MELLO MEATS INC, - KUBISCH S	\$111.90	\$111.90	\$0.00	\$0.00	\$0.00
METROPOLITAN BAKERY	\$522.16	\$522.16	\$0.00	\$0.00	\$0.00
MIBA HYDRAMECHANICA CORP.	\$239.39	\$239.39	\$0.00	\$0.00	\$0.00
MICHIGAN DAIRY	\$106,604.11	\$106,604.11	\$0.00	\$0.00	\$0.00
MICHIGAN PROD. MACHINING	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
MICHIGAN SOY PRODUCTS CO.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
MIDWEST WIRE PRODUCTS, INC.	\$ (2.94)	\$0.00	\$0.00	\$0.00	\$ (2.94)
MILANO BAKERY	\$2,146.68	\$2,146.68	\$0.00	\$0.00	\$0.00
MILTON CHILI CO.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
MINNIE MARIE BAKERS, INC	\$3,668.63	\$3,668.63	\$0.00	\$0.00	\$0.00
MISTER UNIFORM & MAT RENTALS	\$589.30	\$28.32	\$32.47	\$25.90	\$502.61
MOTOR CITY BREWING WORKS	\$ (23.25)	\$0.00	\$ (23.25)	\$0.00	\$0.00

GLWA Aged Accounts Receivable- POLLUTANT SURCHARGE ACCOUNTS

Balances as of 8/31/2018

Customer Name	Total Due	Current	46 - 74 Days	75 - 104 Days	>105 Days
NATIONAL CHILI COMPANY	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
NATIONAL CHILI COMPANY	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
NATIONAL CHILI COMPANY	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
NORTH CENTER BREWING COMPANY	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
NORTHERN LAKES SEAFOOD & MEAT	\$46.71	\$46.71	\$0.00	\$0.00	\$0.00
OAKWOOD BAKERY	\$335.86	\$335.86	\$0.00	\$0.00	\$0.00
PELLERITO FOODS INC.	\$2,038.66	\$2,038.66	\$0.00	\$0.00	\$0.00
PEPSI COLA, INC.	\$39,477.48	\$39,477.48	\$0.00	\$0.00	\$0.00
PERSONAL UNIFORM SERVICE, IN	\$105.81	\$86.39	\$19.42	\$0.00	\$0.00
PETRO ENVIRON TECH, INC.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
PINE TREE ACRES, INC.	\$16,071.93	\$16,071.93	\$0.00	\$0.00	\$0.00
PLATING SPEC	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
POWER VAC OF MICHIGAN, INC.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
PREMIER PLATING, LLC	\$4,025.86	\$0.00	\$1,201.79	\$0.00	\$2,824.07
PRODUCTION SPRING, LLC.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
QUALA SERVICES, LLC	\$290.77	\$290.77	\$0.00	\$0.00	\$0.00
RAY'S ICE CREAM CO.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
RED SPOT PAINT #409139	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
RIVER ROUGE BREWING COMPANY	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
ROAK BREWING CO. LLC	\$2,796.70	\$823.50	\$0.00	\$0.00	\$1,973.20
ROCHESTER MILLS BEER COMPANY	\$271.46	\$271.46	\$0.00	\$0.00	\$0.00
ROCHESTER MILLS PROD BREWERY	\$2,546.54	\$1,348.02	\$0.00	\$0.00	\$1,198.52

GLWA Aged Accounts Receivable- POLLUTANT SURCHARGE ACCOUNTS

Balances as of 8/31/2018

Customer Name	Total Due	Current	46 - 74 Days	75 - 104 Days	>105 Days
RTT	\$23,718.60	\$574.68	\$0.00	\$0.00	\$23,143.92
SEAFARE FOODS, INC.	\$44.62	\$44.62	\$0.00	\$0.00	\$0.00
SHERWOOD BREWING COMPANY	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
SMITH-WATKINS, LLC	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
SPRAYTEK, INC.	\$4,084.94	\$39.17	\$22.60	\$17.24	\$4,005.93
SWEETHEART BAKERY, INC.	\$638.93	\$150.63	\$80.66	\$77.78	\$329.86
THE CROWN GROUP-LIVONIA PLAN	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
THE ROYAL OAK BREWERY	\$(1,666.16)	\$0.00	\$0.00	\$0.00	\$(1,666.16)
TOM LAUNDRY CLEANERS	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
TRAFFIC JAM & SNUG	\$(0.48)	\$0.00	\$0.00	\$0.00	\$(0.48)
TURRI'S ITALIAN FOODS	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
TURRI'S ITALIAN FOODS	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
U-METCO, INC.	\$1,243.93	\$1,243.93	\$0.00	\$0.00	\$0.00
UNCLE RAYS SNACKS, LLC	\$45,860.60	\$45,860.60	\$0.00	\$0.00	\$0.00
UNCLE RAYS SNACKS, LLC	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
UNIQUE LINEN SERVICES, INC.	\$78.71	\$78.71	\$0.00	\$0.00	\$0.00
UNITED FISH DISTRIBUTORS	\$13.35	\$13.35	\$0.00	\$0.00	\$0.00
UNITED LINEN SERVICE, LLC.	\$309.99	\$309.99	\$0.00	\$0.00	\$0.00
UNITED MEAT & DELI	\$190.24	\$190.24	\$0.00	\$0.00	\$0.00
US ECOLOGY MICHIGAN	\$(2,676.25)	\$0.00	\$0.00	\$0.00	\$(2,676.25)
USE ECOLOGY ROMULUS, INC.	\$3,789.88	\$3,789.88	\$0.00	\$0.00	\$0.00
USHER OIL SERVICES	\$5,407.80	\$5,407.80	\$0.00	\$0.00	\$0.00
VERNDALE PRODUCTS	\$15,551.78	\$15,551.78	\$0.00	\$0.00	\$0.00

GLWA Aged Accounts Receivable- POLLUTANT SURCHARGE ACCOUNTS

Balances as of 8/31/2018

Customer Name	Total Due	Current	46 - 74 Days	75 - 104 Days	>105 Days
VERNDALE PRODUCTS, INC.	\$6,183.37	\$6,183.37	\$0.00	\$0.00	\$0.00
VERNOR FOOD PRODUCTS	\$70.01	\$70.01	\$0.00	\$0.00	\$0.00
WIGLEY'S MEAT PROCESS	\$592.70	\$592.70	\$0.00	\$0.00	\$0.00
WINTER SAUSAGE MFG. CO.	\$875.63	\$875.63	\$0.00	\$0.00	\$0.00
WINTER SAUSAGE MFG. CO.	\$165.06	\$165.06	\$0.00	\$0.00	\$0.00
WOLVERINE PACKING CO	\$7,409.09	\$7,409.09	\$0.00	\$0.00	\$0.00
WOLVERINE PACKING CO.	\$3,074.51	\$3,074.51	\$0.00	\$0.00	\$0.00
WOODWARD AVENUE BREWERS	\$158.59	\$0.00	\$158.59	\$0.00	\$0.00
TOTAL POLLUTANT SURCHARGE ACCOUNTS	\$1,775,826.63	\$1,398,181.97	\$55,223.31	\$38,701.70	\$283,719.65



Financial Services Audit Committee Communication

Date: September 21, 2018

To: Great Lakes Water Authority Audit Committee

From: Deirdre Henry, Treasury Manager

Re: Master Bond Ordinance Monthly Cash Transfers to Detroit Water & Sewerage Department (DWSD) and Great Lakes Water Authority (GLWA)

Background: The Master Bond Ordinances for the water and sewer systems prescribe monthly distributions of cash receipts to Detroit Water & Sewerage Department (DWSD) and Great Lakes Water Authority (GLWA) operating, debt service, and other trust accounts.

Analysis: The attached documents summarize the monthly cash transfers to DWSD and GLWA as stipulated by the Master Bond Ordinances for the period January 2016 –September 2018.

Proposed Action: Receive and file report.

Great Lakes Water Authority
Funds Transferred to Accounts Held by GLWA per Master Bond Ordinance
Through September 4, 2018

WATER							
	Operations & Maintenance	Pension Sub Account	Pension Obligation	WRAP	Budget Stabilization (For Benefit of DWSD)	Extraordinary Repair & Replacement (ER&R)	Total Water
Total FY 2016	\$71,052,000	\$6,037,100	\$10,297,200	\$1,983,300	\$2,326,900	\$606,000	\$92,302,500
Total FY 2017	\$111,879,600	\$6,037,200	\$10,297,200	\$2,077,200	\$360,000	\$0	\$130,651,200
Total FY 2018	\$121,562,604	\$6,048,000	\$10,695,696	\$2,159,400	\$0	\$0	\$140,465,700
FY 2019							
July 2018	\$ 10,393,475	\$504,000	\$891,308	\$171,683	-	-	\$11,960,466
August 2018	10,393,475	504,000	891,308	171,683	-	-	11,960,466
September 2018	10,393,475	504,000	891,308	171,683	-	-	11,960,466
October 2018					-	-	-
November 2018					-	-	-
December 2018					-	-	-
January 2019					-	-	-
February 2019					-	-	-
March 2019					-	-	-
April 2019					-	-	-
May 2019					-	-	-
June 2019					-	-	-
Total FY 2019	\$31,180,425	\$1,512,000	\$2,673,924	\$515,049	\$0	\$0	\$35,881,398
Total Water Since Jan 1 2016	\$335,674,629	\$19,634,300	\$33,964,020	\$6,734,949	\$2,686,900	\$606,000	\$399,300,798

SEWER							
	Operations & Maintenance	Pension Sub Account	Pension Obligation	WRAP	Budget Stabilization (For Benefit of DWSD)	Extraordinary Repair & Replacement (ER&R)	Total Water
Total FY 2016	\$100,865,600	\$10,838,400	\$14,025,800	\$2,523,400	\$5,591,700	\$779,600	\$134,624,500
Total FY 2017	\$175,858,800	\$10,838,400	\$14,026,800	\$2,654,400	\$2,654,400	\$0	\$206,032,800
Total FY 2018	\$191,079,396	\$10,824,000	\$14,687,496	\$2,760,804	\$0	\$0	\$219,351,696
FY 2019							
July 2018	\$ 16,093,500	\$902,000	\$1,223,958	\$238,483	-	-	\$18,457,941
August 2018	16,093,500	902,000	1,223,958	238,483	-	-	18,457,941
September 2018	16,093,500	902,000	1,223,958	238,483	-	-	18,457,941
October 2018					-	-	-
November 2018					-	-	-
December 2018					-	-	-
January 2019					-	-	-
February 2019					-	-	-
March 2019					-	-	-
April 2019					-	-	-
May 2019					-	-	-
June 2019					-	-	-
Total FY 2019	\$48,280,500	\$2,706,000	\$3,671,874	\$715,449	\$0	\$0	\$55,373,823
Total Sewer Since Jan 1 2016	\$516,084,296	\$35,206,800	\$46,411,970	\$8,654,053	\$8,246,100	\$779,600	\$615,382,819

Great Lakes Water Authority
Funds Transferred to DWSD per Master Bond Ordinance
Through September 4, 2018

DWSD Water				
	Operations & Maintenance	Pension	Lease Payment (I&E Fund)	Total Water
Total FY 2016	\$ 26,185,600	\$ 4,262,700	\$ 20,173,100	\$ 50,621,400
Total FY 2017	\$ 33,596,400	\$ 4,262,400	\$ 22,500,000	\$ 60,358,800
Total FY 2018	\$ 35,059,704	\$ 4,272,000	\$ 20,625,000	\$ 59,956,704
FY 2019				
July 2018	\$ 2,957,025	\$ 356,000	\$ 1,545,900	\$ 4,858,925
August 2018	2,957,025	356,000	1,545,900	4,858,925
September 2018	2,957,025	356,000	1,545,900	4,858,925
October 2018				-
November 2018				-
December 2018				-
January 2019				-
February 2019				-
March 2019				-
April 2019				-
May 2019				-
June 2019				-
Total FY 2019	\$ 8,871,075	\$ 1,068,000	\$ 4,637,700	\$ 14,576,775
Grand Total Water Transfers	\$ 103,712,779	\$ 13,865,100	\$ 67,935,800	\$ 185,513,679

DWSD Sewer				
	Operations & Maintenance	Pension	Lease Payment (I&E Fund)	Total Sewer
Total FY 2016	\$ 19,774,300	\$ 2,861,800	\$ 7,508,500	\$ 30,144,600
Total FY 2017	\$ 41,535,600	\$ 2,862,000	\$ 27,500,000	\$ 71,897,600
Total FY 2018	\$ 60,517,992	\$ 2,856,000	\$ 18,333,336	\$ 81,707,328
FY 2019				
July 2018	\$ 5,676,792	\$ 238,000	\$ 1,886,333	\$ 7,801,125
August 2018	5,676,792	238,000	1,886,333	7,801,125
September 2018	5,676,792	238,000	1,886,333	7,801,125
October 2018				-
November 2018				-
December 2018				-
January 2019				-
February 2019				-
March 2019				-
April 2019				-
May 2019				-
June 2019				-
Total FY 2019	\$ 17,030,376	\$ 714,000	\$ 5,658,999	\$ 23,403,375
Grand Total Sewer Transfers	\$ 138,858,268	\$ 9,293,800	\$ 59,000,835	\$ 207,152,903

Note 1: Per Section 3.5 of the Lease, the Lease Payment may be used for:

- (a) bond principal and interest for Local System Improvements,
- (b) bond principal and interest for the City's share of common-to-all System Improvements, and
- (c) Local System improvements paid from the lease payment deposited to the Improvement & Extension (I&E) Fund.

Note 2: For FY 2016, \$22,318,500 million of the lease payment was directed by the City of Detroit to offset a portion of its FY 2016 water and sewer debt service in lieu of a cash transfer.



Financial Services Audit Committee Communication

Date: September 21, 2018
To: Great Lakes Water Authority Audit Committee
From: Nicolette N. Bateson, CPA, Chief Financial Officer & Treasurer
Re: Rating Agency reports of September 2018

Background: Over the course of the past 30 days, the Great Lakes Water Authority (GLWA) received positive ratings actions from Fitch Ratings, Moody’s Investor Service, and Standard & Poor’s.

Great Lakes Water Authority Water & Sewerage System Bonds Ratings History (Prior to January 1, 2016 the debt was obligation was in the name of DWSD)							Recent rating agency actions are in green.		
<i>(All ratings are for water and sewage disposal system unless denoted with "W" or "S" respectively.)</i>									
Rating Agency	Standard & Poor's			Moody's			Fitch		
	Rating	Senior	Second	Rating	Senior	Second	Rating	Senior	Second
Outlook		W - Stable	W - Stable		Stable	Stable		Positive	Positive
		S - Positive	S - Positive						
Investment Grade									
Strongest	AAA			Aaa			AAA		
	AA+			Aa1			AA+		
	AA			Aa2			AA		
	AA-	W - 9/5/2018		Aa3			AA-		
	A+	S - 9/5/2018	W - 9/5/2018	A1			A+		
	A		S - 9/5/2018	A2	9/4/2018		A	9/30/2016*	
	A-	9/30/2016*		A3	9/30/2016	9/4/2018	A-		9/30/2016**
	BBB+	8/25/2014	9/30/2016* 8/25/2014	Baa1	2/9/2016	9/30/2016	BBB+		
	BBB			Baa2		2/9/2016	BBB	9/3/2015	
	BBB-			Baa3	8/27/2015		BBB-	8/25/2014	9/3/2015

* DWSD Rating of 11.9.2015 affirmed for GLWA on 5.23.2016 and affirmed on 9.30.2016
 ** 9/30/2016 Rating Affirmed 9/4/2018

Analysis: As we move into the FY 2020 and beyond financial planning cycle, the following reports are presented for reference.

1. Fitch Press Release – Water & Sewer
2. Fitch Credit Report – Water & Sewer
3. Moody’s Credit Opinion – Water
4. Moody’s Credit Opinion – Sewer
5. Standard & Poor’s Research Report – Water
6. Standard & Poor’s Research Report – Sewer

Proposed Action: Receive and file report.



Fitch Rates Great Lakes Water Authority, MI's Water and Sewer Revs 'A' Senior/'A-'Subordinate

Fitch Ratings-Austin-04 September 2018: Fitch Ratings has assigned the following ratings to revenue bonds issued by the Great Lakes Water Authority, MI (GLWA or the authority):

- Approximately \$80 million sewage disposal system revenue senior lien bonds, series 2018A at 'A';
- Approximately \$129 million sewage disposal system revenue refunding senior lien bonds, series 2018B at 'A';
- Approximately \$43 million sewage disposal system revenue refunding senior lien bonds, series 2018C (federally taxable) at 'A';
- Approximately \$156 million water supply system revenue refunding second lien bonds, series 2018A at 'A-'.

The bonds are scheduled to price the week of September 17 via negotiated sale. Proceeds will be used to refund certain GLWA sewer system and water system (the systems) debt for interest savings, fund certain Detroit Water and Sewerage Department (DWSD) sewer system capital expenditures, and pay costs of issuance.

In addition, Fitch has affirmed the following outstanding GLWA bonds, including bonds previously issued by the city of Detroit (the city) and the Michigan Finance Authority, MI on behalf of DWSD and assumed by GLWA:

- \$1.9 billion in senior lien sewer revenue bonds at 'A';
- \$752 million in second lien sewer revenue bonds at 'A-';
- \$1.6 billion in senior lien water revenue bonds at 'A';
- \$668 million in second lien water revenue bonds at 'A-'.

The Rating Outlook has been revised to Positive from Stable.

SECURITY

Senior lien water and sewer bonds are separately secured by a first lien on net revenues of each respective system. Second lien bonds are separately secured by a second lien on the net revenues of each respective system after payment of senior lien bonds.

KEY RATING DRIVERS

POSITIVE OUTLOOK ON SOLID FINANCIALS: The Outlook revision to Positive from Stable reflects solid fiscal 2016 and 2017 financial results related to GLWA's initial operations of the systems, outpacing prior expectations. Changes in rate-setting practices as well as accumulation of reserves under the master bond ordinances have enhanced prospects for achieving forecast expectations and help to adequately insulate GLWA from high city of Detroit retail delinquencies.

LEASE REINFORCES SEPARATE OPERATIONS: All system funds and accounts are separate and distinct from other city funds, including Detroit's general fund. The lease of the systems by GLWA provides further assurance that system operations will remain independent of the city.

HIGHLY LEVERAGED DEBT PROFILE: The systems' debt load is expected to remain elevated for the foreseeable future as a result of legacy issuance and ongoing borrowing. Over the longer term, greater use of pay-as-you-go capital funding is expected to alleviate debt pressures to some degree.

EXPANSIVE SERVICE TERRITORY: The systems provide essential services to a broad area. The water system covers almost 40% of Michigan's population, while the sewer system includes about 30% of Michigan's population. The majority of GLWA's revenues come from suburban customers.

STRONG RATE-ADJUSTMENT HISTORY: The governing bodies have instituted annual rate hikes in support of financial and capital needs. Continued annual adjustments are included in the forecast and will be needed to meet rising debt service and sustain financial performance.

RATING SENSITIVITIES

SUSTAINED FINANCIAL AND OPERATING GAINS: Sustained operating enhancements, improved liquidity and moderating leverage could lead to a rating upgrade over the course of the next couple of years. Alternatively, GLWA's failure to maintain the improved operational and financial performance of its water and sewer utilities due to insufficient revenue recovery or higher than expected costs could result in a change in Outlook back to Stable.

CHANGES TO DEBT PROFILE: Increases in debt issuance levels due to revisions in the capital plan or reductions in operating cash flow would be viewed unfavorably, given the already high leverage of both systems.

CREDIT PROFILE

GLWA entered into 40-year leases of DWSD's water and sewer systems (except for the local city infrastructure), as well as a water and sewer services agreement (combined lease agreements) with the city in June 2015. The lease agreements became effective on Jan. 1, 2016, at which point GLWA assumed operational control of all leased assets of the regional water and sewer systems; the leases also conveyed an interest in all revenues of both the water and sewer systems (including both the regional and local city retail systems). At the same time, GLWA assumed all liabilities of the water and sewer systems, including all outstanding indebtedness of the city related to the respective systems.

Fitch believes the leases and supporting documents effectively codify the legal separation between the systems and the city, and insulate the systems from being included in any future city bankruptcy proceedings, if one were to occur. DWSD continues to own and operate the city retail water and sewer systems and serves as GLWA's agent with regards to the rate setting, billing and collection of city retail accounts. However, GLWA can terminate DWSD's agent responsibilities in the event of nonperformance by DWSD as described in a Water and Sewer Service Agreement (the WSSA) between the city and GLWA.

Key terms of the agreements, which are embedded in GLWA's financial projections, include a \$50 million annual lease payment to the city, although such moneys may only be used at the city's option to fund pay-go capital improvements related to Detroit's local water and sewer systems or DWSD-related debt service associated with the local systems and/or GLWA regional systems. An assistance program is also funded and replenished annually as part of GLWA's budget for low-income customers throughout

GLWA's service territory. In addition, a budget stabilization fund is funded from city retail customers to ensure moneys are available to meet the city's portion of GLWA's annual revenue requirement. Deposits required to fund the lease payment and other created accounts like the assistance account occur subsequent to payment of debt service; however, these are added costs that ratepayers must absorb.

STRONGER FINANCIALS DRIVE OUTLOOK CHANGE

Audited fiscal 2017 results yielded Fitch-calculated total debt service coverage (DSC) for the water system of 1.6x, coverage of full obligations of 1.3x (which includes all transfers including the lease payment) and liquidity of 539 days cash, all of which are considered favorable for a wholesale provider under Fitch's criteria. Fitch's calculations include both GLWA and DWSD operating revenues and expenses given the requirements under the trust indenture, leases and related agreements. Water system DSC for the year was higher than previously forecasted in part due to higher than expected bad debt recoveries. Preliminary fiscal 2018 financial results point to continued solid performance for the water system with total DSC of 1.5x and coverage of full obligations of 1.3x (slightly ahead of the prior forecast). The most recent forecast anticipates financial results through fiscal 2023 commensurate with fiscal 2018 results.

For fiscal 2017, Fitch-calculated total sewer DSC was just under 1.5x, coverage of full obligations was 1.2x and days cash was 172, all of which are considered favorable for wholesale utilities. Sewer system DSC was also higher for the year than previously anticipated. Total sewer system DSC for fiscal 2018 is expected to be weaker than the prior year at slightly less than 1.2x (coverage of all obligations at 1.0x) as the system received around \$20 million less than expected from DWSD. GLWA is working with DWSD to formulate a plan that is expected to be completed by fiscal 2019 Q1 whereby this amount will ultimately be paid to GLWA by DWSD. GLWA attributes the lower than expected collections to one-time events associated with a legal settlement over historical drainage charges (including actions to credit various customer accounts) as well as modifications to phase-in newly adopted drainage program charges. GLWA's latest forecast through fiscal 2023 estimate improved results from 2018 levels beginning in fiscal 2019 and continuing thereafter. A trend of sustained favorable DSC, liquidity and stabilizing leverage could lead to a rating upgrade for both systems over the near-term.

Financial results have stabilized and improved over the past several years from previously poor levels, including years where total DSC for each of the systems was below 1.0x. Gains in financial results are attributable to GLWA and DWSD's efforts to both enhance revenues and cut operating costs. On the revenue front, GLWA adopted changes with its suburban water customers beginning in fiscal 2016 to revise purchase estimates and shift to an increasing amount of fixed monthly charge recovery (60% versus 40% the prior year). These changes are similar to the implementation of a rate simplification initiative for suburban sewer customers effective for fiscal 2015 that identifies each customer's proportionate costs based on historical average shares, with such shares billed monthly and locked in for three years before being subject to recalculation.

DWSD also has been working extensively to reduce retail delinquencies through outreach and aggressively pursuing shut-offs, although 60-day and greater past due accounts from active customers remain abnormally high (44% excluding customers not on payment plans). GLWA's budgeting and accumulation of \$7.5 million in the budget stabilization fund as of fiscal 2017 help to mitigate GLWA's exposure to delinquent city customers.

SYSTEM LEVERAGE REMAINS HIGH

Fitch expects leverage for both systems to remain high for the foreseeable future but that it will decline in time given increased use of pay-go sources and principal amortization that exceeds planned annual

issuances. For fiscal 2017, GLWA's long-term debt per capita totaled \$697 for water and \$1,381 for sewer (excluding the lease obligations), both of which are considered high per Fitch's criteria. For the same period, debt to net plant assets was also elevated for both systems at 130% and 116% for water and sewer, respectively, while debt to funds available for debt service was 9.5x for water and 9.8x for sewer (all excluding the lease obligations). Principal payout is relatively typical for sector credits at about 80% over 20 years for both water and sewer, including debt and contractual pension obligations.

The consolidated GLWA regional and DWSD local 2019-2023 capital improvement plans (CIPs), including regional budgeted capital outlays, total \$979 million for water (down 11% from the fiscal 2017-2021 CIP) and \$748 million for sewer (down 9%). While GLWA's CIPs for the regional water and sewer systems total just \$659 million and \$562 million, respectively, GLWA's revenues fund the DWSD CIPs through the lease payments and debt issued by GLWA for the local projects (including the new money portion related to this sale). Funding for the consolidated CIPs is expected to be provided by approximately 40% debt proceeds and 60% pay-go for the water system and 60% debt/40% pay-go for the sewer system, with the amount of pay-go representing a significant amount of current resources for a wholesale entity.

Projected capital costs have risen from prior CIPs before the system leases were executed as a result of the updated water master plan approved by GLWA's board in August 2016, the first update since 2004. An outcome of the plan includes decommissioning one of the water treatment plants (accounting for over 15% of system capacity) along with other system optimization. The updated water master plan results in significant near-term investment; however, these costs are expected to moderate over time and ultimately result in over \$400 million in capital cost avoidance as well as reduced operating costs by \$2.4 million per year.

Sewer CIP costs have also increased in recent years as GLWA has been going through an update to the sewer master plan, which is expected to be finalized in the 2019-2020 timeframe. While the sewer costs are less refined than the water costs, certain initial estimates from the planning levels have been added to the CIP at this point.

BROAD SERVICE AREA ENHANCES SYSTEM STABILITY

The water system is a regional provider serving around 3.8 million people or almost 40% of Michigan's population, including the city's population of around 675,000. The system serves the city via DWSD on a retail basis and 127 communities through 87 wholesale contracts and provides service to Genesee County Drain Commissioner through a reciprocal backup contract. The service territory consists of 1,760 square miles covering all or a portion of eight counties in southeast Michigan.

The sewer system is a regional provider serving around 2.8 million people or around 30% of Michigan's population, including the city. The system serves the city via DWSD on a retail basis and 76 communities through 18 wholesale contracts. The service territory consists of 944 square miles covering three counties in the Detroit-Warren-Dearborn metropolitan statistical area.

Population and customer growth for both systems have experienced modest annual declines for a number of years. Detroit's population in particular has experienced continuous decline, but suburban areas have picked up most of the migration. Wealth levels in the city are low (less than 50% of the U.S. average) while poverty (39%) and unemployment levels (9.3% as of June 2018) are high, although figures for the metropolitan area overall, which includes the city as well as the suburban customers, are generally in line with state and national averages.

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In addition to the sources of information identified in the Revenue-Supported Rating Criteria, this action was additionally informed by information from Lumesis and Citibank (underwriter).

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Additional information is available on www.fitchratings.com

Applicable Criteria

Rating Criteria for Public-Sector, Revenue-Supported Debt (pub. 26 Feb 2018)

(<https://www.fitchratings.com/site/re/10020113>)

U.S. Water and Sewer Rating Criteria (pub. 30 Nov 2017)

(<https://www.fitchratings.com/site/re/10010508>)

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Great Lakes Water Authority, Michigan

Sewage Disposal System Revenue Bonds and Water Supply System Revenue Bonds New Issue

Ratings

New Issues

Sewage Disposal System Revenue Senior Lien Bonds, Series 2018A A

Sewage Disposal System Revenue Refunding Senior Lien Bonds, Series 2018B A

Sewage Disposal System Revenue Refunding Senior Lien Bonds, Series 2018C (Federally Taxable) A

Water Supply System Revenue Refunding Second Lien Bonds, Series 2018A A-

Outstanding Debt

Sewage Disposal System Senior Lien Bonds A

Sewage Disposal System Second Lien Bonds A-

Water Supply System Senior Lien Bonds A

Water Supply System Second Lien Bonds A-

Rating Outlook^a

Positive

^aOutlook revised to Positive from Stable Sept. 4, 2018.

Related Research

[2018 Water and Sewer Medians \(December 2017\)](#)

[Fitch 2018 Outlook: Water and Sewer Sector \(December 2017\)](#)

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New Issue Details

Sale Information: \$80,460,000 Sewage Disposal System Revenue Refunding Senior Lien Bonds, Series 2018A; \$128,610,000 Sewage Disposal System Revenue Refunding Senior Lien Bonds, Series 2018B; \$43,400,000 Sewage Disposal System Revenue Refunding Senior Lien Bonds, Series 2018C (Federally Taxable); and \$155,585,000 Water Supply System Revenue Refunding Second Lien Bonds, Series 2018A, scheduled to sell via negotiation as early as Sept. 14, 2018.

Security: Senior lien sewer and water bonds separately secured by a first lien on net revenues of each Great Lakes Water Authority (GLWA) sewer and water system. Second lien bonds separately secured by a second lien on the net revenues of each system.

Purpose: To refund certain GLWA sewer system and water system (the systems) debt for interest savings, fund certain Detroit Water and Sewerage Department (DWSD) sewer system capital expenditures for Detroit and pay costs of issuance.

Final Maturity: Sewer – July 1, 2048; water – July 1, 2029.

Key Rating Drivers

Positive Outlook on Solid Financials: The Rating Outlook revision to Positive from Stable reflects solid fiscal years 2016 and 2017 financial results related to GLWA's initial operations of the systems, outpacing prior expectations. Changes in rate-setting practices as well as accumulation of reserves under the master bond ordinances have enhanced prospects for achieving forecast expectations and help to adequately insulate GLWA from high city of Detroit retail delinquencies.

Lease Reinforces Separate Operations: All system funds and accounts are separate and distinct from city funds, including Detroit's general fund. The lease of the systems by GLWA provides further assurance that system operations will remain independent of the city.

Highly Leveraged Debt Profile: The systems' debt load is expected to remain elevated for the foreseeable future as a result of legacy issuance and ongoing borrowing. Over the longer term, greater use of pay-as-you-go capital funding is expected to alleviate debt pressures to some degree.

Expansive Service Territory: The systems provide essential services to a broad area. The water system covers almost 40% of Michigan's population, while the sewer system includes about 30% of Michigan's population. The majority of GLWA's revenues come from suburban customers.

Strong Rate Adjustment History: The governing bodies have instituted annual charge increases in support of financial and capital needs. Continued annual adjustments are included in the forecast and will be needed to meet rising debt service and sustain financial performance.

Rating Sensitivities

Sustained Financial and Operating Gains: Sustained operating enhancements, improved liquidity and moderating leverage could lead to a rating upgrade over the course of the next couple of years. Alternatively, GLWA's failure to maintain the improved operational and financial performance of its water and sewer utilities due to insufficient revenue recovery or higher than expected costs could result in a change in Outlook back to Stable.

**Rating History —
Sewage Disposal
System Senior Lien**

Rating	Action	Outlook/ Watch	Date
A	Affirmed	Positive	9/4/18
A	Upgraded	Stable	9/30/16
BBB	Affirmed	Stable	12/15/15
BBB	Upgraded	Stable	9/2/15
BBB-	Upgraded	Stable	9/3/14
BB+	Affirmed	Positive ^a	8/25/14
BB+	Affirmed	Negative ^a	5/30/14
BB+	Downgraded	Negative ^a	2/27/14
BBB+	Affirmed	Negative ^a	11/27/13
BBB+	Affirmed	Negative ^a	6/14/13
BBB+	Downgraded	Negative	4/1/13
A-	Downgraded	Stable	5/29/12
A	Downgraded	Stable	4/1/11
AA-	Revised	Stable	4/30/10
A+	Affirmed	Negative	4/18/08
A+	Affirmed	Stable	1/28/05
A+	Upgraded	—	10/29/99
A	Assigned	—	11/16/95

^aRating Watch.

**Rating History —
Sewage Disposal
System Second Lien**

Rating	Action	Outlook/ Watch	Date
A-	Affirmed	Positive	9/4/18
A-	Upgraded	Stable	9/30/16
BBB-	Affirmed	Stable	12/15/15
BBB-	Upgraded	Stable	9/2/15
BB+	Upgraded	Stable	9/3/14
BB	Affirmed	Positive ^a	8/25/14
BB	Affirmed	Negative ^a	5/30/14
BB	Downgraded	Negative ^a	2/27/14
BBB+	Upgraded	Negative ^a	11/27/13
BBB	Affirmed	Negative ^a	6/14/13
BBB	Downgraded	Negative	4/1/12
BBB+	Downgraded	Stable	5/29/12
A-	Downgraded	Stable	4/1/11
A+	Revised	Stable	4/30/10
A	Affirmed	Negative	4/18/08
A	Affirmed	Stable	1/28/05
A	Upgraded	—	10/29/99
A-	Assigned	—	11/16/95

^aRating Watch.

Rating History continued on page 3.

Related Criteria

[Rating Criteria for Public-Sector, Revenue-Supported Debt \(February 2018\)](#)

[U.S. Water and Sewer Rating Criteria \(November 2017\)](#)

Changes to Debt Profile: Increases in debt issuance levels due to revisions in the capital plan or reductions in operating cash flow would be viewed unfavorably, given the already high leverage of both systems.

Credit Profile

GLWA entered into 40-year leases of DWSD’s water and sewer systems (except for the local city infrastructure) with the city in June 2015 (the lease agreements). The lease agreements became effective on Jan. 1, 2016, at which point GLWA assumed operational control of all leased assets of the regional water and sewer systems; the leases also conveyed an interest in all revenues of both the water and sewer systems (including both the regional and local city retail systems). At the same time, GLWA assumed all outstanding indebtedness related to the respective regional and local water and sewer systems.

Fitch believes the leases and supporting documents effectively codify the legal separation between the systems and the city, and insulate the systems from being included in any future city bankruptcy proceedings, if one were to occur. DWSD continues to own and operate the city retail water and sewer systems and serves as GLWA’s agent with regards to the rate setting, billing and collection of city retail accounts. However, GLWA can terminate DWSD’s agent responsibilities in the event of nonperformance by DWSD as described in a Water and Sewer Service Agreement (the WSSA) between the city and GLWA.

Key terms of the agreements, which are embedded in GLWA’s financial projections, include a \$50 million annual lease payment to the city, although such moneys may only be used at the city’s option to fund pay-go capital improvements related to Detroit’s local water and sewer systems or DWSD-related debt service associated with the local systems and/or GLWA regional systems. An assistance program is also funded annually as part of GLWA’s budget. In addition, a budget stabilization fund is funded from city retail customers to ensure moneys are available to meet the city’s portion of GLWA’s annual revenue requirement. Deposits required to fund the lease payment and other created accounts such as the assistance account occur subsequent to payment of debt service; however, these are added costs that ratepayers must absorb.

Stronger Financials Drive Outlook Change

Audited fiscal 2017 results yielded Fitch-calculated total debt service coverage (DSC) for the water system of 1.6x, coverage of full obligations of 1.3x (which includes all transfers under the indenture including the lease payment) and liquidity of 539 days cash, all of which are considered favorable for a wholesale provider under Fitch’s criteria. Fitch’s calculations include both GLWA and DWSD operating revenues and expenses given the requirements under the trust indenture, leases and related agreements. Water system DSC for the year was higher than previously forecast (estimated at 1.4x in 2016) in part due to higher than expected bad debt recoveries.

Preliminary fiscal 2018 financial results for the water system point to continued solid performance, with total DSC of 1.5x and coverage of full obligations of 1.3x (slightly ahead of the prior forecast). For the year revenues were \$20 million over budget (a positive 5% variance), driven primarily from higher than expected receipts from Flint, Genesee County and DWSD retail accounts. On the expense side, cash transfers for O&M expenses matched budgeted amounts. The most recent forecast anticipates financial results through fiscal 2023 generally commensurate with fiscal 2018 results, without including any potential savings from the current transaction.

Rating History — Water Supply System Senior Lien

Rating	Action	Outlook/ Watch	Date
A	Affirmed	Positive	9/4/18
A	Upgraded	Stable	9/30/16
BBB	Affirmed	Stable	12/15/15
BBB	Upgraded	Stable	9/2/15
BBB-	Upgraded	Stable	9/3/14
BB+	Affirmed	Positive ^a	8/25/14
BB+	Affirmed	Negative ^a	5/30/14
BB+	Affirmed	Negative ^a	2/28/14
BB+	Downgraded	Negative ^a	11/27/13
BBB+	Affirmed	Negative ^a	6/14/13
BBB+	Downgraded	Negative	4/1/13
A	Downgraded	Stable	4/1/11
AA-	Revised	Stable	4/30/10
A+	Affirmed	Negative	4/18/08
A+	Affirmed	Stable	1/28/05
A+	Upgraded	—	10/29/99
A	Assigned	—	11/16/95

^aRating Watch.

Rating History — Water Supply System Second Lien

Rating	Action	Outlook/ Watch	Date
A-	Affirmed	Positive	9/4/18
A-	Upgraded	Stable	9/30/16
BBB-	Affirmed	Stable	12/15/15
BBB-	Upgraded	Stable	9/2/15
BB+	Upgraded	Stable	9/3/14
BB	Affirmed	Positive ^a	8/25/14
BB	Affirmed	Negative ^a	5/30/14
BB	Downgraded	Negative ^a	2/28/14
BBB	Affirmed	Negative ^a	11/27/13
BBB	Affirmed	Negative ^a	6/14/13
BBB	Downgraded	Negative	4/1/13
A-	Downgraded	Stable	4/1/11
A+	Revised	Stable	4/30/10
A	Affirmed	Negative	4/18/08
A	Affirmed	Stable	1/28/05
A	Upgraded	—	10/29/99
A-	Assigned	—	11/16/95

^aRating Watch.

For fiscal 2017, Fitch-calculated total sewer DSC was just under 1.5x, coverage of full obligations was 1.2x and days cash was 172, all of which are considered favorable for wholesale utilities. Sewer system DSC was also higher for the year than previously anticipated (estimated at 1.3x in 2016). Total sewer system DSC for fiscal 2018 is expected to be weaker than the prior year at slightly less than 1.2x (coverage of all obligations at 1.0x) as the system received around \$20 million less than expected from DWSD. Despite the lower collections, total revenues were only around \$13.5 million lower than budget (negative 2.5% variance). Similar to the water system, cash transfers for O&M equaled budgeted amounts for the year.

GLWA is working with DWSD to formulate a plan that is expected to be completed by fiscal Q1 2019 whereby the shortfall in sewer collection amounts will ultimately be paid to GLWA by DWSD. GLWA attributes the lower than expected collections to one-time events associated with a legal settlement over historical drainage charges (including actions to credit various customer accounts) as well as modifications to phase in newly adopted drainage program charges. GLWA's latest forecast through fiscal 2023 (which also does not include any savings from the current refunding transaction) estimate improved results from 2018 levels beginning in fiscal 2019 and continuing thereafter. A trend of sustained favorable DSC, liquidity and stabilizing leverage could lead to a rating upgrade for both systems over the near term.

Financial results have stabilized and improved over the past several years from previously poor levels, including years where total DSC for each of the systems was below 1.0x. Gains in financial results are attributable to GLWA and DWSD's efforts to both enhance revenues and cut operating costs. On the revenue front, GLWA adopted changes with its suburban water customers beginning in fiscal 2016 to revise purchase estimates and shift to an increasing amount of fixed monthly charge recovery (60% versus 40% the prior year). These changes have led to more accurate forecasting of revenues (for fiscal 2017 billed revenues and volumes were around 102% of budget each) and are similar to the implementation of a rate simplification initiative for suburban sewer customers effective for fiscal 2015 that identifies each customer's proportionate costs based on historical average shares (i.e. a 100% fixed charge), with such shares billed monthly and locked in for three years before being subject to recalculation.

DWSD also has been working extensively to reduce retail delinquencies through outreach and aggressively pursuing shut-offs, although 60-day and greater past due accounts from active customers remain abnormally high (44% excluding customers not on payment plans). GLWA's budgeting and accumulation of \$7.5 million in the budget stabilization fund as of fiscal 2017 help to mitigate GLWA's exposure to delinquent city customers.

System Leverage Remains High

Fitch expects leverage for both systems to remain high for the foreseeable future but will decline in time given increased use of pay-go sources and principal amortization that exceeds planned annual issuances. The vast majority of debt is fixed rate and there are no swaps outstanding, limiting interest rate and third-party credit risks.

For fiscal 2017, GLWA's long-term debt per capita totaled \$697 for water and \$1,381 for sewer (excluding the lease obligations), both of which are considered high per Fitch's criteria. For the same period, debt to net plant assets was also elevated for both systems at 130% and 116% for water and sewer, respectively, while debt to funds available for debt service was 9.5x for water and 9.8x for sewer (all excluding the lease obligations). Principal payout is relatively typical for sector credits at about 80% over 20 years for both water and sewer, including debt and contractual pension obligations.

The consolidated GLWA regional and DWSD local 2019–2023 capital improvement plans (CIPs), including regional budgeted capital outlays, total \$866 million for water (down 11% from the fiscal 2017–2021 CIP) and \$748 million for sewer (down 9%). While GLWA's CIPs for the regional water and sewer systems total just \$659 million and \$562 million, respectively, GLWA's revenues fund the DWSD CIPs through the lease payments and debt issued by GLWA for the local projects (including the new money portion related to this sale). Funding for the consolidated CIPs is expected to be provided by approximately 40% debt proceeds and 60% pay-go for the water system and 60% debt and 40% pay-go for the sewer system, with the amount of pay-go representing a significant amount of current resources for a wholesale entity.

Projected capital costs have risen from prior CIPs before the system leases were executed as a result of the updated water master plan approved by GLWA's board in August 2016, the first update since 2004. An outcome of the plan includes removing treatment processes from one of the water treatment plants (accounting for over 15% of system capacity) along with other system optimization. The updated water master plan results in significant near-term investment; however, these costs are expected to moderate over time and ultimately result in over \$400 million in capital cost avoidance as well as reduced operating costs by \$2.4 million per year.

Sewer CIP costs have also increased since before the system leases were executed as GLWA has been going through an update to the sewer master plan, which is expected to be finalized in the 2019–2020 timeframe. While the sewer costs are less refined than the water costs, certain initial estimates from the planning levels have been added to the CIP at this point.

Broad Service Area Enhances System Stability

The water system is a regional provider serving around 3.8 million people, or almost 40% of Michigan's population, including the city's population of approximately 675,000. The system serves the city via DWSD on a retail basis and 127 communities through 87 wholesale contracts and provides service to Genesee County Drain Commissioner through a reciprocal backup contract. The service territory consists of 1,760 square miles covering all or a portion of eight counties in southeast Michigan. Water supplies, which are derived from the Detroit River, Lake Huron and Lake St. Clair, are more than sufficient to meet the perpetual needs of the service territory. Similarly, combined treatment capacity by the system's five plants greatly exceeds current and future projected demand levels. The capacity margin will decline with the decommissioning of one of the treatment plants but is still expected to be more than sufficient over at least the next 20 years. GLWA faces no issues relating to the water system and is in full compliance with the federal Lead and Copper Rule.

The sewer system is also a regional provider serving around 2.8 million people, or approximately 30% of Michigan's population, including the city. The system serves the city via DWSD on a retail basis and 76 communities through 18 wholesale contracts. The service territory consists of 944 square miles covering three counties in the Detroit-Warren-Dearborn metropolitan statistical area. Like the water system, sewer treatment capacity is more than sufficient to meet average demands, but wet weather flows can exceed system capacity. As a result GLWA operates certain combined sewer overflow facilities to manage these events. GLWA is in material compliance with its discharge requirements, although GLWA is a party to an administrative order dating back to 2011 requiring certain corrective measures relating to biosolids handling.

Population and customer growth for both systems have experienced modest annual declines for a number of years. Detroit's population in particular has experienced continuous decline, but suburban areas have picked up most of the migration. Wealth levels in the city are low (less than 50% of the U.S. average) while poverty (39%) and unemployment levels (9.3% as of June

2018) are high, although figures for the metropolitan area overall, which includes the city as well as the suburban customers, are generally in line with state and national averages.

Financial Summary — Sewer System

(\$000, Audited Years Ended June 30)

	2013	2014	2015	2016	2017	2018	2019	Projected			
								2020	2021	2022	2023
Balance Sheet											
Unrestricted Cash and Investments	50,298	116,899	197,070	188,063	205,179	—	—	—	—	—	—
Other Unrestricted Current Assets	231,613	260,368	241,429	146,602	99,583	—	—	—	—	—	—
Available Restricted Cash and Investments	—	—	—	5,813	5,500	—	—	—	—	—	—
Current Liabilities Payable from Unrestricted Assets	(280,203)	(272,343)	(276,396)	(172,737)	(181,761)	—	—	—	—	—	—
Net Working Capital	1,707	104,924	162,103	167,741	128,502	—	—	—	—	—	—
Net Fixed Assets	2,861,257	2,837,995	2,869,146	2,995,767	2,869,310	—	—	—	—	—	—
Net Long-Term Debt Outstanding	3,280,729	3,435,532	3,533,419	4,019,827	3,867,814	—	—	—	—	—	—
Operating Statement											
Operating Revenues	440,863	475,771	505,672	635,958	779,495	532,407	566,838	587,724	608,688	630,403	652,990
Non-Operating Revenues Available for Debt Service	(200)	(8,741)	(928)	1,089	(3,993)	5,298	4,571	3,556	3,548	3,618	3,596
Connection Fees	—	—	—	2,000	—	—	—	—	—	—	—
Total Revenues Available for Debt Service	440,663	467,030	504,743	639,047	775,502	537,705	571,409	591,280	612,236	634,021	656,586
Operating Expenditures (Excluding Depreciation)	223,394	207,173	195,079	288,339	436,462	265,161	272,881	278,158	283,392	288,733	294,178
Depreciation	121,464	118,409	119,848	152,825	194,349	—	—	—	—	—	—
Fitch-Calculated Operating Income	95,805	141,448	189,816	197,883	144,691	272,543	298,528	313,122	328,843	345,288	362,408
Net Revenues Available for Debt Service	217,269	259,857	309,665	350,708	339,040	272,543	298,528	313,122	328,843	345,288	362,408
Senior Lien Annual Debt Service	133,477	129,961	132,541	140,191	140,854	142,377	148,607	153,591	142,877	158,436	169,589
All-In Annual Debt Service	225,223	229,611	232,613	228,571	234,555	233,321	242,466	252,784	251,600	260,650	257,011
Required Transfers ^a	6,568	6,232	28,715	30,290	43,322	35,881	42,034	39,398	39,557	39,739	39,865
Financial Statistics											
Senior Lien Debt Service Coverage (x)	1.63	2.00	2.34	2.50	2.41	1.91	2.01	2.04	2.30	2.18	2.14
All-In Debt Service Coverage (x)	0.96	1.13	1.33	1.53	1.45	1.17	1.23	1.24	1.31	1.32	1.41
Coverage of Full Obligations (x) (a)	0.94	1.10	1.18	1.35	1.22	1.01	1.05	1.07	1.13	1.15	1.22
Days Cash on Hand	82	206	369	245	176	—	—	—	—	—	—
Days Working Capital	3	185	303	212	107	—	—	—	—	—	—
Debt / Net Plant (%)	115	121	123	134	135	—	—	—	—	—	—
Debt / Funds Available for Debt Service (x)	15.1	13.2	11.4	11.5	11.4	—	—	—	—	—	—
Outstanding L/T Debt Per Capita (\$)	1,172	1,227	1,262	1,436	1,381	—	—	—	—	—	—
Free Cash / Depreciation (%)	(12)	20	40	60	31	—	—	—	—	—	—

^aIncludes non-operating pension costs, professional service fees, assistance fund transfers, and lease payments. DWSD-Detroit Water and Sewerage Department (MI). GLWA-Great Lakes Water Authority (MI). Notes: Fitch has reclassified certain financial statement items for analytical purposes. Fiscals 2013–2015 reflects DWSD financials. Fiscals 2016–2023 reflect GLWA only with regards to 'Balance Sheet' items and both GLWA/DWSD with regards to 'Operating Statement' items. Source: GLWA, DWSD and Fitch.

Financial Summary — Water System

(\$000, Fiscal Years Ending June 30)

	2013	2014	2015	2016	2017	2018	2019	Projected			
								2020	2021	2022	2023
Balance Sheet											
Unrestricted Cash and Investments	47,674	112,901	99,145	167,293	267,336	—	—	—	—	—	—
Other Unrestricted Current Assets	171,157	137,893	161,656	117,317	96,900	—	—	—	—	—	—
Available Restricted Cash and Investments	—	—	—	2,357	2,990	—	—	—	—	—	—
Current Liabilities Payable from Unrestricted Assets	(168,266)	(186,137)	(202,839)	(151,106)	(136,374)	—	—	—	—	—	—
Net Working Capital	50,565	64,657	57,962	135,860	230,852	—	—	—	—	—	—
Net Fixed Assets	2,083,632	2,011,644	1,949,697	2,143,613	2,039,477	—	—	—	—	—	—
Net Long-Term Debt Outstanding	2,568,176	2,632,502	2,515,343	2,977,404	3,078,206	—	—	—	—	—	—
Operating Statement											
Operating Revenues	355,528	349,369	364,278	432,204	459,925	421,202	405,077	419,790	435,124	450,934	468,215
Non-Operating Revenues Available for Debt Service	5,564	1,894	10,039	392	(450)	5,860	3,837	3,669	3,367	2,975	2,504
Total Revenues Available for Debt Service	361,092	351,263	374,318	432,596	459,474	427,062	408,914	423,458	438,490	453,909	470,720
Operating Expenditures (Excluding Depreciation)	168,453	146,582	136,030	151,942	181,028	166,942	167,367	170,441	173,605	176,832	180,124
Depreciation	83,031	85,026	124,371	122,045	160,505	—	—	—	—	—	—
Fitch-Calculated Operating Income	109,607	119,655	113,916	158,608	117,941	260,119	241,547	253,018	264,885	277,077	290,596
Net Revenues Available for Debt Service	192,638	204,681	238,288	280,653	278,446	260,119	241,547	253,018	264,885	277,077	290,596
Senior Lien Annual Debt Service	130,182	140,249	134,821	128,178	134,235	127,687	119,231	123,910	126,616	127,786	132,968
All-In Annual Debt Service	172,459	182,465	178,924	171,139	175,010	172,905	170,962	178,889	190,786	187,370	192,902
Required Transfers ^a	5,796	2,827	22,107	32,839	35,260	33,427	31,451	31,948	32,018	32,093	32,179
Financial Statistics											
Senior Lien Debt Service Coverage (x)	1.48	1.46	1.77	2.19	2.07	2.04	2.03	2.04	2.09	2.17	2.19
All-In Debt Service Coverage (x)	1.12	1.12	1.33	1.64	1.59	1.50	1.41	1.41	1.39	1.48	1.51
Coverage of Full Obligations (x) ^a	1.08	1.10	1.19	1.38	1.32	1.26	1.19	1.20	1.19	1.26	1.29
Days Cash on Hand	103	281	266	408	545	—	—	—	—	—	—
Days Working Capital	110	161	156	326	465	—	—	—	—	—	—
Debt / Net Plant (%)	123	131	129	139	151	—	—	—	—	—	—
Debt / Funds Available for Debt Service (x)	13.3	12.9	10.6	10.6	11.1	—	—	—	—	—	—
Outstanding L/T Debt Per Capita (\$)	676	693	662	784	810	—	—	—	—	—	—
Free Cash / Depreciation (%)	17	23	30	63	42	—	—	—	—	—	—

^aIncludes non-operating pension costs, professional service fees, assistance fund transfers, and lease payments. DWSD-Detroit Water and Sewerage Department (MI). GLWA-Great Lakes Water Authority (MI). Notes: Fitch has reclassified certain financial statement items for analytical purposes. Fiscals 2013-2015 reflects DWSD financials. Fiscals 2016-2023 reflect GLWA only with regards to 'Balance Sheet' items and both GLWA/DWSD with regards to 'Operating Statement' items. Source: GLWA, DWSD and Fitch.

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CREDIT OPINION

4 September 2018


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Great Lakes Water Authority, MI Water Enterprise

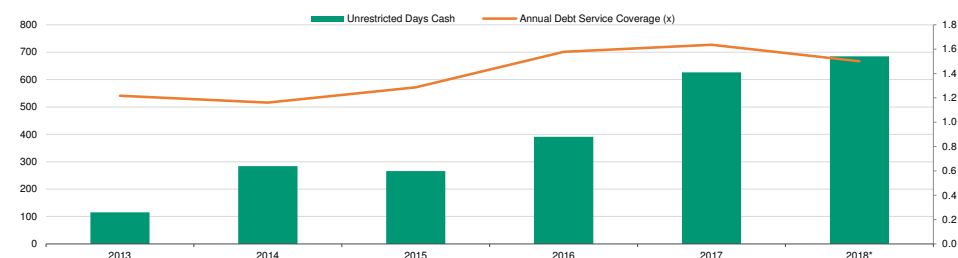
Update following upgrade of water revenue bonds to A2 and A3

Summary

The Great Lakes Water Authority's (GLWA) [Water Enterprise](#) (A2 stable) has maintained strong financial metrics in recent years and we expect this to continue. A combination of GLWA's commitment to raising rates and stabilization of the customer base supports an expectation of continued and moderate revenue growth. The system's healthy liquidity and debt service coverage balance a very high debt burden. At the same time, the enterprise has resources available to support capital spending in ways other than issuing debt. Though we anticipate more borrowing in the coming years, continued revenue growth should moderate the system's debt burden. The authority has achieved operating efficiencies by reducing staff and right-sizing treatment facilities. The system's sizable service area and scale of operations remain credit strengths, though there are and will remain economic weaknesses in certain areas of the customer base. Activity in the [City of Detroit](#) (Ba3 stable) accounts for a large share of annual revenue and the retail system in the city is still contending with leaks and water losses. We do not expect addressing these challenges will be a significant burden as long as revenue growth and the underlying economy remain healthy. An economic setback in the region, however, could intensify operating challenges.

On August 31, 2018 we upgraded to A2 and A3 from A3 and Baa1 GLWA's senior and second lien water revenue debt, respectively.

Exhibit 1

Debt service coverage and liquidity have improved and are strong


* Unaudited

Source: Audited financial statements of Great Lakes Water Authority and City of Detroit Water Fund

Credit strengths

- » Very large system that provides essential water services to approximately 38% of the state's population
- » Commitment to annual revenue enhancements to support sound debt service coverage and healthy liquidity
- » Implementation of operational efficiencies, including right-sizing of personnel and water treatment capacity

Credit challenges

- » Declining water consumption trend given economic and demographic weaknesses in portions of the service area, as well as general conservation efforts
- » High leverage will moderate slowly given outstanding capital needs and plans to issue additional debt
- » High combined operating needs and fixed costs leave little margin to miss revenue targets in order to maintain strong liquidity and expand pay-go capital financing

Rating outlook

The stable outlook incorporates our expectation that key financial metrics will remain favorable and mitigate high leverage of pledged revenue.

Factors that could lead to an upgrade

- » Sustained expansion and diversification of the service area's economic base
- » Growth in revenue that continues to outpace borrowing so as to moderate leverage of pledged resources

Factors that could lead to a downgrade

- » Renewed economic stress that pressures consumption and revenue trends
- » Material reduction to the system's liquidity or debt service coverage ratios
- » Growth in leverage of the water system's net revenue

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Key indicators

Exhibit 2

Great Lakes Water Authority, Water Enterprise, MI					
System Characteristics					
Asset Condition (Net Fixed Assets / Annual Depreciation)	14 years				
System Size - O&M (\$000)	\$155,776				
Service Area Wealth: MFI % of US median	101.20%				
Legal Provisions					
Rate Covenant (x)	1.20x				
Debt Service Reserve Requirement	DSRF funded at lesser of standard 3-prong test				
Management					
Rate Management	A				
Regulatory Compliance and Capital Planning	A				
Financial Strength					
	2013	2014	2015	2016	2017
Operating Revenue (\$000)	\$361,092	\$357,291	\$366,104	\$426,450	\$442,093
System Size - O&M (\$000)	\$151,204	\$145,268	\$136,030	\$156,333	\$155,776
Net Revenues (\$000)	\$209,888	\$212,023	\$230,074	\$270,117	\$286,317
Outstanding Revenue Debt (\$000)	\$2,546,229	\$2,505,049	\$2,394,144	\$2,278,059	\$2,358,137
Annual Debt Service (\$000)	\$172,459	\$182,645	\$178,924	\$171,139	\$175,010
Annual Debt Service Coverage (x)	1.2x	1.2x	1.3x	1.6x	1.6x
Cash on Hand	115 days	284 days	266 days	391 days	626 days
Debt to Operating Revenues (x)	7.1x	7.0x	6.5x	5.3x	5.3x

See the coverage section under Debt Service Coverage and Liquidity for more details about what's included in revenues, expenditures, and debt service, and how coverage is calculated under the bond resolution.

Source: Audited financial statements of Great Lakes Water Authority and City of Detroit Water Fund

Profile

The [Great Lakes Water Authority](#) (GLWA) is the regional wholesale provider of water and sewer services to southeast [Michigan](#) (Aa1 stable). Fully established in 2016, GLWA is an incorporated municipal authority operating under the guidance of a six-member board consisting of one appointee each of the counties of [Macomb](#) (Aa1 stable), [Oakland](#) (Aaa stable), and [Wayne](#) (Baa2 stable), two appointees of the Mayor of Detroit, and one of the Governor of Michigan. The water enterprise treats water from Lake Huron, Lake St. Clair and the Detroit River and distributes treated water to a service area population of approximately 3.8 million.

Detailed credit considerations

Service area and system characteristics: very large service area in southeast Michigan

The regional water supply system, which is leased from the City of Detroit, covers a vast 1,760 square miles in southeast Michigan. It provides treated water to all or portions of eight counties. The system is a wholesale enterprise whose articles of incorporation allow for direct retail service. Residential and business activity within the City of Detroit, has accounted for between 20% and 25% of annual GLWA revenue over the last five fiscal years (2013-2017). Residents and businesses within Detroit are retail customers of the Detroit Water and Sewerage Department (DWSD). The remainder of water sales are to 127 suburban customers via 87 wholesale customer contracts.

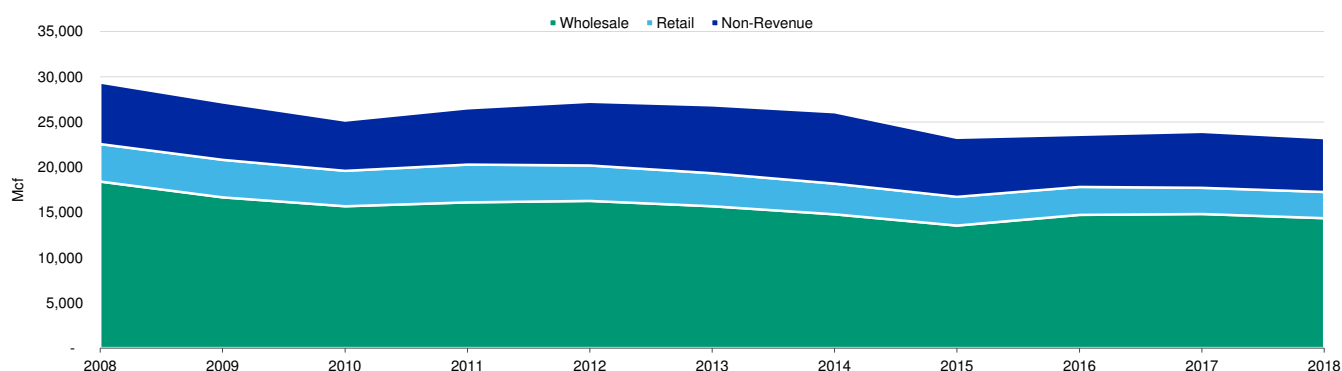
Since 2008, 80 of GLWA's wholesale customers signed new model contracts with 30-year terms and automatic 10-year renewal. Customers must provide notice of intent to terminate five years in advance of the end of the contract term. Effective December 1, 2017 the City of Flint entered into the 30-year model contract, which will provide the city with a stable source of quality treated water. The contract was signed in conjunction with a master agreement and regional collaboration among the city and GLWA, as well as the Genesee County Drain Commissioner (GCDC), [Karegnondi Water Authority](#) (KWA; A2 stable), and the State of Michigan. The agreement provides for reciprocal backup water supply from GCDC and GLWA's use of Flint's KWA raw water rights.

Although the creation of the KWA resulted in the exit of GCDC as a wholesale customer, we anticipate the model contracts will ensure a stable customer base going forward. GCDC had been the water system's third largest customer, accounting for 5.9% of wholesale customer charges in fiscal 2017. Stabilization of the regional economy should further support the resiliency of the customer base. Since peaking at 15.1% in 2009, the Detroit MSA's unemployment rate has fallen to 4.4% as of August 2018. Median family income has also gradually improved, and is now estimated at 101.2% of the national figure.

Similar to many water systems in the Midwest, consumption is falling. From 2008 to 2018 the volume of water billed dropped by roughly 23%. At the same time, non-revenue volume produced by the water utility remains very high, driven mainly by leaks or major breaks in the transmission and distribution systems. Over the past five years non-revenue water accounted for approximately 27% of water produced. Production volumes, however, are not metered, and the recent cost of service study indicates production volumes are likely overstated.

Exhibit 3

Water usage continues to decline, while non-revenue water production remains high



Fiscal 2018 figures are preliminary

Source: Audited financial statements of Great Lakes Water Authority

Declining usage can be traced to several factors, including weather trends and conservation efforts. While this trend may stabilize over the long term, sustained upticks in usage are unlikely absent the expansion of the system into new wholesale contract communities. Population in the Detroit MSA fell nearly 4% between 2000 and 2010, and while recent estimates point to flat trends in the service area since, material growth may be unlikely. GLWA has adjusted its rate structure to increase fixed rate charges, which will continue to mitigate downward effects of consumption decline.

Debt service coverage and liquidity: financial metrics expected to remain healthy

Debt service and liquidity strengthened in recent years and we expect both to remain healthy. The authority plans to limit annual growth in its water system revenue requirements by 4%, but is committed to adjusting service charges, as needed, to meet bond covenants. Each year GLWA conducts an extensive study of both its wholesale service charges and allocated annual revenue requirement to retail water customers, with the purpose of adjusting revenue to reflect the cost of operations, depreciation expense, and return on the rate base. Due to positive operating variances in fiscal 2017, GLWA's needed revenue increases fell below 4% in fiscal 2018 and in the adopted fiscal 2019 budget.

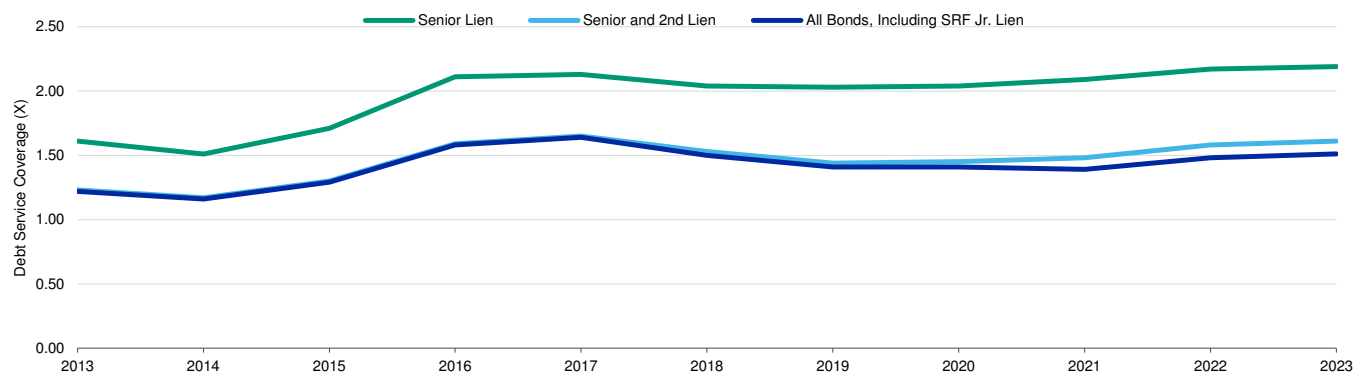
Significant growth in retail rates in Detroit could challenge the capacity of some of DWSD's customers to pay. Delinquent Detroit retail accounts have remained high, though DWSD has enhanced both collection efforts and customer assistance programs, including participating in GLWA's water residential assistance program (WRAP). Additionally, DWSD funds a budget reserve, per the bond ordinance, to cover shortfalls in retail collections. The significant portion of annual revenue derived from Detroit retail operations remains a key credit challenge that could affect debt service coverage and liquidity. However, in conjunction with GLWA's commitment to manageable revenue requirement increases, DWSD's efforts should limit growth in delinquent retail accounts, especially if moderate economic growth continues.

Fiscal 2017 marked GLWA's first full year in operation, during which total water revenue grew 3.7%. Growth in revenue supported 2.1x coverage of senior lien debt service, 1.7x coverage on combined senior and second lien debt service, and 1.6x coverage of all debt service including junior lien state revolving fund payments. Thought audited information is not yet available for fiscal 2018, management estimates coverage at 2.0x and 1.5x, respectively, of senior lien and total debt service.

Per the master bond ordinance, revenue includes all money collected from the regional wholesale and local retail water customer payments deposited to a lockbox administered by a third-party trustee. O&M expenses are defined as cash transfers made to the GLWA's and DWSD's respective operation and maintenance funds. Bifurcated accounting between the GLWA's regional and DWSD's local operations means adjustments must be made to accurately assess coverage under the master bond ordinance.

Exhibit 4

Debt service coverage expected to remain stable



2018 figures are unaudited, 2019-2023 figures are projected

Source: Audited financial statements and projections of Great Lakes Water Authority

LIQUIDITY

The water system's liquidity is strong and will remain so despite planned spending. At the close of fiscal 2017 the water fund had an unrestricted cash balance of \$267.3 million, equivalent to 626 days of O&M. The authority estimates cash increased to \$313.2 million at the close of fiscal 2018. The water fund also has significant restricted cash assets held for budget stabilization, debt service, and capital. The authority anticipates cash will remain at or above 433 days of operations through 2023. This accounts for up to \$350 million of planned capital spending from reserves and surplus revenue over the next five years.

Debt and legal covenants: high debt burden could moderate with sustained revenue growth

Leverage of pledged water revenue is high. Current long-term debt across all liens is 5.3x fiscal 2017 operating revenue. Upcoming capital needs include improvements to the water delivery infrastructure (\$274 million), water treatment plants (\$210 million), and general purpose and central services (\$99 million). In addition to financing these improvements with reserves and surplus revenue, GLWA plans to issue approximately \$52.2 million in revenue bond, and \$137.2 million in junior lien SRF loans over the next five years. The increase in debt will be more than offset by the amount paid down over the next five years. Though we expect the system's debt burden will remain high, sustained revenue growth would make leverage less of a credit challenge going forward.

DEBT STRUCTURE

All water revenue debt of the GLWA is fixed rate. GLWA's rate covenant requires net revenue coverage of debt service equal to 120% for senior lien bonds, 110% for second lien bonds and 100% for any subordinate lien debt. Senior and second lien bonds benefit from debt service reserve funds (DSRF) sized at lessor of the standard three-prong test. As of July 1, 2018, approximately 12% and 13%, respectively, of the senior and second lien DSRF requirements are satisfied with cash. The balances of each are satisfied with various surety or insurance policies.

DEBT-RELATED DERIVATIVES

GLWA is not party to any derivative agreements associated with its pledge of net water revenue.

PENSIONS AND OPEB

Current employees of GLWA are participants in a defined contribution benefit plan, though many are scheduled to receive accrued pension benefits from the City of Detroit's frozen defined benefit General Retirement System (GRS). Pursuant to the City of Detroit's bankruptcy settlement, GLWA will contribute \$45.4 million annually to GRS through fiscal 2023 to accelerate amortization of the GRS unfunded liability associated with GLWA employees. The water enterprise's share of the annual GLWA payment to GRS will be \$19.5 million, or approximately 5% of fiscal 2017 gross revenue, not inclusive of operating revenue from DWSD pledged to debt service. Less than half of the annual GRS payment is considered O&M and senior to debt service.

Beyond 2023, GLWA's payments to GRS will be based on the actuarial needs of the plan and sized to amortize any unfunded liability associated with GLWA employees. GLWA makes no payments towards accrued retiree healthcare liabilities as the City of Detroit's bankruptcy settlement eliminated those benefits. GLWA established a new defined contribution retiree healthcare savings plan, resulting in no potential unfunded liability.

Management and governance: management works to sustain regional cooperation

The management of GLWA has made strides in enhancing operational efficiencies and regional cooperations since its formation. To that end GLWA dramatically right-sized its work force, reducing full time employees by over 1,000 over the past several years. Additionally, since system capacity exceeds demand, management has de-rated parts of its treatment plants. This allows the water system to reduce capital costs while preserving flexibility to put the facilities back to use. Rate structure adjustments and payment assistance to low-income retail customers should support revenue stability. Additionally, the number of wholesale model contracts entered into points to increased regional collaboration.

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EMEA	44-20-7772-5454

CREDIT OPINION

4 September 2018


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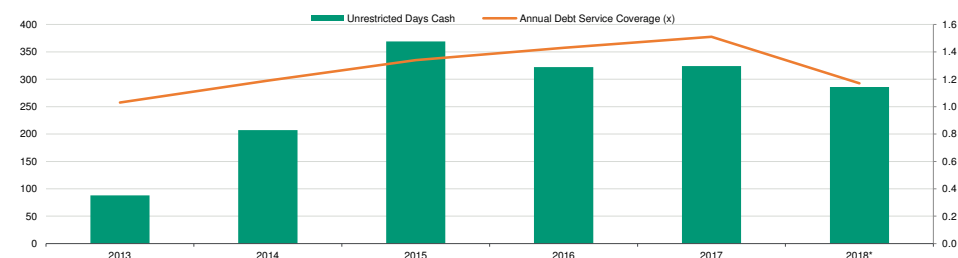
Update following upgrade of sewer revenue bonds to A2 and A3

Summary

The Great Lakes Water Authority's (GLWA) [Sewer Enterprise](#) (A2 stable) has maintained strong financial metrics in recent years and we expect this to continue. A combination of GLWA's commitment to raising rates and stabilization of the customer base supports an expectation of continued and moderate revenue growth. The system's healthy liquidity and debt service coverage balance a very high debt burden. At the same time, the enterprise has resources available to support capital spending in ways other than issuing debt. Though we anticipate more borrowing in the coming years, continued revenue growth should moderate the system's debt burden. The authority has achieved operating efficiencies by reducing staff and optimizing treatment facilities. The system's sizable service area and scale of operations remain credit strengths, though there are and will remain economic weaknesses in certain areas of the customer base. Activity in the [City of Detroit](#) (Ba3 stable) accounts for a very large share of annual revenue and the retail system in the city, in particular, is still continuing a strategy to mitigate future combined sewage overflows (CSOs). We do not expect addressing these challenges will be a significant burden as long as revenue growth and the underlying economy remain healthy. An economic setback in the region, however, could intensify operating challenges.

On August 31, 2018 we upgraded to A2 and A3 from A3 and Baa1 GLWA's senior and second lien sewer revenue debt, respectively.

Exhibit 1

Debt service coverage is satisfactory while liquidity is strong


* Unaudited

Source: Audited financial statements of Great Lakes Water Authority and City of Detroit Sewer Fund

Credit strengths

- » Very large system that provides essential wastewater services to an estimated 2.8 million residents
- » Commitment to annual revenue enhancements to support sound debt service coverage and healthy liquidity
- » Simplified monthly fixed rate structure mitigates declining usage while providing stable cash flow throughout the year

Credit challenges

- » Economic and demographic weaknesses in portions of the service area, including the City of Detroit which accounts for roughly 45% of annual operating revenue
- » High leverage will moderate slowly given outstanding capital needs and plans to issue additional debt
- » High combined operating needs and fixed costs leave little margin to miss revenue targets in order to maintain strong liquidity and expand pay-go capital financing

Rating outlook

The stable outlook incorporates our expectation that key financial metrics will remain favorable and mitigate high leverage of pledged revenue.

Factors that could lead to an upgrade

- » Sustained expansion and diversification of the service area's economic base
- » Growth in revenue that continues to outpace borrowing so as to moderate leverage of pledged resources

Factors that could lead to a downgrade

- » Renewed economic stress that pressures consumption and revenue trends
- » Material reduction to the system's liquidity or debt service coverage ratios
- » Growth in leverage of the sewer system's net revenue

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Key indicators

Exhibit 2

Great Lakes Water Authority, Sewer Enterprise, MI					
System Characteristics					
Asset Condition (Net Fixed Assets / Annual Depreciation)	15 years				
System Size - O&M (\$000)	\$231,095				
Service Area Wealth: MFI % of US median	101.20%				
Legal Provisions					
Rate Covenant (x)	1.20x				
Debt Service Reserve Requirement	DSRF funded at lesser of standard 3-prong test				
Management					
Rate Management	A				
Regulatory Compliance and Capital Planning	A				
Financial Strength					
	2013	2014	2015	2016	2017
Operating Revenue (\$000)	\$440,663	\$479,929	\$506,903	\$539,481	\$585,386
System Size - O&M (\$000)	\$209,785	\$206,052	\$195,079	\$213,432	\$231,095
Net Revenues (\$000)	\$230,878	\$273,877	\$311,824	\$326,049	\$354,291
Outstanding Revenue Debt (\$000)	\$3,326,187	\$3,260,648	\$3,372,956	\$3,270,266	\$3,144,592
Annual Debt Service (\$000)	\$225,223	\$229,611	\$232,613	\$228,571	\$234,555
Annual Debt Service Coverage (x)	1.0x	1.2x	1.3x	1.4x	1.5x
Cash on Hand	88 days	207 days	369 days	322 days	324 days
Debt to Operating Revenues (x)	7.5x	6.8x	6.7x	6.1x	5.4x

See the coverage section under Debt Service Coverage and Liquidity for more details about what's included in revenues, expenditures, and debt service, and how coverage is calculated under the bond resolution.

Source: Audited financial statements of Great Lakes Water Authority and City of Detroit Sewer Fund

Profile

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Detailed credit considerations

Service area and system characteristics: very large service area in southeast Michigan

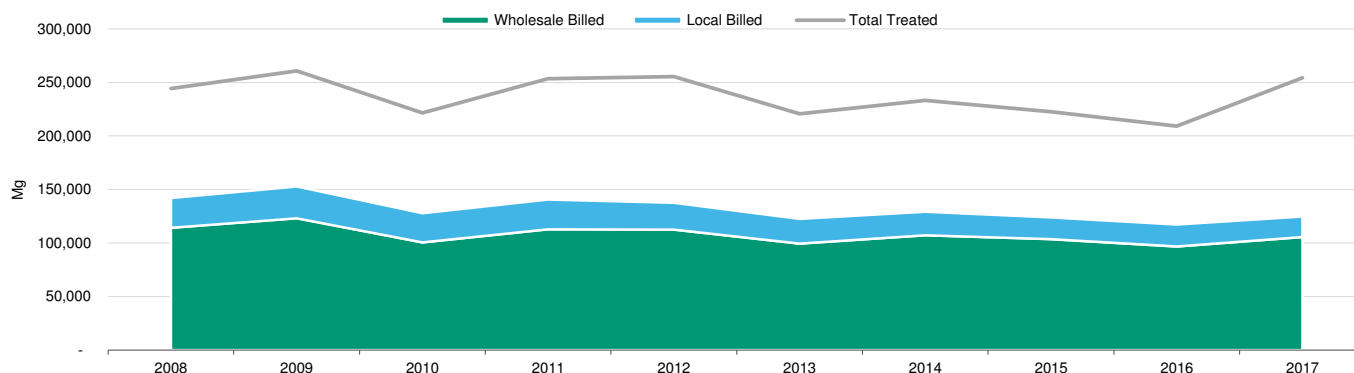
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Since 2009, 11 of GLWA's wholesale customers signed new model contracts with 30-year terms and automatic 10-year renewal. Customers under the model contract must provide notice of intent to terminate five years in advance of the end of the contract term. All remaining wholesale customers that are not on the model contract have purchased services from DWSD and subsequently GLWA since at least 1961. Stabilization of the regional economy should further support the resiliency of the customer base. Since peaking at 15.1% in 2009, the Detroit MSA's unemployment rate has fallen to 4.4% as of August 2018. Median family income has also gradually improved, and is now estimated at 101.2% of the national figure.

Similar to many older sewer systems, GLWA's wastewater utility has a significant amount of combined sewer infrastructure. As such, a large degree of treated wastewater volume is related to wet weather events. Over the past ten years only an average of 36% of total treated wastewater volume has been a result of sanitary volume associated with customer water usage. The remaining 64% reflects water from runoff of wet weather events and infiltration. Greater ability to control infiltration would likely lead to reductions in treatment costs.

Exhibit 3

Runoff from wet weather events continue to account for a large amount of treated wastewater



Source: Audited financial statements of Great Lakes Water Authority

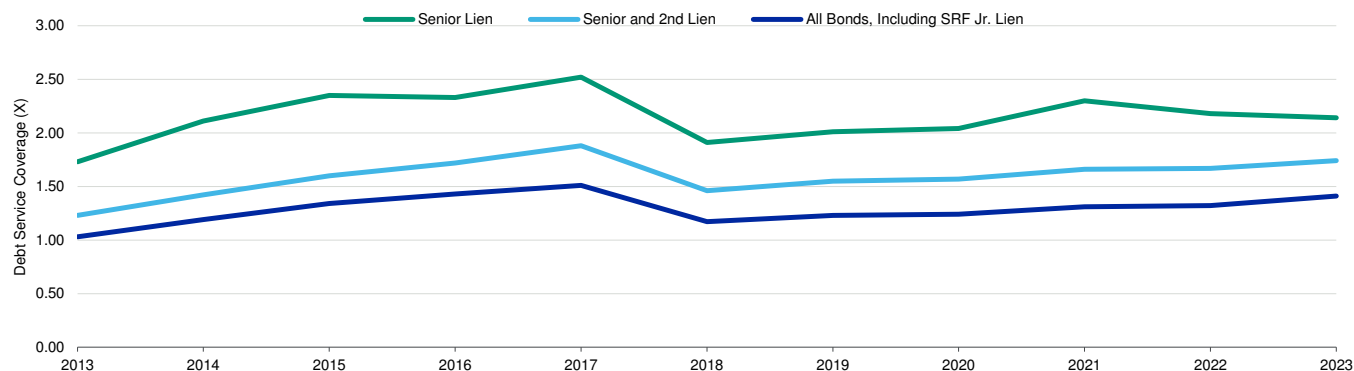
Debt service coverage and liquidity: financial metrics expected to remain healthy

Debt service and liquidity strengthened in recent years and we expect both to remain healthy. The authority plans to limit annual growth in its sewer system revenue requirements by 4%, but is committed to adjusting service charges, as needed, to meet bond covenants. Each year GLWA conducts an extensive study of both its wholesale service charges and allocated annual revenue requirement to retail sewer customers, with the purpose of adjusting revenue to reflect the cost of operations, depreciation expense, and return on the rate base. Due to positive operating variances in fiscal 2017, GLWA's needed revenue increases fell below 4% in fiscal 2018 and in the adopted fiscal 2019 budget.

Significant growth in retail rates in Detroit could challenge the capacity of some of DWSD's customers to pay. Delinquent Detroit retail accounts have remained high, though DWSD has enhanced both collection efforts and customer assistance programs, including participating in GLWA's water residential assistance program (WRAP). Additionally, DWSD funds a budget reserve, per the bond ordinance, to cover shortfalls in retail collections. The significant portion of annual revenue derived from Detroit retail operations remains a key credit challenge that could affect debt service coverage and liquidity. However, in conjunction with GLWA's commitment to manageable revenue requirement increases, DWSD's efforts should limit growth in delinquent retail accounts, especially if moderate economic growth continues.

Fiscal 2017 marked GLWA's first full year in operation, during which total sewer revenue grew 4.1%. Growth in revenue supported 2.5x coverage of senior lien debt service, 1.9x coverage on combined senior and second lien debt service, and 1.5x coverage of all debt service including junior lien state revolving fund payments. Though audited information is not yet available for fiscal 2018, management estimates coverage at 1.9x and 1.2x, respectively, of senior lien and total debt service.

Exhibit 4

Debt service coverage expected to remain stable

2018 figures are unaudited, 2019-2023 figures are projected

Source: Audited financial statements and projections of Great Lakes Water Authority

Per the master bond ordinance, revenue includes all money collected from the regional wholesale and local retail sewer customer payments deposited to a lockbox administered by a third-party trustee. O&M expenses are defined as cash transfers made to the GLWA's and DWSD's respective operation and maintenance funds. Bifurcated accounting between the GLWA's regional and DWSD's local operations means adjustments must be made to accurately assess coverage under the master bond ordinance.

LIQUIDITY

The sewer system's liquidity is strong and will remain so despite planned spending. At the close of fiscal 2017 the sewer fund had an unrestricted cash balance of \$205.2 million, equivalent to 324 days of O&M. The authority estimates cash increased to \$208.1 million at the close of fiscal 2018. The sewer fund also has significant restricted cash assets held for budget stabilization, debt service, and capital. The authority anticipates total combined cash will remain at or above 342 days of operations through 2023. This accounts for up to \$174 million of planned capital spending from reserves and surplus revenue over the next five years.

Debt and legal covenants: high debt burden could moderate with sustained revenue growth

Leverage of pledged sewer revenue is high. Current long-term debt across all liens is 5.5x fiscal 2017 operating revenue. Upcoming capital needs include improvements to the water resource recovery facility (\$238 million), collection system infrastructure (\$143 million), and general purpose, metering, and central services (\$148 million). In addition to financing these improvements with reserves and surplus revenue, GLWA plans to issue approximately \$354 million in revenue bonds and \$34 million in junior lien SRF loans over the next five years. The increase in debt will be offset by the amount of outstanding principal paid down over the next five years. Though we expect the system's debt burden will remain high, sustained revenue growth would make leverage less of a credit challenge going forward.

DEBT STRUCTURE

GLWA's rate covenant requires net revenue coverage of debt service equal to 120% for senior lien bonds, 110% for second lien bonds and 100% for any subordinate lien debt. Senior and second lien bonds benefit from debt service reserve funds (DSRF) sized at the lesser of the standard three-pronged test. As of July 1, 2018, approximately 24% and 42%, respectively, of the senior and second lien DSRF requirements are satisfied with cash. The balances of each are satisfied with various surety or insurance policies.

With the exception of the outstanding Series 2006D senior lien bonds, all debt paid from net sewer revenue is fixed rate. The Series 2006D bonds are floating rate notes and make up a modest 7% of total debt paid by sewer revenue.

DEBT-RELATED DERIVATIVES

GLWA is not party to any derivative agreements associated with its pledge of net sewer revenue.

PENSIONS AND OPEB

Current employees of GLWA are participants in a defined contribution benefit plan, though many are scheduled to receive accrued pension benefits from the City of Detroit's frozen defined benefit General Retirement System (GRS). Pursuant to the City of Detroit's bankruptcy settlement, GLWA will contribute \$45.4 million annually to GRS through fiscal 2023 to accelerate amortization of the GRS

unfunded liability associated with GLWA employees. The sewer enterprise's share of the annual GLWA payment to GRS will be \$25.9 million, or approximately 4.3% of fiscal 2017 gross revenue, not inclusive of operating revenue from DWSD pledged to debt service. Less than of the annual GRS payment is considered O&M and senior to debt service.

Beyond 2023, GLWA's payments to GRS will be based on the actuarial needs of the plan and sized to amortize any unfunded liability associated with GLWA employees. GLWA makes no payments towards accrued retiree healthcare liabilities as the City of Detroit's bankruptcy settlement eliminated those benefits. GLWA established a new defined contribution retiree healthcare savings plan, resulting in no potential unfunded liability.

Management and governance: management works to sustain regional cooperation

The management of GLWA has made strides in enhancing operational efficiencies and regional cooperations since its formation. To that end GLWA dramatically right-sized its work force, reducing full time employees by over 1,000 over the past several years. Additionally, management's master planning process has focused on leveraging the entire region's existing infrastructure to more efficiently address wet weather events, utilizing more green technology, and evaluating resource recovery options and energy reduction opportunities. Rate structure adjustments and payment assistance to low-income retail customers should support revenue stability. Additionally, the number of wholesale model contracts entered into points to increased regional collaboration.

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Credit Profile

US\$155.585 mil wtr supp sys rev rfdg 2nd ln bnds ser 2018A due 07/01/2029

<i>Long Term Rating</i>	A+/Stable	New
Great Lakes Wtr Auth wtr (2nd lien)		
<i>Long Term Rating</i>	A+/Stable	Upgraded
Great Lakes Wtr Auth WTRSWR		
<i>Long Term Rating</i>	AA-/Stable	Upgraded

Rationale

S&P Global Ratings has assigned its 'A+' rating to the Great Lakes Water Authority, Mich.'s (GLWA) series 2018 water supply system refunding second-lien bonds. We have also raised our ratings on the authority's existing senior-lien bonds three notches to 'AA-' from 'A-' and their existing second lien bonds to 'A+' from 'BBB+'. The outlook is stable.

The upgrade is based on several factors:

- Oversight through an agency relationship and cooperation with the Detroit Water and Sewer Department (DWSD) and its governing Board of Water Commissioners that we view as strong and supportive of credit quality. Because of Detroit's economy that we view as very weak and historical collections/bad debt issues, we view both the existence and continuation of these functions as key to the maintenance of the rating at its current level.
- Overall management and governance functions that we also view as supportive of credit quality at the current rating level. GLWA management maintains active communication with both the DWSD retail system and its wholesale customers and has a comprehensive set of internal policies related to, among other things, maintenance of certain financial targets, key performance indicators for both financial and operational metrics, and internal controls.
- Actual financial performance has continued to exceed projections from prior feasibility studies. Now that GLWA has two full fiscal years (2017 and 2018) of operating as a separate entity from DWSD, and that various reconciliations and adjustments related to the separation have already taken place, we would expect that future variances to the feasibility studies may not be as dramatic. However, given GLWA's comprehensive budgeting practices and strong budgetary oversight of DWSD's operations, we would expect that future financial performance should be largely consistent with the most current projections.
- GLWA is not under any regulatory-driven capital costs from consent orders or consent decrees. While we view the GLWA system as highly leveraged, the fact that all of the capital plan is forward-looking and not mostly being used to cure regulatory infractions is a key credit strength that is supportive of the current rating level.
- Limited future exposure to pension cost escalation from legacy Detroit obligations resulting from prior bankruptcy negotiations. It is our understanding that after the 2023 fiscal year, both GLWA and DWSD pension costs related to legacy pension plans will drop from a total for both water and sewer systems of \$45.4 million (which is a mandated contribution based on Detroit's bankruptcy plan of adjustment) to what is currently projected to be no more than \$9.1 million. These additional payments would be used to retire the remaining unfunded liability from the

closed/legacy pension plans that has arisen after the original payments were determined in 2014.

Additional factors supporting the rating include the following:

- A diverse revenue stream from a large number of wholesale customers;
- Revenues from both wholesale customers and the DWSD retail system that are mostly fixed, which, in our view, significantly insulate GLWA's financial performance from volatility caused by weather and flow variances.

Offsetting these strengths is Detroit's economy, which we consider very weak and which could continue to place downward pressure on utility collection rates in the city, and high system leverage, that we do not believe will abate significantly at least over the two-year outlook horizon.

The ratings also reflect the application of our wholesale utility criteria, but we do not follow a purely weak-link approach since GLWA has, in our view, additional financial strengths that could be used to support debt payments if a single participant does not fulfil its payment obligations. These strengths include pledged reserves and unrestricted liquidity available at the wholesaler GLWA level; the ability to adjust revenue requirements to participants as its cost structure changes; and strong management policies related to both the regional system and Detroit's local system. The fact that GLWA's service base is large and serves a large percentage of the state's population also supports our view that the ratings should reflect that diversity, with overall economic considerations playing a more prominent role in the credit analysis.

Details Of Legal Framework Relevant To The Credit Rating

The bonds are secured by a statutory lien on pledged assets of the system, prioritized by the lien status, which include net revenues of GLWA's water supply system, along with investments credited to the water supply and earnings on those investments. The net revenue pledge is constituted from gross revenues of the DWSD retail and the GLWA regional systems, which cover both systems' operating and maintenance (O&M) expenses. A rate covenant stipulates that the GLWA board set rates to produce at least 1.2x coverage of senior-lien debt, 1.1x for second-lien bonds, and 1x for junior-lien bonds. The ability to issue additional bonds exists if net revenues for the previous fiscal year, or net revenues adjusted by approved rate increases and system expansion for the current or next fiscal year, produce coverage of maximum annual debt service (MADS; including the proposed bonds) of at least those levels indicated in the rate covenant for the particular liens.

There is also a debt service reserve (DSR) for senior-lien bonds equal to MADS or the lesser of the standard three-prong test, and for second-lien bonds equal to MADS or the lesser of the standard three-prong test. On achieving approval from at least 51% of senior- and second-lien bondholders and having appropriate senior-lien ratings from at least two credit rating agencies no lower than 'AA-' or the equivalent, GLWA, through amendments to the master bond ordinance (MBO), has the option to eliminate this reserve requirement on its outstanding and future bonds on any lien for which approval has been granted. If this proposed amendment is approved, we currently view the effects as credit neutral; however, our criteria methodology would indicate that if credit quality deteriorated, the importance of a DSR becomes a more important credit factor by providing immediate additional liquidity pledged to bondholders. To date,

GLWA has achieved bondholder approval for this amendment from about 33% and 58% of senior- and second-lien bondholders, respectively.

The statutory lien on pledged assets is well established by state statute under Act 94 of 1933 (as amended).

Under the GLWA master bond ordinance, U.S. Bank N.A. is the trustee.

We view the numerous oversight and control functions that GLWA has over Detroit's retail system as supportive of both the overall legal framework and the ability of the GLWA regional system to help make the net revenues originating from Detroit's local system more predictable, which in turn results in an analysis that focuses more on this framework as opposed to one that benchmarks the rating specifically on our view of DWSD's creditworthiness. The primary three documents that place parameters around this operating relationship between the two entities are the water and sewer lease agreements, and both a service agreement and memorandum of understanding (MOU) between GLWA and the Detroit retail system.

The major provisions of both lease agreements that we view as supportive of the overall legal and operational framework include the following:

- Explicit language that requires all revenues collected by Detroit be held in segregated accounts in trust and remitted within five days of receipt to a trustee-held pledged revenue account under the master bond ordinance.
- Requirements that both GLWA and Detroit retail maintain a biennial budget and a five-year capital improvement plan (CIP).
- In consideration of a lease payment from GLWA for use by the Detroit local system, the use of those funds are restricted to either repayment of debt or capital projects.
- GLWA has the exclusive and direct right to establish all rates and charges, including the retail users within Detroit (although through the service agreement, GLWA delegates its right to set rates to DWSD).
- All vendor and employee contracts related to GLWA operations are assigned to the authority.

The major provisions of the service agreement and MOU that we view as supportive of the overall legal and operational framework include the following:

- If certain performance standards are not met, GLWA can revoke its appointment of Detroit as its agent for collections of revenue requirements.
- GLWA will set revenue requirements for DWSD that are related to the costs for providing services, and, in turn, Detroit will set retail rates in a fashion that meets GLWA's revenue requirement.
- All responsibilities for discharge permit and other environmental compliance requirements are explicitly allocated between Detroit retail and GLWA.
- DWSD is required to submit periodic budget and operational reporting requirements to GLWA and discuss these results at a Reconciliation Committee, which is also the initial mechanism to develop a plan for DWSD to cure any budget shortfalls it experiences.
- The service agreement has an explicit mechanism for dispute resolution.

Economic Conditions And Customer Base

GLWA's water system serves a large population of about 3.8 million across Wayne, Oakland, and Macomb counties, which covers about 30% of Michigan's population.

We consider Detroit's economy very weak, but the revenue base for both water and sewer is well diversified geographically beyond the city limits. The large amount of inactive accounts in Detroit exacerbates the need for ongoing collection efforts and could affect the large amount of accounts receivable. Management is actively working to lower its uncollectible accounts, but 48% of Detroit retail accounts are inactive, which we view as a significant number. We note, however, that collections efforts have increased, in our view, since GLWA was formed in 2016, including the introduction of payment plans and GLWA's water residential assistance program (WRAP) for low-income residents.

Looking at the metropolitan area as a whole, however, average economic indicators are much better, with median household effective buying income at 98% of the U.S. average, and according the U.S. Bureau of Labor Statistics, the city of Detroit's annual average unemployment rate was under 10% for 2017, the first time since 2001. We believe the metrics for a regional utility indicate a better overall economic base for the service area than looking at the city's economic indicators alone.

A weakening of economic metrics could weaken the credit rating, especially if this were to occur on a more regional scale. A general regional weakening economy would lessen the positive effects that the more diversified revenue and customer base has had on the rating profile.

Rate Structure And Collection Issues

The implementation of model contracts and moving wholesale customers' revenue requirements to a higher level of fixed-cost recovery, is, in our view, a credit strength because it will help prevent revenue fluctuations based on metered flow and will help stabilize revenue collections. Management has also maintained a wholesale customer outreach program since 1997.

Management is committed to moderate annual service charge increases intended to produce a 4% increase in overall annual revenues, instead of the wide swings in rates in the past. We understand it is hoping to achieve this through additional recovery of fixed costs, continued cost reductions, labor force reductions, and the use of cash for capital when appropriate.

A credit weakness is the large amount of past due and inactive accounts in Detroit. DWSD management has a dedicated shut-off program that has been implemented by an outside contractor, although meaningful results will take time, in our view. One benchmark we will look at is overall budget variances for the DWSD local system as one indication of the progress DWSD is making on collection efforts.

Finances And Liquidity

The historical DWSD financial performance has been somewhat volatile, in our view, due primarily to changes in billed versus budgeted volumes and exacerbated by economic stress. Still, in most years, each system has been able to generate net revenues that cover fixed costs by at least 1x.

For GLWA, our fixed-charge coverage analysis generally follows the presentation in GLWA's MBO calculation for junior-lien debt service coverage, with additional revenue offsets due to pension payments made to Detroit for its frozen general retirement system expenses and additional fixed costs due to pension note payments made to Detroit for its B and C note payments. Our calculation focuses on how net revenues are covering all of GLWA's fixed costs instead of reporting coverage based on MBO definitions of operating and nonoperating expenses. We generally view the historical fixed-charge coverage as adequate to good, with the expectation that coverage will steadily improve due to the implementation of fixed cost recovery rates and various management initiatives.

Liquidity of the system has fluctuated, but has generally stayed at levels we would consider good. Projections show a steady unrestricted liquidity position through 2023 of about \$166 million, which takes into account operating reserves, budget stabilization, emergency repair, and improvement and extension fund balances. Because the MBO allows for any monies in these funds to be used for either O&M expense requirements or debt service shortfalls, we view them as unrestricted liquidity.

Capital And Debt

The size and scope of the CIP are credit neutral. We expect that capital costs will continue to be distributed between Detroit's retail system and the regional system as appropriate, and in a manner consistent with the lease and service agreements' allocate costs.

The water system is highly leveraged (especially since 2012, when DWSD issued bonds to refund its variable-rate debt portfolio and to terminate its swaps). We do not expect this condition to abate in the near term and generally view the debt profile as a credit weakness. Debt service also represents about 100% of O&M expenses, and we do not see this number falling in the near future since additional debt is layered in to fund the CIP.

Outlook

The stable outlook reflects our opinion that the rating should not change, at least over the two-year outlook horizon, due to several factors, including the following:

- Our expectation that the water supply system's financial metrics should remain at levels generally consistent with current projections due to the rate structure that provides a large amount of revenue stability;
- DWSD revenue variances should remain low, given both GLWA's and DWSD's continued efforts to improve collections; and
- Exposure to a large service base that extends beyond the boundaries of the immediate Detroit area, which should

help continue to support stable usage trends.

Upside scenario

While possible, we currently do not expect to raise the rating in the foreseeable future, absent both financial performance well above what current projections indicate and economic indicators for Detroit that show significant improvement. We believe that both current and projected financial performance and service base characteristics are consistent with the current rating level.

Downside scenario

If economic stress or cost escalations lead to financial results measurably worse than that GLWA currently projects, then either the outlook, rating, or both could be negatively affected.

Ratings Detail (As Of September 5, 2018)		
Great Lakes Wtr Auth wtr (BAM) (SECMKT) <i>Unenhanced Rating</i>	A+(SPUR)/Stable	Upgraded
Great Lakes Wtr Auth wtr (BAM) (SECMKT) <i>Unenhanced Rating</i>	A+(SPUR)/Stable	Upgraded
Great Lakes Wtr Auth wtr (BAM) (SECMKT) <i>Unenhanced Rating</i>	A+(SPUR)/Stable	Upgraded
Great Lakes Wtr Auth wtr (Sr lien) <i>Long Term Rating</i>	AA-/Stable	Upgraded
Great Lakes Wtr Auth wtr (Sr lien) <i>Long Term Rating</i>	AA-/Stable	Upgraded
Great Lakes Wtr Auth wtr (Sr lien) <i>Long Term Rating</i>	AA-/Stable	Upgraded
Great Lakes Wtr Auth wtr (2nd lien) (wrap of insured) (AGM & BHAC) (SEC MKT) <i>Unenhanced Rating</i>	A+(SPUR)/Stable	Upgraded
Great Lakes Wtr Auth wtr (2nd lien) (AGM) <i>Unenhanced Rating</i>	A+(SPUR)/Stable	Upgraded
Great Lakes Wtr Auth wtr (2nd lien) (MBIA) (National) <i>Unenhanced Rating</i>	A+(SPUR)/Stable	Upgraded
Great Lakes Wtr Auth WTRSWR (National) (MBIA) <i>Unenhanced Rating</i>	AA-(SPUR)/Stable	Upgraded
Detroit wtr supp sys (Senior lien) <i>Unenhanced Rating</i>	AA-(SPUR)/Stable	Upgraded
Great Lakes Wtr Auth <i>Unenhanced Rating</i>	A+(SPUR)/Stable	Upgraded
Great Lakes Wtr Auth supp sys (2nd lien) <i>Unenhanced Rating</i>	A+(SPUR)/Stable	Upgraded
Great Lakes Wtr Auth wtr supp sys		

Ratings Detail (As Of September 5, 2018) (cont.)		
<i>Unenhanced Rating</i>	AA-(SPUR)/Stable	Upgraded
Great Lakes Wtr Auth wtr supp sys (Sr lien) (MBIA) (National)		
<i>Unenhanced Rating</i>	AA-(SPUR)/Stable	Upgraded
Great Lakes Wtr Auth wtr supp sys (2nd lien)		
<i>Unenhanced Rating</i>	A+(SPUR)/Stable	Upgraded
Michigan Fin Auth, Michigan		
Great Lakes Wtr Auth, Michigan		
Michigan Fin Auth (Great Lakes Wtr Auth) wtr		
<i>Unenhanced Rating</i>	AA-(SPUR)/Stable	Upgraded
Michigan Fin Auth (Great Lakes Wtr Auth) wtr (AGM)		
<i>Unenhanced Rating</i>	AA-(SPUR)/Stable	Upgraded
Michigan Fin Auth (Great Lakes Wtr Auth) wtr (BAM) (SECMKT)		
<i>Unenhanced Rating</i>	A+(SPUR)/Stable	Upgraded
Michigan Fin Auth (Great Lakes Wtr Auth) wtr (National)		
<i>Unenhanced Rating</i>	A+(SPUR)/Stable	Upgraded
Michigan Fin Auth (Great Lakes Wtr Auth) WTRSWR		
<i>Unenhanced Rating</i>	AA-(SPUR)/Stable	Upgraded
Michigan Fin Auth (Great Lakes Wtr Auth) WTRSWR		
<i>Long Term Rating</i>	AA-/Stable	Upgraded
Michigan Fin Auth (Great Lakes Wtr Auth) WTRSWR		
<i>Long Term Rating</i>	A+/Stable	Upgraded
Michigan Fin Auth (Great Lakes Wtr Auth) WTRSWR		
<i>Long Term Rating</i>	AA-/Stable	Upgraded
Michigan Fin Auth (Great Lakes Wtr Auth) WTRSWR (AGM)		
<i>Unenhanced Rating</i>	AA-(SPUR)/Stable	Upgraded

Many issues are enhanced by bond insurance.

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Great Lakes Water Authority, Michigan; Water/Sewer

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Great Lakes Water Authority, Michigan; Water/Sewer

Credit Profile

US\$128.61 mil swg disposal sys rev rfdg sr ln bnds ser 2018B due 07/01/2029		
<i>Long Term Rating</i>	A+/Positive	New
US\$80.46 mil swg disposal sys rev sr ln bnds ser 2018A due 07/01/2048		
<i>Long Term Rating</i>	A+/Positive	New
US\$43.4 mil swg desposal sys rev rfdg sr ln bnds (Federally Taxable) ser 2018C due 07/01/2024		
<i>Long Term Rating</i>	A+/Positive	New
Great Lakes Wtr Auth swg (2nd lien)		
<i>Long Term Rating</i>	A/Positive	Upgraded
Great Lakes Wtr Auth WTRSWR		
<i>Long Term Rating</i>	A+/Positive	Upgraded

Rationale

S&P Global Ratings has assigned its 'A+' rating to the Great Lakes Water Authority's (GLWA) series 2018 sewage disposal system revenue and revenue refunding senior-lien bonds. We have also raised our ratings by two notches on both GLWA's existing senior-lien bonds to 'A+' from 'A-' and its existing second-lien bonds to 'A' from 'BBB+'. The outlook is positive.

The upgrade is based on several factors:

- Oversight through an agency relationship and cooperation with the Detroit Water and Sewer Board (DWSD) and its Board of Water Commissioners that we view as strong and supportive of credit quality. Because of Detroit's extremely weak overall economic indicators and historical collections/bad debt issues, we view both the existence and continuation of these functions as key to the maintenance of the rating at its current level.
- Overall management and governance functions that we also view as supportive of credit quality at the current rating level. GLWA management maintains active communication with both the DWSD retail system and its wholesale customers and has a comprehensive set of internal policies related to, among other things, maintenance of certain financial targets, key performance indicators for both financial and operational metrics, and internal controls.
- Actual financial performance has continued to exceed projections from prior feasibility studies. Now that GLWA has two full fiscal years (2017 and 2018) of operating as a separate entity from DWSD, and that various reconciliations and adjustments related to the separation have already taken place, we would expect that future variances to the feasibility studies may not be as dramatic. However, given GLWA's comprehensive budgeting practices and strong budgetary oversight of DWSD's operations, we would expect that future financial performance should be largely consistent with the most current projections.
- GLWA is not under any regulatory-driven capital costs from consent orders or consent decrees. While we view the GLWA system as highly leveraged, the fact that all of the capital plan is forward-looking and not mostly being used to cure regulatory infractions is a key credit strength that is supportive of the current rating level.

- Limited future exposure to pension cost escalation from legacy Detroit obligations resulting from prior bankruptcy negotiations. It is our understanding that after the 2023 fiscal year, both GLWA and DWSD pension costs related to legacy pension plans will drop from a total for both water and sewer systems of \$45.4 million (which is a mandated contribution based on Detroit's bankruptcy plan of adjustment) to what is currently projected to be no more than \$9.1 million. These additional payments would be used to retire the remaining unfunded liability from the closed/legacy pension plans that has arisen after the original payments were determined in 2014.

Additional factors supporting the rating include the following:

- A diverse revenue stream from a large number of wholesale customers;
- Revenues from both wholesale customers and the DWSD retail system that are fixed, which, in our view, significantly insulates GLWA's financial performance from volatility caused by weather and flow variances.

Offsetting these strengths are the following factors:

- Ongoing negative revenue variances from the DWSD local sewer system that have, in our view, material effects on the overall creditworthiness of the GLWA sewage disposal system. GLWA reports that the negative revenue variance caused by DWSD for the 2018 fiscal year is about \$19.8 million. The authority has also experienced significant negative and positive outflows in the DWSD system since 2016 due to various one-time events, although GLWA reports that the 2018 variance was most likely attributable to DWSD's implementation of a new drainage program and related litigation.
- We consider Detroit's economy very weak, which could continue to place downward pressure on utility collection rates in the city, and high system leverage, that we do not believe will abate significantly at least over the two-year outlook horizon.

The ratings also reflect the application of our wholesale utility criteria, but we do not follow a purely weak-link approach since GLWA has, in our view, additional financial strengths that could be used to support debt payments if a single participant does not fulfil its payment obligations. These strengths include pledged reserves and unrestricted liquidity available at the wholesaler GLWA level; the ability to adjust revenue requirements to participants as its cost structure changes; and strong management policies related to both the regional system and Detroit's local system. The fact that GLWA's service base is large and serves a large percentage of the state's population also supports our view that the ratings should reflect that diversity, with overall economic considerations playing a more prominent role in the credit analysis.

Legal Framework Details Relevant To The Credit Rating

The bonds are secured by a statutory lien on pledged assets of the system, prioritized by the lien status, which include net revenues of GLWA's sewage disposal system, along with investments credited to the sewer system and earnings on those investments. The net revenue pledge is constituted from gross revenues of the DWSD retail and the GLWA regional systems, which cover both systems' operating and maintenance (O&M) expenses. A rate covenant stipulates that the GLWA board set rates to produce at least 1.2x coverage of senior-lien debt, 1.1x for second-lien bonds, and 1x for junior-lien bonds. The ability to issue additional bonds exists if net revenues for the previous fiscal year, or net

revenues adjusted by approved rate increases and system expansion for the current or next fiscal year, produce coverage of maximum annual debt service (MADS; including the proposed bonds) of at least those levels indicated in the rate covenant for the particular liens.

There is also a debt service reserve (DSR) for senior-lien bonds equal to MADS or the lesser of the standard three-prong test, and for second-lien bonds equal to average annual debt service or the lesser of the three-prong test. On achieving approval from at least 51% of senior- and second-lien bondholders and having appropriate senior-lien ratings from two credit rating agencies no lower than 'AA-' or the equivalent, GLWA, through amendments to the master bond ordinance (MBO), has the option to eliminate this reserve requirement on its outstanding and future bonds on any lien for which approval has been granted. If this proposed amendment is approved, we currently view the effects as credit neutral; however, our criteria methodology would indicate that if credit quality deteriorated, the importance of a DSR becomes a more important credit factor by providing immediate additional liquidity pledged to bondholders. To date, GLWA has achieved bondholder approval for this amendment from about 7% and 39% of senior- and second-lien bondholders, respectively.

The statutory lien on pledged assets is well established by state statute under Act 94 of 1933 (as amended).

Under the GLWA master bond ordinance, U.S. Bank N.A. is the trustee.

We view the numerous oversight and control functions that GLWA has over Detroit's retail system as supportive of both the overall legal framework and the ability of the GLWA regional system to help make the net revenues originating from Detroit's local system more predictable, which in turn results in an analysis that focuses more on this framework as opposed to one that benchmarks the rating specifically on our view of DWSD's creditworthiness. The primary three documents that place parameters around this operating relationship between the two entities are the water and sewer lease agreements, and both a service agreement and memorandum of understanding (MOU) between GLWA and the Detroit retail system.

The major provisions of both lease agreements that we view as supportive of the overall legal and operational framework include the following:

- Explicit language that requires all revenues collected by Detroit be held in segregated accounts in trust and remitted within five days of receipt to a trustee-held pledged revenue account under the master bond ordinance.
- Requirements that both GLWA and Detroit retail maintain a biennial budget and a five-year capital improvement plan (CIP).
- In consideration of a lease payment from GLWA for use by the Detroit local system, the use of those funds are restricted to either repayment of debt or capital projects.
- GLWA has the exclusive and direct right to establish all rates and charges, including the retail users within Detroit (although through the service agreement, GLWA delegates its right to set rates to DWSD).
- All vendor and employee contracts related to GLWA operations are assigned to the authority.

The major provisions of the service agreement and MOU that we view as supportive of the overall legal and operational framework include the following:

- If certain performance standards are not met, GLWA can revoke its appointment of Detroit as its agent for collections of revenue requirements.
- GLWA will set revenue requirements for DWSD that are related to the costs for providing services, and, in turn, Detroit will set retail rates in a fashion that meets GLWA's revenue requirement.
- All responsibilities for discharge permit and other environmental compliance requirements are explicitly allocated between Detroit retail and GLWA.
- DWSD is required to submit periodic budget and operational reporting requirements to GLWA and discuss these results at a Reconciliation Committee, which is also the initial mechanism to develop a plan for DWSD to cure any budget shortfalls it experiences.
- The service agreement has an explicit mechanism for dispute resolution.

Economic Conditions And Customer Base

GLWA's sewer system serves a large population of about 2.8 million across Wayne, Oakland, and Macomb counties, which covers about 30% of Michigan's population.

We consider Detroit's economy very weak, but the revenue base for both water and sewer is well diversified geographically beyond the city limits. The large amount of inactive accounts in Detroit exacerbates the need for ongoing collection efforts and could affect the large amount of accounts receivable. Management is actively working to lower its uncollectible accounts, but 48% of Detroit retail accounts are inactive, which we view as a significant number. We note, however, that collections efforts have increased, in our view, since GLWA was formed in 2016, including the introduction of payment plans and GLWA's water residential assistance program (WRAP) for low-income residents.

Looking at the metropolitan area as a whole, however, average economic indicators are much better, with median household effective buying income at 98% of the U.S. average, and according the U.S. Bureau of Labor Statistics, the city of Detroit's annual average unemployment rate was under 10% for 2017, the first time since 2001. We believe the metrics for a regional utility indicate a better overall economic base for the service area than looking at the city's economic indicators alone.

A weakening of economic metrics could weaken the credit rating, especially if this were to occur on a more regional scale. A general regional weakening economy would lessen the positive effects that the more diversified revenue and customer base has had on the rating profile.

Rate Structure And Collection Issues

The implementation of model contracts and moving wholesale customers' revenue requirements to a higher level of fixed-cost recovery, is, in our view, a credit strength because it will help prevent revenue fluctuations based on metered flow and will help stabilize revenue collections. Management has also maintained a wholesale customer outreach program since 1997.

Management is committed to moderate annual rate increases intended to produce a 4% increase in overall annual

revenues, instead of the wide swings in rates in the past. We understand it is hoping to achieve this through implementation of fixed-cost recovery, continued cost reductions, labor force reductions, and the use of cash for capital when appropriate.

A credit weakness is the large amount of past due and inactive accounts in Detroit. DWSD management has a dedicated shut-off program that has been implemented by an outside contractor, although meaningful results will take time, in our view. One benchmark we will look at is overall budget variances for the DWSD local system as one indication of the progress DWSD is making on collection efforts.

Finances And Liquidity

The historical DWSD financial performance has been somewhat volatile, in our view, due primarily to changes in billed versus budgeted volumes and exacerbated by economic stress. Still, in most years, each system has been able to generate net revenues that cover fixed costs by at least 1x.

For GLWA, our fixed-charge coverage analysis generally follows the presentation in GLWA's MBO calculation for junior-lien debt service coverage, with additional revenue offsets due to pension payments made to Detroit for its frozen general retirement system expenses and additional fixed costs due to pension note payments made to Detroit for its B and C note payments. Our calculation focuses on how net revenues are covering all of GLWA's fixed costs instead of reporting coverage based on MBO definitions of operating and nonoperating expenses. We generally view the historical fixed-charge coverage as adequate to good, with the expectation that coverage will steadily improve due to the implementation of fixed-cost recovery rates and various management initiatives.

Liquidity of the system has fluctuated, but has generally stayed at levels we would consider good. Projections show a steady unrestricted liquidity position through 2023 of about \$210 million, which takes into account operating reserves, budget stabilization, emergency repair, and improvement and extension fund balances. Because the MBO allows for any monies in these funds to be used for either O&M expense requirements or debt service shortfalls, we view them as unrestricted liquidity.

Capital And Debt

The size and scope of the CIP are credit neutral. We expect that capital costs will continue to be distributed between Detroit's retail system and the regional system as appropriate, and in a manner consistent with the lease and service agreements' allocate costs.

The sewer system is highly leveraged (especially since 2012, when DWSD issued bonds to refund its variable-rate debt portfolio and to terminate its swaps). We do not expect this condition to abate in the near term and generally view the debt profile as a credit weakness. Debt service also represents over 80% of O&M expenses, and we do not see this number falling in the near future since additional debt is layered in to fund the CIP.

Outlook

The positive outlook reflects our expectation that there is at least a one-in-three chance that the rating could improve over the two-year outlook horizon. The most significant factor we are expecting to lead to an upgrade is resolution of what we view to be significant revenue variances caused by the DWSD local system. It is our understanding that progress is being made to resolve these variances, but there could be ongoing revenue pressures depending on how the drainage program litigation is resolved.

For an upgrade to occur over the next two years, we would also expect the following to occur:

- Continued financial performance that meets or exceeds GLWA's expectations as reflected in the current feasibility study;
- No large and unforeseen capital needs that would cause either large and sustained reductions in liquidity or significant increases in fixed costs; and
- Continued demonstration that the relationship with DWSD through the service agreement and MOU is being successfully used to minimize any future financial disruptions that may occur.

Downside scenario

While the outlook is currently positive, we could revise it to stable without raising the rating if we believe that a resolution with DWSD related to its ongoing revenue variances is not settled in a fashion that is either sustainable long term or able to achieve a significant amount of variance reduction. If economic stress or cost escalations lead to financial results measurably worse than that GLWA currently projects, then either the outlook, rating, or both could be negatively affected.

Ratings Detail (As Of September 5, 2018)

Great Lakes Wtr Auth swg (wrap of insured) (ASSURED GTY) (SEC MKT) <i>Unenhanced Rating</i>	A+(SPUR)/Positive	Upgraded
Great Lakes Wtr Auth swg (wrap of insured) (MBIA, National & ASSURED GTY) (SEC MKT) <i>Unenhanced Rating</i>	A(SPUR)/Positive	Upgraded
Great Lakes Wtr Auth swg (Sr lien) <i>Long Term Rating</i>	A+/Positive	Upgraded
Great Lakes Wtr Auth swg (Sr lien) (AGM) (SECMKT) <i>Unenhanced Rating</i>	A+(SPUR)/Positive	Upgraded
Great Lakes Wtr Auth swg (2nd lien) (wrap of insured) (FGIC, AGM & BHAC) (SEC MKT) <i>Unenhanced Rating</i>	A(SPUR)/Positive	Upgraded
Great Lakes Wtr Auth swg (2nd lien) (AGM) <i>Unenhanced Rating</i>	A(SPUR)/Positive	Upgraded
Great Lakes Wtr Auth swg (2nd lien) (AGM) <i>Unenhanced Rating</i>	A(SPUR)/Positive	Upgraded
Great Lakes Wtr Auth swg (2nd lien) (BAM) (SECMKT) <i>Unenhanced Rating</i>	A(SPUR)/Positive	Upgraded

Ratings Detail (As Of September 5, 2018) (cont.)		
Great Lakes Wtr Auth swg (2nd lien) (BAM) (SECMKT)		
<i>Unenhanced Rating</i>	A(SPUR)/Positive	Upgraded
Great Lakes Wtr Auth swr (wrap of insured) (FGIC) (ASSURED GTY - SEC MKT)		
<i>Unenhanced Rating</i>	A(SPUR)/Positive	Upgraded
Great Lakes Wtr Auth WTRSWR (National) (MBIA)		
<i>Unenhanced Rating</i>	A+(SPUR)/Positive	Upgraded
Great Lakes Wtr Auth WTRSWR (BHAC)		
<i>Unenhanced Rating</i>	A(SPUR)/Positive	Upgraded
Great Lakes Wtr Auth swg disp sys		
<i>Unenhanced Rating</i>	A+(SPUR)/Positive	Upgraded
Great Lakes Wtr Auth swg disp sys VRBD (2nd lien) ser 2006A		
<i>Unenhanced Rating</i>	A(SPUR)/Positive	Upgraded
Great Lakes Wtr Auth swg (FGIC) (National)		
<i>Unenhanced Rating</i>	A+(SPUR)/Positive	Upgraded
Great Lakes Wtr Auth swg (Sr lien) (AGM)		
<i>Unenhanced Rating</i>	A+(SPUR)/Positive	Upgraded
Great Lakes Wtr Auth swg (2nd lien)		
<i>Unenhanced Rating</i>	A(SPUR)/Positive	Upgraded
Great Lakes Wtr Auth swg (2nd lien) (MBIA) (National)		
<i>Unenhanced Rating</i>	A(SPUR)/Positive	Upgraded
Great Lake Wtr Auth swg (2nd lien)		
<i>Unenhanced Rating</i>	A(SPUR)/Positive	Upgraded
Michigan Fin Auth, Michigan		
Great Lakes Wtr Auth, Michigan		
Michigan Fin Auth (Great Lakes Wtr Auth) swg		
<i>Unenhanced Rating</i>	A+(SPUR)/Positive	Upgraded
Michigan Fin Auth (Great Lakes Wtr Auth) swg disposal (AGM)		
<i>Unenhanced Rating</i>	A(SPUR)/Positive	Upgraded
Michigan Fin Auth (Great Lakes Wtr Auth) swg disposal (BAM)		
<i>Unenhanced Rating</i>	A(SPUR)/Positive	Upgraded
Michigan Fin Auth (Great Lakes Wtr Auth) swg (BAM) (SECMKT)		
<i>Unenhanced Rating</i>	A(SPUR)/Positive	Upgraded
Michigan Fin Auth (Great Lakes Wtr Auth) swg (National)		
<i>Unenhanced Rating</i>	A(SPUR)/Positive	Upgraded
Michigan Fin Auth (Great Lakes Wtr Auth) WTRSWR		
<i>Long Term Rating</i>	A+/Positive	Upgraded
Michigan Fin Auth (Great Lakes Wtr Auth) WTRSWR		
<i>Long Term Rating</i>	A+/Positive	Upgraded

Ratings Detail (As Of September 5, 2018) (cont.)

Michigan Fin Auth (Great Lakes Wtr Auth) WTRSWR		
<i>Long Term Rating</i>	A+/Positive	Upgraded
Michigan Fin Auth (Great Lakes Wtr Auth) WTRSWR		
<i>Unenhanced Rating</i>	A+(SPUR)/Positive	Upgraded
Michigan Fin Auth (Great Lakes Wtr Auth) WTRSWR		
<i>Long Term Rating</i>	A/Positive	Upgraded

Many issues are enhanced by bond insurance.

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