Great Lakes Water Authority

Investment Performance Report – March 2020





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Executive Summary

PORTFOLIO RECAP

- Safety The aggregate 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 portfolio 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 Standard & Poor's.
- Liquidity Great Lakes Water Authority ("GLWA") has continued to monitor its portfolio with the goal of limiting the allocation to cash and bank deposit accounts and maximizing the use of short-term investments to meet liquidity requirements. As of March 31, 2020, only 32% of the total assets were held in cash and money market accounts maturing overnight.
- Return The overall market yield decreased to 0.66% as of March 31, 2020 versus 1.56% as of December 31, 2019. The lower yield is a result of the declining interest rate environment that is prevalent in the market. GLWA earned \$15.2 million (unaudited) in investment income for fiscal year-to-date on a book value basis. Based on current interest rate environment, the income earned for the previous quarter, and assuming GLWA maintains the same investable balances for the remainder of the fiscal year, we are projecting earnings of approximately \$17.4 million in earnings for FY 2020.

Туре	Financial Institution	Book Value	Market Value	YTM @ Market (as of 3/31/20)
Deposit Account	Comerica	\$3,630,752	\$3,630,752	0.15%
Deposit Account - Retainage	First Independence	\$15,226,727	\$15,226,727	0.05%
Deposit Account – Flint Security Deposit	Chase	\$3,811,619	\$3,811,619	0.34%
Deposit Account	Chase	\$12,185,221	\$12,185,221	0.34%
Trust Money Market Fund	U.S. Bank	\$156,074,869	\$156,074,869	0.37%
Money Market Fund	JP Morgan	\$53,261,853	\$53,261,853	0.79%
Local Government Investment Pool	GovMIC	\$107,953,094	\$107,953,094	1.36%
Managed Funds	PFM	\$749,502,063	\$759,841,669	0.64%
TOTAL		<u>\$1,101,646,198</u>	<u>\$1,111,985,803</u>	<u>0.66%</u>

AVAILABLE FUNDS (Unaudited)

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. In addition to the above, there also exists surety bonds in the amount of \$324,309,258 as of 3/31/2020.

Prepared by PFM Asset Management LLC



Investment Strategy

GLWA INVESTMENT STRATEGY

- > The aggregate portfolio is in compliance with GLWA's investment policy and Michigan Public Act 20.
- > To date, GLWA has continued to invest its funds in a mixture of short and intermediate-term investments to ensure adequate liquidity to cover upcoming debt and pension payments.
- > The aggregate portfolio was yielding 0.66% at the end of March.*
 - This compares to the 0.08% yield of the Bank of America / Merrill Lynch 3-Month U.S. Treasury Bill Index as of 3/31/2020, which is a comparable market indicator.
 - It should be noted that due to the impact of COVID-19, the Federal Reserve cut rates at two emergency meetings to a new target range of 0.00% to 0.25%, and as a result of the Fed's new zero interest rate policy, the markets saw a dramatic drop in Treasury yields over the last few weeks of March.
- GLWA continues to implement a very disciplined investment plan to provide improved safety and diversification and putting every dollar to work.
- PFM Asset Management LLC ("PFM"), GLWA's investment advisor, will continue to actively manage long-term portfolios with full discretion and align short-term balances with expected liabilities, subject to GLWA's investment policy and state statutes.
- GLWA will continue to work with PFM to identify strategies in this extremely low interest rate environment to maximize future investment income while meeting the objectives of safety and liquidity.
- Assuming GLWA maintains similar investable balances during this low interest rate environment, the interest income earnings projection for FY 2020 will be approximately \$17.4 million.

^{*} Current market yield as of March 31, 2020.



Summary Market Overview and Outlook

ECONOMIC HIGHLIGHTS UPDATE

- U.S. economic conditions are characterized by: severe uncertainty caused by the growing COVID-19 pandemic; virtual shutdown of many segments of the economy likely forcing the U.S. into a recession; massive job losses and deteriorating consumer confidence; and significant volatility in all markets.
- The Fed cut the target Fed Funds rate by 150 basis points in two steps to 0.00% 0.25%. In addition, the Fed responded rapidly to liquidity challenges in the bond market, implementing major lending facilities and conducting large scale asset purchases "in the amounts needed to support smooth market functioning and effective transmission of monetary policy."
- The U.S. Congress passed the Coronavirus Aid, Relief, and Economic Security ("CARES") Act, a \$2 trillion stimulus package that provides aid to individuals, small and large businesses, state and local governments, and the health care industry.

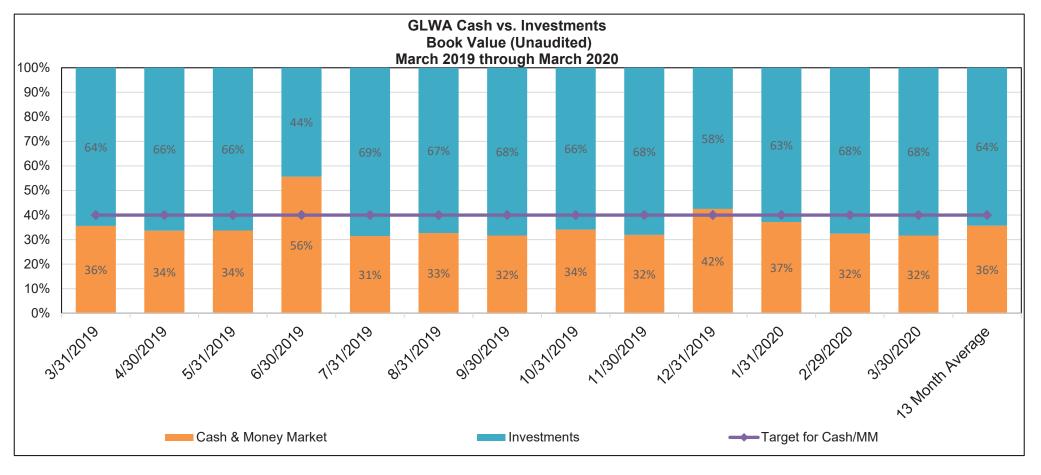
ECONOMIC IMPACT ON PORTFOLIO

- U.S. Treasury yields plunged during March in the wake of the Fed's rate cuts and a broad flight-to-quality. Short-term yields settled near 0.00% and long-term rates fell to record lows with the 10-year Treasury well below 1.00%. At the same time, yield spreads on all non-government securities widened sharply, causing corporate, municipal and securitized sectors to far underperform Treasuries.
- The Fed's market support programs are just starting to impact the markets. There mere announcement calmed the markets, and the central bank's pledge to "act as appropriate to support the economy" provides further support in the face of the novel coronavirus outbreak. This should lead to moderating volatility in the coming months.
- Federal Agency yield spreads increased during March to their widest levels in over 10 years. Given the sector's high quality and liquidity, PFM viewed wider spreads as an opportunity to add to Agency allocations.
- In the money market space, yield spreads on commercial paper investments widened sharply, but issuers began to re-enter the market in late March, supported by the Fed's liquidity support measures. PFM believes the prudent action is to remain cautious and vigilant with regards to commercial paper investments.



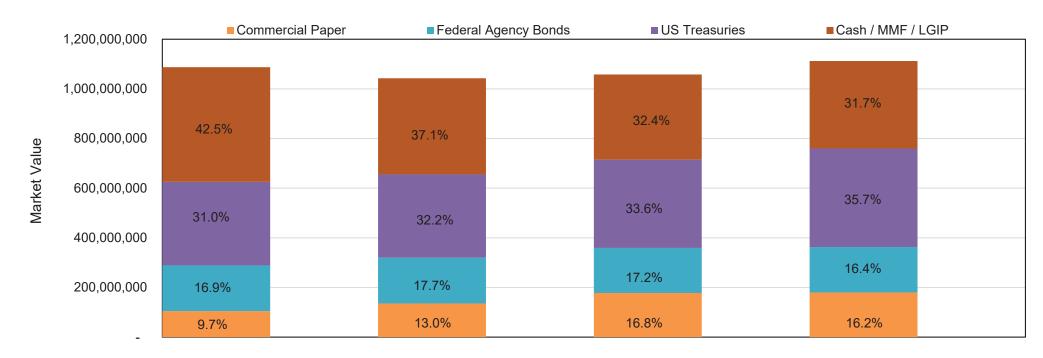
Portfolio Mix Cash / Money Market vs. Investments

- GLWA'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, GLWA has set a target ratio of 40% cash & money market accounts and 60% investments for the portfolio holdings. The 13-month average at the end of December of 2019 was ahead of the target.
- The chart below compares the monthly allocation of the portfolio holdings to the 13-month average and the target. The allocation between cash and investments will vary each month based on liquidity requirements. For March of 2020, 32% of the portfolio was invested in cash & money market accounts. This percentage is lower than December due to the Authority's efficient management of funds.





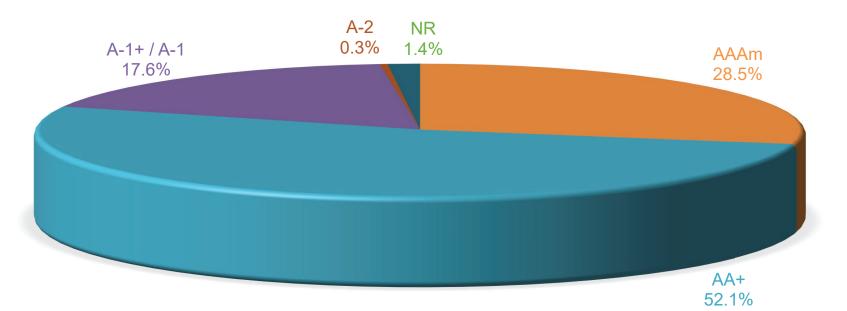
Investments – By Security Type



	December		Janua	ry	Februa	ry	March		
	Market	Asset	Market	Asset		Asset		Asset	
Security Type	Value	Allocation	Value	Allocation	Value	Allocation	Value	Allocation	
Commercial Paper	104,960,206	9.7%	135,645,833	13.0%	177,965,359	16.8%	180,085,293	16.2%	
Federal Agencies	183,805,199	16.9%	184,309,789	17.7%	181,466,233	17.2%	182,803,984	16.4%	
U.S. Treasuries	336,598,575	31.0%	335,345,112	32.2%	355,494,225	33.6%	396,952,391	35.7%	
Cash / MMF / LGIP	462,071,256	42.5%	387,307,611	37.1%	342,843,990	32.4%	352,144,134	31.7%	
Total	1,087,435,236	100.0%	1,042,608,345	100.0%	1,057,769,808	100.0%	1,111,985,803	100.0%	



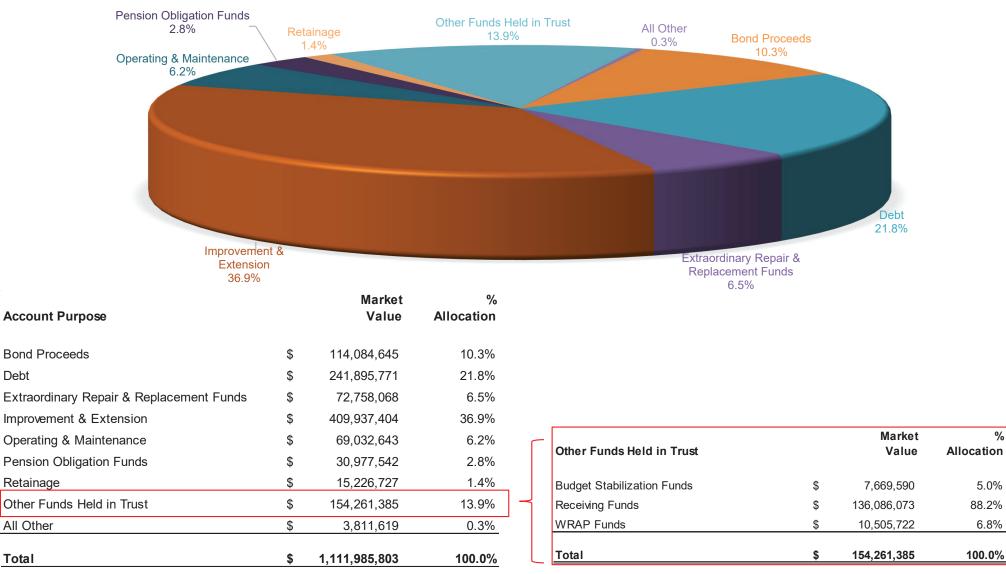
Investments – By Credit Quality



Credit Quality	Market Value	Asset Allocation
Ratings		
AAAm	317,289,816	28.5%
AA+	579,756,376	52.1%
A-1 + / A-1	196,082,133	17.6%
A-2	3,630,752	0.3%
NR	15,226,727	1.4%
Totals	1,111,985,803	100.0%



Investments – By Account Purpose



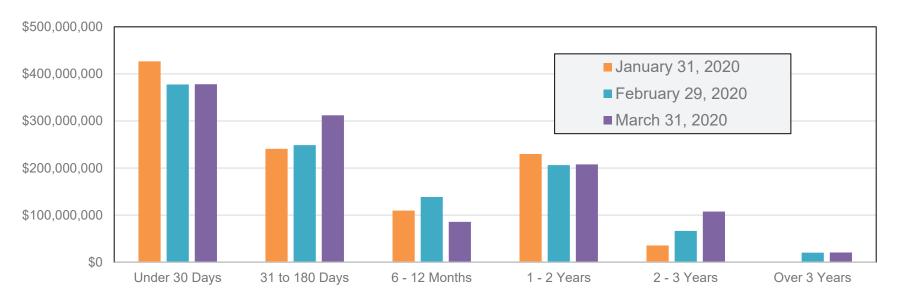
In addition to the totals listed above, there also exists surety bonds in the amount of \$324,309,258 as of March 31, 2020. "All Other" funds includes the Flint Security Deposit account which is held on behalf of the City of Flint and do not belong to GLWA.

Prepared by PFM Asset Management LLC



Investments – By Maturity

Maturity Distribution	January 31, 2020	%	February 29, 2020	%	March 31, 2020	%
Under 30 Days	\$ 426,668,251	40.9%	\$ 377,535,147	35.7%	\$ 378,053,948	34.0%
31 to 180 Days	240,904,368	23.1%	248,695,716	23.5%	311,952,361	28.1%
6 - 12 Months	109,666,307	10.5%	138,567,889	13.1%	85,778,294	7.7%
1 - 2 Years	229,747,504	22.0%	206,230,007	19.5%	207,857,379	18.7%
2 - 3 Years	35,621,915	3.4%	66,433,394	6.3%	107,619,445	9.7%
Over 3 Years	-	0.0%	20,307,655.20	1.9%	20,724,375.00	1.9%
Totals	\$ 1,042,608,345	100.0%	\$ 1,057,769,808	100.0%	\$ 1,111,985,803	100.0%



In addition to the totals listed above, there also exists surety bonds in the amount of \$324,309,258 as of March 31, 2020.

Prepared by PFM Asset Management LLC



Investment Accounts – Yield at Cost & Market

	As of Mar	ch 31, 2020	As of Decen	ber 31, 2019	
	YTM @ Cost	YTM @ Market	YTM @ Cost	YTM @ Marl	
Bank Deposits					
Comerica	0.15%	0.15%	0.18%	0.18%	
First Indenpedence	0.05%	0.05%	0.05%	0.05%	
Flint Deposit Account	0.34%	0.34%	0.80%	0.80%	
JP Morgan Chase	0.34%	0.34%	0.80%	0.80%	
Sub-Total Bank Deposits	0.19%	0.19%	0.42%	0.42%	
Noney Market Funds / LGIPs					
GovMIC	1.36%	1.36%	1.75%	1.75%	
U.S. Bank - First American MMF	0.37%	0.37%	1.48%	1.48%	
JP Morgan Securities - Blackrock MMF	0.79%	0.79%	1.52%	1.52%	
Sub-Total MMF / LGIPs	0.78%	0.78%	1.55%	1.55%	
nvestment Portfolios					
Sewage SR Debt Serv 5403	1.67%	1.54%	1.83%	1.84%	
Sewage SR Res 5400	1.69%	0.24%	1.69%	1.61%	
Sew 2nd Debt Serv 5403	1.61%	1.47%	1.85%	1.79%	
Sewage 2nd Res 5481	1.74%	0.25%	1.74%	1.60%	
Sew SRF Debt Serv 5410	1.94%	1.32%	1.88%	1.84%	
Sewage ER & R	2.20%	0.32%	2.47%	1.63%	
Sewer Improvement & Extension	1.80%	0.37%	2.10%	1.63%	
Sewer Pension Obligation	1.52%	0.37%	1.75%	1.60%	
Sewer Wrap Fund	1.52%	1.44%	1.91%	1.78%	
Sewer Budget Stabilization Fund	2.28%	0.32%	2.53%	1.63%	
Sewer Bond Fund	1.61%	1.82%	2.06%	1.84%	
Sewer O&M Pension Sub Account	2.00%	0.37%	2.00%	1.58%	
Water SR Debt Ser 5503	1.66%	1.52%	1.83%	1.83%	
Water SR Reserve 5500	2.18%	0.27%	2.19%	1.61%	
Water 2nd Debt Serv 5503	1.66%	1.45%	1.83%	1.83%	
Water 2nd Res 5581	1.84%	0.24%	1.84%	1.61%	
Water SRF Debt Serv 5575	2.03%	1.57%	1.94%	1.85%	
Water ER & R	2.19%	0.32%	2.44%	1.62%	
Water Improvement & Extension	2.06%	0.39%	2.30%	1.63%	
Water Pension Obligation	1.53%	0.37%	1.75%	1.60%	
Water Wrap Fund	1.50%	1.35%	1.86%	1.78%	
Water Budget Stabilization Fund	2.28%	0.32%	2.53%	1.63%	
Water Bond Fund	2.33%	0.82%	2.42%	1.66%	
Water O&M Pension Sub Account	2.00%	0.37%	2.00%	1.58%	
Sub-Total Investment Portfolios	1.91%	0.64%	2.16%	1.66%	
Grand Total	1.53%	0.66%	1.85%	1.56%	

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. 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.



Demonstration of Yield to Maturity vs. Duration

- 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 GLWA's aggregate portfolio compares somewhat favorably to those of other short-term market indices (i.e., the S&P LGIP index and the 3-month U.S. Treasury index), despite the inverted yield curve environment.
- GLWA 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 Marc	h 31, 2020	
	Market Value	YTM @ Market	Effective Duration	Weighted Average Maturity
GLWA				
Great Lakes Water Authority	\$1,111,985,803	0.66%	0.71 Years	264 Days
Short/Intermediate-Term Indices				
S&P Rated Government Investment Pool Index		1.15%	0.08 Years	30 Days
BoA / ML 3-Month Treasury Index		0.08%	0.16 Years	58 Days
BoA / ML 6-Month Treasury Index		0.09%	0.41 Years	150 Days
BoA / ML 1-Year Treasury Index		0.09%	0.91 Years	332 Days
BoA / ML 1-3 Year Treasury Index		0.20%	1.85 Years	675 Days
BoA / ML 1-5 Year Treasury Index		0.25%	2.66 Years	971 Days
Peer Analysis (Water Entities / Utilities)				
District of Columbia Water & Sewer Authority, DC	\$348,534,146	0.63%	0.88 Years	343 Days
DuPage Water Commission, IL	\$147,980,152	0.77%	2.33 Years	1,309 Days
Fairfax County Water Authority, VA	\$169,569,584	0.59%	2.05 Years	773 Days
Metro Wastewater Reclamation District, CO	\$185,185,300	1.11%	2.29 Years	946 Days
Metropolitan Water District of Southern California, CA	\$699,735,506	1.46%	0.57 Years	238 Days
Philadelphia Water Department, PA	\$209,765,912	0.88%	0.97 Years	358 Days
San Bernardino Valley Municipal Water District, CA	\$365,347,305	0.87%	1.80 Years	675 Days
Tohopekaliga Water Authority, FL	\$154,434,430	1.23%	1.90 Years	995 Days
Truckee Meadows Water Authority, NV	\$108,186,469	0.56%	2.02 Years	765 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.



Monthly Investment Income (Book Value)

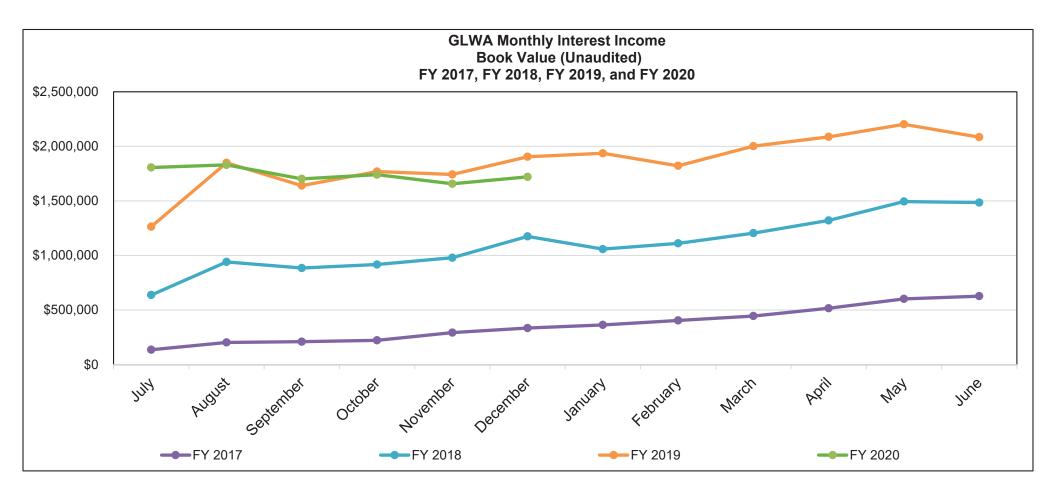
FY 2020 INVESTMENT INCOME BY MONTH (Unaudited)									
Month	Interest Earned During Period	Realized Gain / Loss	Investment Income						
July 2019	\$1,763,209.65	\$43,136.83	\$1,806,346.48						
August 2019	\$1,829,826.44	\$0.00	\$1,829,826.44						
September 2019	\$1,700,961.33	\$1,005.57	\$1,701,966.90						
October 2019	\$1,740,610.53	\$0.00	\$1,740,610.53						
November 2019	\$1,656,964.78	\$0.00	\$1,656,964.78						
December 2019	\$1,720,392.03	\$0.00	\$1,720,392.03						
January 2020	\$1,566,652.22	\$0.00	\$1,566,652.22						
February 2020	\$1,565,502.42	\$0.00	\$1,565,502.42						
March 2020	\$1,563,729.94	\$0.00	\$1,563,729.94						
<u>FY 2020 Y-T-D</u>	<u>\$15,107,849.34</u>	<u>\$44,142.40</u>	<u>\$15,151,991.74</u>						

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.



Year-Over-Year Investment Income

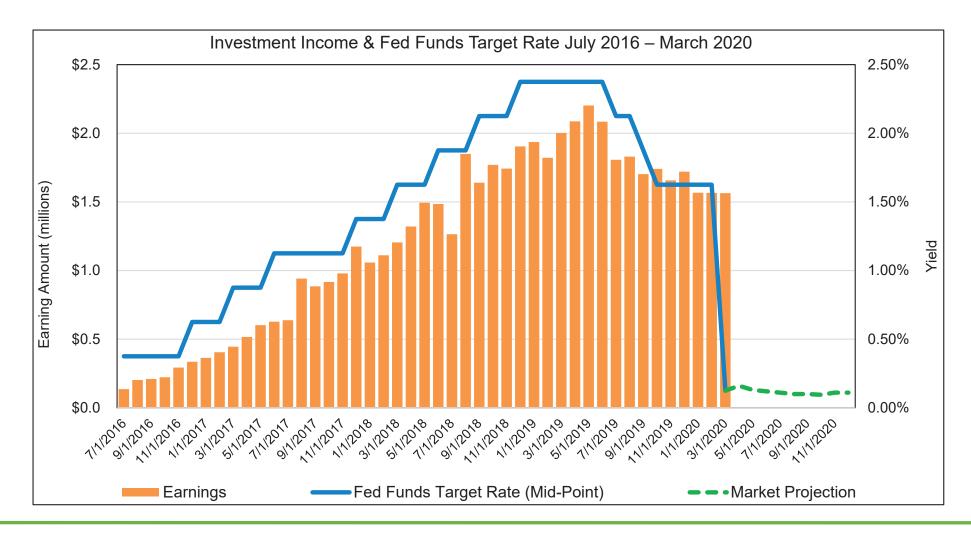
- GLWA has earned \$15,151,992 in investment income for fiscal year 2020 on a book value basis compared to \$15,928,947 for the first six months of fiscal year 2019.
- Projected investment income for fiscal year 2020 is \$17.4 million as the market expects the overnight lending rate to be maintained at its current range of 0.00% to 0.25% through the end of the fiscal year.





Monthly Investment Income Compared to Fed Funds Rate

- As a result of the short-term duration of GLWA's portfolio, it is heavily impacted by changes in the Fed Funds rate; the chart below illustrates that GLWA's investment income has consistently followed the trend of the Fed Funds target rate.
- According to effective Fed Funds futures, the market expects the overnight lending rate to be maintained at its current target range of 0.00% to 0.25% through 2021; based on the historical trend, the most recent cuts in the Fed Funds rate will translate into lower interest earnings for GLWA.





Appendix I: Portfolio Holdings



DESCRIPTION	CUSIP	PAR AMOUNT	MATURITY DATE	SETTLEMENT DATE	YTM AT COST	ORIGINAL COST	DAYS TO MATURITY ACCRUED II	NTEREST	TOTAL VALUE
Short-Term Bank Deposits / MMF / LGIP									
COMERICA BANK		\$ 3,630,752	4/1/2020	3/31/2020	0.15% \$	3,630,752	1 \$	- \$	\$ 3,630,752
FIRST INDEPENDENCE BANK		15,226,727	4/1/2020	3/31/2020	0.05%	15,226,727	1	-	15,226,727
FLINT DEPOSIT ACCOUNT		3,811,619	4/1/2020	3/31/2020	0.34%	3,811,619	1	-	3,811,619
JP MORGAN CHASE		12,185,221	4/1/2020	3/31/2020	0.34%	12,185,221	1	-	12,185,221
GovMIC		107,953,094	4/1/2020	3/31/2020	1.36%	107,953,094	1	-	107,953,094
U.S. BANK - FIRST AMERICAN MMF		156,074,869	4/1/2020	3/31/2020	0.37%	156,074,869	1	-	156,074,869
JP MORGAN SECURITIES - BLACKROCK MMF		53,261,853	4/1/2020	3/31/2020	0.79%	53,261,853	1	-	53,261,853



DESCRIPTION	CUSIP	PAR AMOUNT	MATURITY DATE	SETTLEMENT DATE	YTM AT COST	ORIGINAL COST	DAYS TO MATURITY	ACCRUED INTEREST	TOTAL VALUE
Commercial Paper		A (000 000	4/4/0000	10/10/00 10	1.000/	004 504		•	A
Credit Agricole NY 0 4/1/2020	22533TD11	\$ 1,000,000	4/1/2020	12/16/2019	1.83% \$	994,591	1	\$ -	\$ 1,000,000
MUFJ Securities 0 4/1/2020	62479LD10	1,150,000	4/1/2020	2/7/2020	1.62%	1,147,206	1	-	1,150,000
Toyota Motor Credit 0 4/1/2020	89233GD11	1,010,000	4/1/2020	11/20/2019	1.87%	1,003,060	1	-	1,010,000
MUFG Bank NY 0 5/1/2020	62479LE19	1,000,000	5/1/2020	2/7/2020	1.65%	996,173	31	-	998,990
Credit Agricole NY 0 5/1/2020	22533TE10	1,000,000	5/1/2020	12/16/2019	1.83%	993,074	31	-	998,990
Skandinav Enskilda Bank 0 5/27/2020	83050TET4	250,000	5/27/2020	3/12/2020	1.25%	249,340	57	-	249,398
Toyota Motor Credit 0 6/1/2020	89233GF19	175,000	6/1/2020	2/7/2020	1.69%	174,061	62	-	174,531
Toyota Motor Credit 0 6/1/2020	89233GF19	1,000,000	6/1/2020	2/7/2020	1.69%	994,633	62	-	997,320
BNP Paribas NY 0 6/19/2020	09659BFK1	2,850,000	6/19/2020	1/3/2020	1.81%	2,826,193	80	-	2,840,111
JPMorgan Securities 0 6/19/2020	46640PFK4	4,053,000	6/19/2020	10/8/2019	1.85%	4,000,463	80	-	4,038,936
Natixis Bank NY 0 6/19/2020	63873JFK1	398,000	6/19/2020	11/13/2019	1.90%	393,448	80	-	396,619
Apple Inc 0 6/19/2020	03785DFK7	9,900,000	6/19/2020	3/23/2020	1.09%	9,873,622	80	-	9,865,647
BNP Paribas NY 0 6/19/2020	09659BFK1	7,475,000	6/19/2020	1/3/2020	1.81%	7,412,559	80	-	7,449,062
Credit Agricole 0 6/19/2020	22533TFK7	6,897,000	6/19/2020	12/6/2019	1.81%	6,829,785	80	-	6,873,067
JPMorgan Securities 0 6/19/2020	46640PFK4	10,495,000	6/19/2020	10/8/2019	1.85%	10,358,959	80	-	10,458,582
Lloyds Bank PLC 0 6/19/2020	53943RFK0	10,392,000	6/19/2020	2/7/2020	1.66%	10,328,652	80	-	10,355,940
Natixis Bank NY 0 6/19/2020	63873JFK1	1,208,000	6/19/2020	11/13/2019	1.90%	1,194,185	80	-	1,203,808
Natixis Bank NY 0 6/19/2020	63873JFK1	3,123,000	6/19/2020	1/6/2020	1.83%	3,097,092	80	-	3,112,163
Apple Inc 0 6/19/2020	03785DFK7	3,169,000	6/19/2020	3/23/2020	1.09%	3,160,556	80	-	3,158,004
BNP Paribas NY 0 6/19/2020	09659BFK1	4,195,000	6/19/2020	1/3/2020	1.81%	4,159,958	80	-	4,180,443
JPMorgan Securities 0 6/19/2020	46640PFK4	3,886,000	6/19/2020	10/8/2019	1.85%	3,835,628	80	-	3,872,516
Lloyds Bank PLC 0 6/19/2020	53943RFK0	3,847,000	6/19/2020	2/7/2020	1.66%	3,823,549	80	-	3,833,651
BNP Paribas NY 0 6/19/2020	09659BFK1	7,480,000	6/19/2020	1/3/2020	1.81%	7,417,517	80	-	7,454,044
JPMorgan Securities 0 6/19/2020	46640PFK4	11,779,000	6/19/2020	10/8/2019	1.85%	11,626,315	80	-	11,738,127
Lloyds Bank PLC 0 6/19/2020	53943RFK0	8,601,000	6/19/2020	2/7/2020	1.66%	8,548,570	80	-	8,571,155



DESCRIPTION	CUSIP	PAR AMOUNT	MATURITY DATE	SETTLEMENT DATE	YTM AT COST	ORIGINAL COST	DAYS TO MATURITY	ACCRUED INTEREST	TOTAL VALUE
Commercial Paper									
Natixis Bank NY 0 6/19/2020	63873JFK1	3,921,000	6/19/2020	11/13/2019	1.90%	3,876,157	80	-	3,907,394
Natixis Bank NY 0 6/19/2020	63873JFK1	4,489,000	6/19/2020	1/6/2020	1.83%	4,451,760	80	-	4,473,423
Pfizer Inc 0 6/24/2020	71708EFQ3	1,500,000	6/24/2020	2/24/2020	1.61%	1,491,933	85	-	1,491,554
Pfizer Inc 0 6/24/2020	71708EFQ3	1,750,000	6/24/2020	2/24/2020	1.61%	1,740,589	85	-	1,740,146
IBM Corporation 0 6/25/2020	45920FFR4	1,000,000	6/25/2020	3/12/2020	1.05%	996,938	86	-	996,270
IBM Corporation 0 6/25/2020	45920FFR4	740,000	6/25/2020	3/12/2020	1.05%	737,734	86	-	737,240
Apple Inc 0 7/1/2020	03785DG18	3,820,000	7/1/2020	3/23/2020	1.09%	3,808,434	92	-	3,805,904
Cooperatieve Rabobank 0 7/1/2020	21687AG15	4,017,000	7/1/2020	12/6/2019	1.79%	3,975,919	92	-	4,002,177
Toyota Motor Credit 0 7/1/2020	89233GG18	1,250,000	7/1/2020	1/6/2020	1.88%	1,238,569	92	-	1,245,388
Toyota Motor Credit 0 7/1/2020	89233GG18	4,017,000	7/1/2020	2/7/2020	1.69%	3,989,818	92	-	4,002,177
Cooperatieve Rabobank 0 7/1/2020	21687AG15	3,550,000	7/1/2020	12/6/2019	1.79%	3,513,695	92	-	3,536,901
Apple Inc 0 7/1/2020	03785DG18	550,000	7/1/2020	3/23/2020	1.09%	548,335	92	-	547,971
Apple Inc 0 7/1/2020	03785DG18	10,855,000	7/1/2020	3/23/2020	1.09%	10,822,133	92	-	10,814,945
Cooperatieve Rabobank 0 7/1/2020	21687AG15	11,675,000	7/1/2020	12/6/2019	1.79%	11,555,604	92	-	11,631,919
Toyota Motor Credit 0 7/1/2020	89233GG18	1,983,000	7/1/2020	2/7/2020	1.69%	1,969,582	92	-	1,975,683
MUFG Bank NY 0 7/1/2020	62479LG17	260,000	7/1/2020	2/7/2020	1.67%	258,262	92	-	259,041
Svenska Handelsbanken 0 7/28/2020	86960JGU3	1,000,000	7/28/2020	3/12/2020	1.00%	996,167	119	-	995,210
MUFG Bank NY 0 8/25/2020	62479LHR9	1,500,000	8/25/2020	2/24/2020	1.61%	1,487,800	147	-	1,492,421
MUFG Bank NY 0 8/25/2020	62479LHR9	1,750,000	8/25/2020	2/24/2020	1.61%	1,735,767	147	-	1,741,157
MUFG Bank NY 0 9/18/2020	62479LJJ5	245,000	9/18/2020	1/3/2020	1.91%	241,686	171	-	243,728
MUFG Bank NY 0 9/18/2020	62479LJJ5	245,000	9/18/2020	2/7/2020	1.68%	242,469	171	-	243,728
Pfizer Inc 0 9/18/2020	71708EJJ5	250,000	9/18/2020	3/23/2020	2.51%	246,917	171	-	248,703
BNP Paribas NY 0 9/18/2020	09659BJJ0	3,750,000	9/18/2020	2/7/2020	1.65%	3,711,967	171	-	3,730,538
MUFG Bank NY 0 9/18/2020	62479LJJ5	5,119,000	9/18/2020	1/3/2020	1.91%	5,049,763	171	-	5,092,432
Pfizer Inc 0 9/18/2020	71708EJJ5	5,175,000	9/18/2020	3/23/2020	2.51%	5,111,187	171	-	5,148,142



DESCRIPTION	CUSIP	PAR AMOUNT	MATURITY DATE	SETTLEMENT DATE	YTM AT COST	ORIGINAL COST	DAYS TO MATURITY	ACCRUED INTEREST	TOTAL VALUE
Federal Agencies		A A TFA AA	1/00/0000	0/00/00/0	0.500/ 0	0 740 000		^	0.754.040
FHLMC 2.5 4/23/2020	3137EAEM7	\$ 3,750,000	4/23/2020	6/28/2018	2.56% \$	3,746,288	23		3,754,219
FHLB 2.625 5/28/2020	3130AECJ7	3,750,000	5/28/2020	6/28/2018	2.57%	3,753,825	58	33,633	3,761,618
FHLMC 2.375 2/16/2021	3137EAEL9	3,500,000	2/16/2021	8/8/2018	2.79%	3,465,210	322	10,391	3,558,590
FHLMC 2.375 2/16/2021	3137EAEL9	20,000,000	2/16/2021	8/8/2018	2.79%	19,801,200	322	59,375	20,334,800
FHLMC 2.375 2/16/2021	3137EAEL9	250,000	2/16/2021	8/9/2018	2.78%	247,563	322	742	254,185
FHLMC 2.375 2/16/2021	3137EAEL9	685,000	2/16/2021	8/9/2018	2.78%	678,321	322	2,034	696,467
FNMA 2.5 4/13/2021	3135G0U27	3,500,000	4/13/2021	8/8/2018	2.82%	3,471,685	378	40,833	3,577,980
FNMA 2.5 4/13/2021	3135G0U27	20,000,000	4/13/2021	8/8/2018	2.82%	19,838,200	378	233,333	20,445,600
FNMA 2.5 4/13/2021	3135G0U27	250,000	4/13/2021	8/9/2018	2.81%	247,985	378	2,917	255,570
FNMA 2.5 4/13/2021	3135G0U27	3,400,000	4/13/2021	8/8/2018	2.81%	3,372,698	378	39,667	3,475,752
FNMA 2.5 4/13/2021	3135G0U27	685,000	4/13/2021	8/9/2018	2.81%	679,479	378	7,992	700,262
FNMA 2.5 4/13/2021	3135G0U27	5,750,000	4/13/2021	8/8/2018	2.81%	5,703,828	378	67,083	5,878,110
FHLB 2.25 6/11/2021	3130A1W95	10,000,000	6/11/2021	7/11/2019	1.94%	10,058,200	437	68,750	10,220,300
FHLB 2.25 6/11/2021	3130A1W95	25,000,000	6/11/2021	7/11/2019	1.94%	25,145,500	437	171,875	25,550,750
FHLB 1.875 7/7/2021	3130AGLD5	3,715,000	7/7/2021	6/10/2019	1.96%	3,708,982	463	16,253	3,784,322
FHLB 1.875 7/7/2021	3130AGLD5	3,910,000	7/7/2021	6/10/2019	1.96%	3,903,666	463	17,106	3,982,961
FHLMC 2.375 1/13/2022	3137EADB2	10,000,000	1/13/2022	7/11/2019	1.89%	10,118,700	653	51,458	10,350,700
FHLMC 2.375 1/13/2022	3137EADB2	25,000,000	1/13/2022	7/11/2019	1.89%	25,296,750	653	128,646	25,876,750
FHLB 2.125 6/10/2022	313379Q69	10,000,000	6/10/2022	7/11/2019	1.92%	10,059,200	801	65,521	10,384,300
FHLB 2.125 6/10/2022	313379Q69	25,000,000	6/10/2022	7/11/2019	1.92%	25,148,000	801	163,802	25,960,750



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 8/15/2023	912833LM0	\$ 10,500,000	8/15/2023	2/7/2020	1.41% \$	9,992,745	1,232	\$ - \$	10,368,960
T-Note 0.5 3/15/2023	912828ZD5	10,000,000	3/15/2023	3/16/2020	0.58%	9,977,344	1,079	2,174	10,063,300
T-Note 1.25 10/31/2021	912828T67	10,000,000	10/31/2021	7/11/2019	1.83%	9,870,703	579	52,198	10,167,200
T-Note 1.5 1/15/2023	912828Z29	15,000,000	1/15/2023	2/7/2020	1.39%	15,045,703	1,020	46,978	15,513,300
T-Note 1.75 10/31/2020	912828WC0	4,915,000	10/31/2020	11/20/2019	1.64%	4,919,992	214	35,917	4,962,626
T-Note 2 11/30/2020	912828A42	3,500,000	11/30/2020	8/8/2018	2.72%	3,444,082	244	23,333	3,545,115
T-Note 2 11/30/2020	912828A42	6,100,000	11/30/2020	9/6/2019	1.74%	6,119,539	244	40,667	6,178,629
T-Note 2.125 8/31/2020	912828VV9	3,500,000	8/31/2020	8/8/2018	2.69%	3,460,762	153	6,265	3,529,120
T-Note 2.125 8/31/2020	912828VV9	5,000,000	8/31/2020	7/11/2019	1.95%	5,009,570	153	8,950	5,041,600
T-Note 2.375 4/30/2020	9128284J6	3,500,000	4/30/2020	4/30/2019	2.40%	3,499,043	30	34,712	3,506,405
T-Note 2.5 5/31/2020	9128284Q0	3,500,000	5/31/2020	8/8/2018	2.66%	3,489,883	61	29,167	3,513,825
T-Note 2.5 5/31/2020	9128284Q0	4,750,000	5/31/2020	7/11/2019	2.02%	4,770,039	61	39,583	4,768,763
T-Note 0 8/15/2023	912833LM0	10,500,000	8/15/2023	2/7/2020	1.41%	9,992,745	1,232	-	10,368,960
T-Note 0.5 3/15/2023	912828ZD5	20,000,000	3/15/2023	3/16/2020	0.58%	19,954,688	1,079	4,348	20,126,600
T-Note 1.25 10/31/2021	912828T67	2,500,000	10/31/2021	7/11/2019	1.83%	2,467,676	579	13,049	2,541,800
T-Note 1.25 10/31/2021	912828T67	17,500,000	10/31/2021	9/6/2019	1.55%	17,388,574	579	91,346	17,792,600
T-Note 1.5 1/15/2023	912828Z29	15,000,000	1/15/2023	2/7/2020	1.39%	15,045,703	1,020	46,978	15,513,300
T-Note 1.75 10/31/2020	912828WC0	13,595,000	10/31/2020	11/20/2019	1.64%	13,608,807	214	99,348	13,726,736
T-Note 2 11/30/2020	912828A42	20,000,000	11/30/2020	8/8/2018	2.72%	19,680,469	244	133,333	20,257,800
T-Note 2.125 8/31/2020	912828VV9	20,000,000	8/31/2020	8/8/2018	2.69%	19,775,781	153	35,802	20,166,400
T-Note 2.375 4/30/2020	9128284J6	15,000,000	4/30/2020	4/30/2019	2.40%	14,996,484	30	148,764	15,027,450
T-Note 2.5 5/31/2020	9128284Q0	20,000,000	5/31/2020	8/8/2018	2.66%	19,942,188	61	166,667	20,079,000
T-Note 1.875 6/30/2020	912828VJ6-1	3,750,000	6/30/2020	6/28/2018	2.52%	3,703,271	91	17,578	3,765,234
T-Note 1.875 12/15/2020	9128283L2	2,070,000	12/15/2020	7/10/2019	1.91%	2,069,030	259	11,347	2,096,206
T-Note 2.625 12/15/2021	9128285R7	2,700,000	12/15/2021	7/10/2019	1.80%	2,752,945	624	20,720	2,810,943
T-Note 0.5 3/15/2023	912828ZD5	250,000	3/15/2023	3/16/2020	0.59%	249,336	1,079	54	251,583
T-Note 1.25 10/31/2021	912828T67	270,000	10/31/2021	9/6/2019	1.55%	268,313	579	1,409	274,514
T-Note 2 11/30/2020	912828A42	250,000	11/30/2020	8/9/2018	2.72%	246,006	244	1,667	253,223
T-Note 2.125 8/31/2020	912828VV9	250,000	8/31/2020	8/9/2018	2.69%	247,188	153	448	252,080
T-Note 2.5 5/31/2020	9128284Q0	250,000	5/31/2020	8/9/2018	2.66%	249,297	61	2,083	250,988
T-Note 2.625 5/15/2021	9128284P2	245,000	5/15/2021	2/7/2019	2.49%	245,708	410	2,421	251,862
T-Note 0.5 3/15/2023	912828ZD5	3,410,000	3/15/2023	3/16/2020	0.59%	3,400,942	1,079	741	3,431,585
T-Note 1.25 10/31/2021	912828T67	3,405,000	10/31/2021	9/6/2019	1.55%	3,383,586	579	17,773	3,461,932
T-Note 2 11/30/2020	912828A42	3,400,000	11/30/2020	9/17/2018	2.81%	3,341,828	244	22,667	3,443,826
T-Note 2.125 8/31/2020	912828VV9	3,400,000	8/31/2020	8/8/2018	2.69%	3,361,883	153	6,086	3,428,288
T-Note 2.5 5/31/2020	9128284Q0	3,400,000	5/31/2020	8/8/2018	2.66%	3,390,172	61	28,333	3,413,430
T-Note 2.625 5/15/2021	9128284P2	3,455,000	5/15/2021	2/7/2019	2.49%	3,464,852	410	34,135	3,551,775
T-Note 1.5 6/15/2020	912828XU9-1	635,000	6/15/2020	7/10/2019	2.00%	632,098	76	2,785	636,488



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 1.5 6/15/2020	912828XU9-2	355,000	6/15/2020	7/10/2019	1.99%	353,391	76	1,557	356,026
T-Note 1.5 6/15/2020	912828XU9-2	1,784,000	6/15/2020	9/6/2019	1.82%	1,779,679	76	7,823	1,789,156
T-Note 1.5 6/15/2020	912828XU9-2	928,000	6/15/2020	10/10/2019	1.66%	926,985	76	4,070	930,682
T-Note 1.5 6/15/2020	912828XU9-2	887,000	6/15/2020	11/20/2019	1.58%	886,619	76	3,890	889,563
T-Note 1.5 6/15/2020	912828XU9-2	922,000	6/15/2020	12/16/2019	1.59%	921,604	76	4,043	924,665
T-Note 1.5 6/15/2020	912828XU9-2	891,000	6/15/2020	1/14/2020	1.56%	890,756	76	3,907	893,575
T-Note 1.5 6/15/2020	912828XU9-2	890,000	6/15/2020	2/7/2020	1.55%	889,826	76	3,903	892,572
T-Note 1.5 6/15/2020	912828XU9-2	885,000	6/15/2020	3/11/2020	0.47%	887,385	76	3,881	887,558
T-Note 1.875 6/30/2020	912828VJ6-2	1,740,000	6/30/2020	7/3/2018	2.54%	1,717,638	91	8,156	1,747,673
T-Note 1.875 6/30/2020	912828VJ6-2	2,760,000	6/30/2020	10/30/2018	2.81%	2,718,061	91	12,938	2,772,172
T-Note 2.625 12/15/2021	9128285R7	7,100,000	12/15/2021	7/10/2019	1.80%	7,239,227	624	54,487	7,391,739
T-Note 1.625 6/30/2020	912828XH8	9,705,000	6/30/2020	10/11/2017	1.61%	9,709,928	91	39,427	9,741,782
T-Note 2.625 12/15/2021	9128285R7	20,350,000	12/15/2021	7/10/2019	1.80%	20,749,051	624	156,170	21,186,182
T-Note 0.5 3/15/2023	912828ZD5	688,000	3/15/2023	3/16/2020	0.59%	686,173	1,079	150	692,355
T-Note 1.25 10/31/2021	912828T67	730,000	10/31/2021	9/6/2019	1.55%	725,438	579	3,810	742,206
T-Note 2 11/30/2020	912828A42	685,000	11/30/2020	8/9/2018	2.72%	674,056	244	4,567	693,830
T-Note 2.125 8/31/2020	912828VV9	685,000	8/31/2020	8/9/2018	2.69%	677,294	153	1,226	690,699
T-Note 2.5 5/31/2020	9128284Q0	685,000	5/31/2020	8/9/2018	2.66%	683,073	61	5,708	687,706
T-Note 2.625 5/15/2021	9128284P2	700,000	5/15/2021	2/7/2019	2.49%	702,023	410	6,916	719,607
T-Note 1.375 9/15/2020	9128282V1	5,134,000	9/15/2020	12/6/2019	1.62%	5,124,374	168	3,069	5,163,880
T-Note 1.375 9/15/2020	9128282V1	79,000	9/15/2020	1/3/2020	1.60%	78,877	168	47	79,460
T-Note 0.5 3/15/2023	912828ZD5	5,765,000	3/15/2023	3/16/2020	0.59%	5,749,687	1,079	1,253	5,801,492
T-Note 1.25 10/31/2021	912828T67	5,765,000	10/31/2021	9/6/2019	1.55%	5,728,744	579	30,092	5,861,391
T-Note 2 11/30/2020	912828A42	5,750,000	11/30/2020	9/17/2018	2.81%	5,651,621	244	38,333	5,824,118
T-Note 2.125 8/31/2020	912828VV9	5,750,000	8/31/2020	8/8/2018	2.69%	5,685,537	153	10,293	5,797,840
T-Note 2.5 5/31/2020	9128284Q0	5,750,000	5/31/2020	8/8/2018	2.66%	5,733,379	61	47,917	5,772,713
T-Note 2.625 5/15/2021	9128284P2	5,685,000	5/15/2021	2/7/2019	2.49%	5,701,211	410	56,167	5,844,237
T-Note 1.5 6/15/2020	912828XU9-1	1,140,000	6/15/2020	7/10/2019	2.00%	1,134,790	76	4,999	1,142,672
T-Note 1.5 6/15/2020	912828XU9-2	299,000	6/15/2020	7/10/2019	1.99%	297,645	76	1,311	299,864
T-Note 1.5 6/15/2020	912828XU9-2	2,449,000	6/15/2020	9/6/2019	1.82%	2,443,069	76	10,739	2,456,078
T-Note 1.5 6/15/2020	912828XU9-2	1,267,000	6/15/2020	10/10/2019	1.66%	1,265,614	76	5,556	1,270,662
T-Note 1.5 6/15/2020	912828XU9-2	1,217,000	6/15/2020	11/20/2019	1.58%	1,216,477	76	5,337	1,220,517
T-Note 1.5 6/15/2020	912828XU9-2	1,265,000	6/15/2020	12/16/2019	1.59%	1,264,456	76	5,547	1,268,656
T-Note 1.5 6/15/2020	912828XU9-2	1,223,000	6/15/2020	1/14/2020	1.56%	1,222,666	76	5,363	1,226,534
T-Note 1.5 6/15/2020	912828XU9-2	1,222,000	6/15/2020	2/7/2020	1.55%	1,221,761	76	5,359	1,225,532
T-Note 1.5 6/15/2020	912828XU9-2	1,215,000	6/15/2020	3/11/2020	0.47%	1,218,275	76	5,328	1,218,511
T-Note 1.625 6/30/2020	912828XH8	4,565,000	6/30/2020	2/27/2017	1.54%	4,578,374	91	18,545	4,582,301
T-Note 1.625 6/30/2020	912828XH8	6,560,000	6/30/2020	10/11/2017	1.61%	6,563,331	91	26,650	6,584,862
T-Note 2.625 12/15/2021	9128285R7	10,900,000	12/15/2021	7/10/2019	1.80%	11,113,742	624	83,649	11,347,881

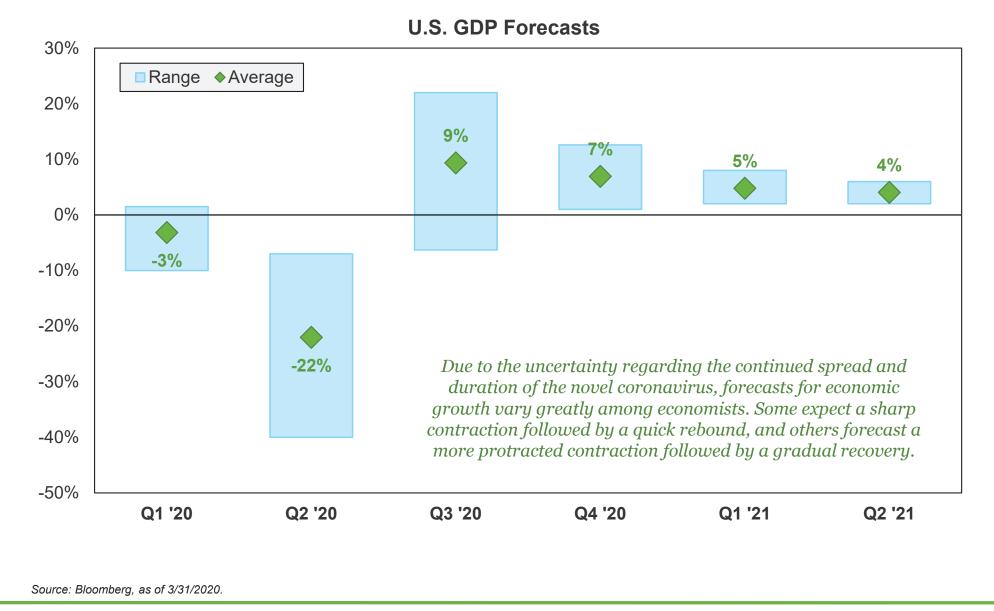


Appendix II: Economic Update



GLWA Great Lakes Water Authority

U.S. Economy Projected to Contract in the Near-Term

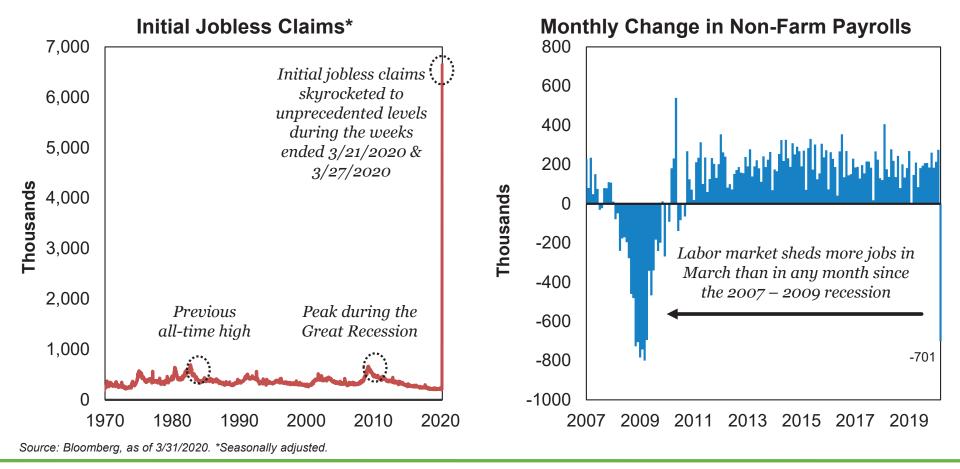


Prepared by PFM Asset Management LLC



U.S. Economy Posts Record Job Losses in March

- The initial jobless claims report showed 6.65 million Americans filed for unemployment benefits for the week ended March 28th, far exceeding the consensus estimate of 3.76 million, and nearly doubling the previous record set last week, which was revised up to 3.31 million
- California recorded the largest initial jobless claims, followed by Pennsylvania then New York; about 6.0% of the U.S. labor force has filed for jobless claims in the last two weeks of March, up from 0.3% at the end of February



Prepared by PFM Asset Management LLC



Yield Curve Falls, Especially Short-Term Securities

- Following two March rate cuts totaling 150 basis points, U.S. Treasury rates drastically declined in March
- White House officials seek to prepare the nation for what is expected to be a challenging couple of weeks, providing little optimism for investors; also pressuring Treasury yields is the fact that nearly 90% of Americans are under stay-at-home measures, making for a bleak business environment

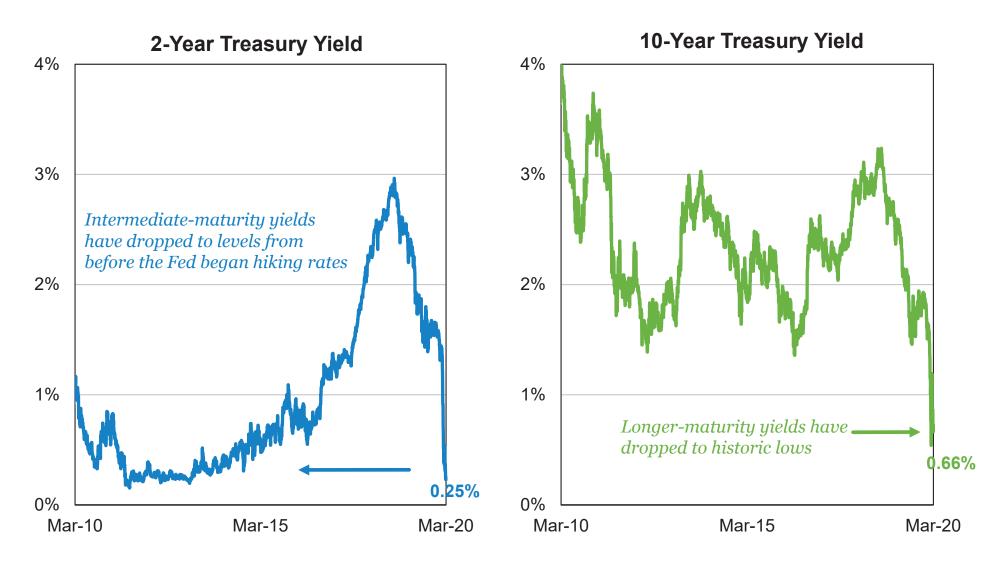
				U.S. Treasury Yield Curve						
	<u>2/29/2020</u>	<u>3/31/2020</u>	<u>Change</u>	— February 29, 2020 — March 31, 2020 2.0						
3 month	1.28%	0.09%	-1.19%	2.0						
6 month	1.16%	0.15%	-1.01%	1.5						
1 year	1.02%	0.16%	-0.85%							
2 year	0.92%	0.25%	-0.67%							
3 year	0.88%	0.31%	-0.57%							
5 year	0.94%	0.42%	-0.52%	0.5						
10 year	1.15%	0.67%	-0.48%							
30 year	1.68%	1.32%	-0.35%	0.0 3M 2Y3Y 5Y 10Y 30Y Maturity						

U.S. Treasury Yield Curve

Source: Bloomberg, as of 3/31/2020.



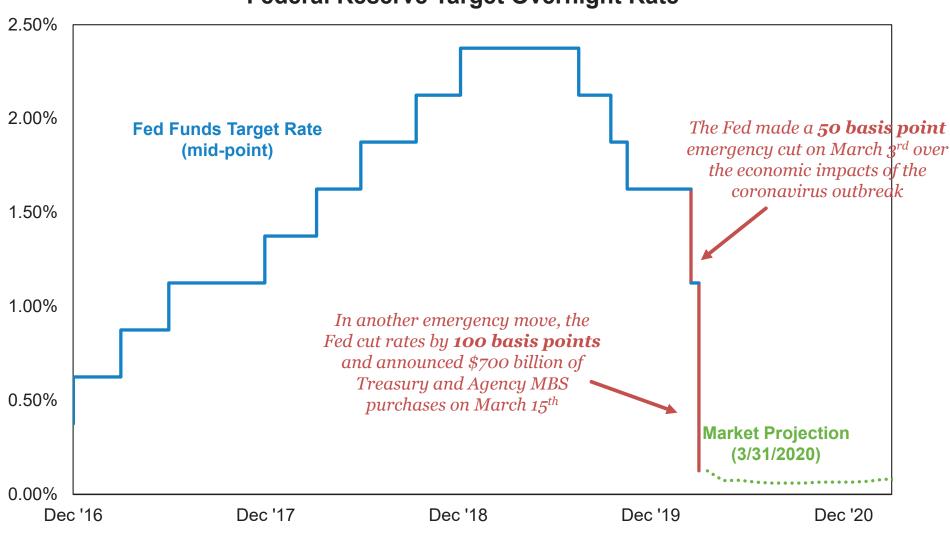
Rates Plummet Due to Coronavirus Outbreak



Source: Bloomberg, as of 3/31/2020.



Fed Delivers Two Emergency Rate Cuts in Early March



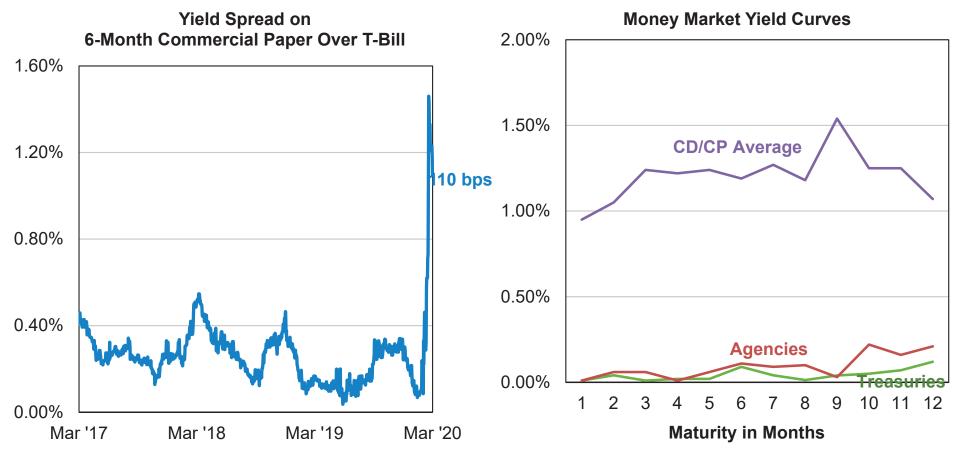
Federal Reserve Target Overnight Rate

Source: Bloomberg. Market Projection as of 3/31/2020.



Short-Term Credit Spreads Elevated and Volatile

- The Fed's new Commercial Paper Funding Facility (CPFF) will become operational in the first half of April 2020
- The purpose of the CPFF is to enhance the liquidity of the commercial paper market by increasing the availability of term commercial paper funding to issuers and by providing greater assurance to both issuers and investors that firms / municipalities will be able to roll over their maturing commercial paper



Source: Bloomberg, PFM Trading Desk, as of 3/31/2020. Not a specific recommendation. Actual yields may vary by issue.



Fixed Income Market Overview and Outlook

FIXED INCOME MARKET – ECONOMIC HIGHLIGHTS

- Although the U.S. economy entered the year on a strong footing, that deteriorated quickly as the COVID-19 pandemic took hold across the globe, including the U.S.
 - This created a threefold crisis: (1) a global health crisis; (2) a virtual economic shutdown in the U.S. and elsewhere; and (3) unprecedented moves in the financial markets.
 - The immediate impact of the pandemic on global economies made typical economic indicators, most of which are backward-looking, essentially irrelevant.
- > The Federal Reserve responded aggressively by:
 - Cutting rates at two emergency meetings to the new target range of 0.00% to 0.25%,
 - Initiating unlimited bond buying (quantitative easing) of various security types, and
 - Dusting off and adding to their playbook of market support programs from the 2008 2009 financial crisis to cushion the potential blow on the financial markets.
- Treasury yields plunged in response to the Fed's new zero interest rate policy, with longer-term Treasury yields reaching new historic lows.
 - These moves led to positive returns on Treasury indexes; however, in a move reminiscent of 2008, yield spreads on all other asset classes spiked as investors grappled with unprecedented uncertainty.



Fixed Income Market Overview and Outlook

FIXED INCOME MARKET – ECONOMIC HIGHLIGHTS

- > Our strategy for the first quarter of 2020 included the following elements:
 - PFM took a proactive response to the emerging crises and fast-moving markets by shifting portfolio strategies to emphasize safety and liquidity, as well as holding frequent, ad-hoc Credit and Investment Committee meetings to assess emerging news and market trends.
 - We also moved to improve the liquidity profile of portfolios by increasing our target allocation of U.S. Treasuries and Agencies and reassessing our clients' potential near-term cash needs.
 - After several quarters of reducing Federal Agency allocations due to unattractive levels, yield spreads widened to levels not seen since 2009; PFM therefore viewed this as an opportunity to begin adding to Agency allocations to capture value on one of the safest and most liquid asset classes.
 - Like their longer-term counterparts, short-term commercial paper credit spreads widened sharply due to credit and liquidity concerns; we partially returned to the CP market in a cautious manner late in the quarter, emphasizing the largest, strongest banks and industrial issuers.
- U.S. economic fundamentals are expected to deteriorate significantly in the second quarter of 2020 as the full effect of COVID-19 materializes.
 - The real question is the duration of the economic shutdown and the speed and trajectory of the eventual recovery.
- > Our outlook for the major fixed-income investment-grade sectors are as follows:
 - Federal Agencies currently offer value, materially less credit risk, and better liquidity than most other sectors; moving
 into the second quarter, we will likely target increased allocations to Agencies.
 - The commercial paper market sector faces numerous challenges and uncertainties and we believe the prudent action is to remain cautious and vigilant until longer-term economic consequences are better understood and market liquidity stabilizes.



Disclosure

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