

**Great Lakes Water Authority/
Detroit Water and Sewerage Department
Five-year Financial Forecast – Cash Basis**

July 1, 2015 through June 30, 2020

**Great Lakes Water Authority/Detroit Water and Sewerage Department
Five-year Financial Forecast
Table of Contents**

Report Letter.....	1
Project Summary	2-3
Executive Summary.....	4
Financial Forecast	5-10
Summary of Significant Assumptions and Accounting Policies.....	11-19
Appendices:	
A. Estimated Collections of User Charge Revenues.....	20-21
B. Estimated Operations and Maintenance Expenses.....	22-25
C. Capital Improvement Plan	26-27
D. Debt Financing.....	28
E. Sensitivity Analysis:	
Description of Scenario Alternatives.....	29
Scenario 1, Pessimistic Assumptions	30
Scenario 2, Optimistic Assumptions.....	31

Independent Accountant's Report

Mr. Eric Rothstein
Project Management Office Advisor
Great Lakes Water Authority

We have compiled the accompanying five-year financial forecast of the combined activities of the Great Lakes Water Authority ("GLWA") and the Detroit Water and Sewerage Department ("DWSD"), as well as the stand-alone activities of the GLWA, for the years ending June 30, 2016 through June 30, 2020, in accordance with attestation standards established by the American Institute of Certified Public Accountants. This forecast includes both the Sewage Disposal Fund and the Water Fund.

The forecast does not present all significant financial measures that would be presented in a complete set of financial statements (statement of net position, statement of revenue, expenses, and changes in net position, and statement of cash flows). Accordingly, this forecast is not designed for those who are not informed about DWSD's financial position, results of operations, and cash flows.

A compilation is limited to presenting, in the form of a forecast, information that is the representation of management and does not include evaluation of the support for the assumptions underlying the forecast. We have not examined the forecast and, accordingly, do not express an opinion or any other form of assurance on the accompanying statements or assumptions. Furthermore, there will usually be differences between the forecasted and actual results because events and circumstances frequently do not occur as expected and those differences may be material. We have no responsibility to update this report for events and circumstances occurring after the date of this report.

We also compiled the accompanying appendices (as listed in the table of contents) and, accordingly, do not express an opinion or any other form of assurance on such information.

The accompanying forecast and this report are intended solely for the information and use of the Great Lakes Water Authority, the City of Detroit and the Detroit Water and Sewerage Department and are not intended to be and should not be used by anyone other than the specified parties.

Plante & Moran, PLLC

May 29, 2015

Great Lakes Water Authority/Detroit Water and Sewerage Department Five-year Financial Forecast

Project Summary

During the City of Detroit's bankruptcy, a Memorandum of Understanding (MOU) was signed to begin the process of splitting the Detroit Water and Sewerage Department into two operating entities – the Great Lakes Water Authority will operate at the regional level, and will charge fees to both Detroit customers and all suburban customers; and the City of Detroit will continue to operate the retail operations within the City jurisdiction.

Among the various terms of the MOU are the following provisions with the most significant impact to the financial activities of both DWSD and GLWA:

1. GLWA will assume responsibility for all DWSD bonded indebtedness;
2. GLWA will lease from or take title to DWSD machinery, equipment and infrastructure necessary to operate the wholesale system;
3. GLWA will deposit \$50 million per year into restricted bank accounts that may be used at the City's discretion solely for the use in DWSD retail operations for any combination of the following: Detroit local system infrastructure improvements, debt service associated with such improvements or the City's share of the cost of common-to-all improvements (this is referred to as the "lease payment" throughout this forecast);
4. GLWA will set aside 0.5% of base budgeted system-wide operating revenues per year (both GLWA wholesale revenues and Detroit retail revenues) for the Water Residential Assistance Program (WRAP) fund to provide assistance to indigent residential customers (both suburban and Detroit);
5. GLWA will continue to provide a \$26.216 million per year rate of return to City rate payers, in recognition of the City's ownership and system support. This will occur in the form of an additional cost included in the cost pool for suburban wholesale customers, and an equal reduction to the cost pool for the Detroit customer base. The cost transfer for water and sewer services is based on the FY 2014 amounts calculated and is fixed for the 40 year term, as identified in the MOU.
6. GLWA will fund \$42.9 million for 8 years (plus \$2.5m in annual administrative expenses) into the pension system (the MOU calls for 9 years, but this forecast begins one year after the initiation of payments); and
7. GLWA will strive to hold annual budgeted revenue increases to not greater than 4% each year (driven from the base year of FY 2015) for each of the first ten years under Authority management. Two potential exceptions to this limitation are any EPA-imposed environmental requirements and any shortfall in bond rate covenant requirements.

Great Lakes Water Authority/Detroit Water and Sewerage Department Five-year Financial Forecast

The signing of the MOU was predicated on an analysis dated August 22, 2014 and updated September 8, 2014. The general interpretation of this analysis was that the creation of the GLWA was likely feasible, subject to considerable contingencies, risks and further due diligence. Since then, there has been development in several factors, the most significant of which is a decline in the total volume of water being purchased by the end users of the system and an additional \$50 million impairment of capital assets.

The purpose of this financial forecast is to evaluate the feasibility of entering into the Great Lakes Water Authority leases, in accordance with the items outlined above from the MOU, given all currently available information. More specifically, it is intended to better understand the extent of the operational modifications or financing restructuring that may be necessary in order to create the GLWA and honor the commitment to hold total revenue requirement increases to 4%. The forecast presents both (a) the cash flows of the Water system, the Sewer system, and the combined water/sewer system of the current (extant) Detroit Water & Sewerage Department; and (b) the cash flows of the stand-alone GLWA. The stand-alone GLWA system excludes the activities related solely to the Detroit retail system (DWSD-R). It should be noted that the contractual agreements to accomplish the stand-alone GLWA have not been finalized as of the date of this forecast.

Difference from Amounts Presented in Forecast Prepared for Potential Refunding

This forecast varies in certain respects from the forecasts developed by The Foster Group, LLC, as consultant to DWSD in connection with DWSD's potential public offering of revenue refunding bonds for each system. The principal difference between the two forecasts is that this forecast assumes that the number of fulltime equivalent employees (FTE's) employed by the systems will drop, without replacement, by 5% per year, to a floor of 1,000 employees. The remaining variances are the result of rounding differences, which management does not regard as material.

Great Lakes Water Authority/Detroit Water and Sewerage Department Five-year Financial Forecast

Executive Summary

The forecast indicates that the expected operating parameters should result in sufficient cash flow in the system to enable the system to support cash outflows for the \$50 million lease payment, the \$45.4 million pension reimbursement (\$31.9 million GLWA stand-alone), and the approximately \$4.5 million WRAP program, and to do so within the 4% revenue requirement increase limitation. As discussed in the Significant Risks and Opportunities section on page 11-12, the Authority will have to actively manage the water and sewer operations, as there are potential significant risks associated with the operations, but also significant opportunities to manage those risks.

**Financial Forecast of the
Combined Operations of
the Great Lakes Water Authority and
the Detroit Water and Sewerage Department
Cash basis - July 1, 2015 through June 30, 2020**

**Great Lakes Water Authority/Detroit Water and Sewerage Department
Five-year Financial Forecast**

Water System Forecast

Historical results:			Forecasted results:				
2013 Audited	2014 Unaudited	2015 Estimate	2016	2017	2018	2019	2020
			CASH INFLOWS				
\$ 350,839,000	\$ 344,879,100	\$ 353,500,000	\$ 396,244,500	\$ 412,094,300	\$ 428,578,100	\$ 445,721,300	\$ 463,550,200
4,688,700	4,490,200	4,000,000	4,750,000	4,750,000	4,750,000	4,750,000	4,750,000
5,563,800	4,276,700	1,500,000	2,805,300	3,189,800	3,184,900	3,145,400	3,342,500
361,091,500	353,646,000	359,000,000	403,799,800	420,034,100	436,513,000	453,616,700	471,642,700
			CASH OUTFLOWS				
151,204,300	145,268,200	151,500,000	165,800,000	167,555,500	169,403,700	171,358,900	173,411,200
209,887,200	208,377,800	207,500,000	237,999,800	252,478,600	267,109,300	282,257,800	298,231,500
			Debt service:				
130,225,500	140,212,000	134,820,900	139,102,500	147,442,600	146,847,900	137,363,100	145,230,100
40,435,100	39,888,000	42,314,200	42,185,200	42,200,300	42,754,300	51,194,400	51,183,500
1,842,100	2,800,000	1,788,800	2,165,500	2,553,000	2,549,900	3,761,400	3,764,000
5,800,000	2,383,200	22,031,000	Nonoperating expense:				
-	-	9,200,000	9,200,000	9,200,000	9,200,000	9,200,000	9,200,000
-	-	-	1,981,200	2,060,500	2,142,900	2,228,600	2,317,800
-	-	3,049,100	1,506,000	1,506,000	1,506,000	1,506,000	1,506,000
329,507,000	330,551,400	364,704,000	361,940,400	372,517,900	374,404,700	376,612,400	386,612,600
31,584,500	23,094,600	(5,704,000)	41,859,400	47,516,200	62,108,300	77,004,300	85,030,100
-	-	-	-	17,732,000	86,146,000	30,909,000	43,913,000
-	-	-	22,500,000	22,500,000	22,500,000	22,500,000	22,500,000
(1,879,100)	42,132,200	(189,200)	Cash differences from accrual records				
29,705,400	65,226,800	(5,893,200)	19,359,400	7,284,200	(46,537,700)	23,595,300	18,617,100
			Cash and investments available for operations:				
17,969,000	47,674,400	112,901,200	107,008,000	126,367,400	133,651,600	87,113,900	110,709,200
\$ 47,674,400	\$ 112,901,200	\$ 107,008,000	\$ 126,367,400	\$ 133,651,600	\$ 87,113,900	\$ 110,709,200	\$ 129,326,300
35,281,000	33,896,000	35,350,000	38,687,000	39,096,000	39,528,000	39,984,000	40,463,000
			Debt service coverage:				
161.2%	148.6%	153.9%	171.1%	171.2%	181.9%	205.5%	205.4%
123.0%	115.7%	117.1%	131.3%	133.1%	140.9%	149.7%	151.8%
121.7%	113.9%	116.0%	129.7%	131.4%	139.0%	146.8%	149.0%

See accompanying summaries of significant assumptions and accounting policies and accountant's report.

**Great Lakes Water Authority/Detroit Water and Sewerage Department
Five-year Financial Forecast**

Sewer System Forecast

Historical results:			Forecasted results:				
2013 audited	2014 Unaudited	2015 Estimate	2016	2017	2018	2019	2020
			CASH INFLOWS				
\$ 437,239,300	\$ 471,186,800	\$ 494,200,000	\$ 522,152,800	\$ 543,038,900	\$ 564,760,500	\$ 587,350,900	\$ 610,844,900
3,623,900	4,584,100	4,700,000	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000
861,800	-	1,100,000	2,283,300	2,715,600	2,910,000	2,840,000	3,052,500
441,725,000	475,770,900	500,000,000	529,436,100	550,754,500	572,670,500	595,190,900	618,897,400
			CASH OUTFLOWS				
209,785,100	206,051,500	200,852,000	220,800,000	210,845,100	212,995,400	215,274,000	217,681,000
231,939,900	269,719,400	299,148,000	308,636,100	339,909,400	359,675,100	379,916,900	401,216,400
			Debt service:				
133,463,800	130,286,000	134,501,000	144,633,400	144,647,900	144,593,000	144,357,400	143,943,100
54,967,400	62,390,000	62,901,000	54,206,900	54,220,000	54,220,000	54,456,000	56,221,000
36,450,500	37,724,000	39,108,000	43,612,800	47,382,100	47,411,100	50,986,600	51,083,400
			Nonoperating expense:				
6,600,000	11,573,600	65,125,000	12,200,000	12,200,000	12,200,000	12,200,000	12,200,000
-	-	12,200,000	2,610,800	2,715,200	2,823,800	2,936,800	3,054,200
-	-	-	2,507,400	2,507,400	2,507,400	2,507,400	2,507,400
-	-	5,074,000	480,571,300	474,517,700	476,750,700	482,718,200	486,690,100
441,266,800	448,025,100	519,761,000	480,571,300	474,517,700	476,750,700	482,718,200	486,690,100
			Available for capital improvts. & lease payments				
458,200	27,745,800	(19,761,000)	48,864,800	76,236,800	95,919,800	112,472,700	132,207,300
-	-	-	-	-	29,551,000	97,500,000	97,500,000
-	-	-	27,500,000	27,500,000	27,500,000	27,500,000	27,500,000
24,195,700	38,855,700	570,900	21,364,800	48,736,800	38,868,800	(12,527,300)	7,207,300
24,653,900	66,601,500	(19,190,100)	97,709,000	119,073,800	167,810,600	206,679,400	194,152,100
			Cash and investments available for operations:				
25,643,700	50,297,600	116,899,100	97,709,000	119,073,800	167,810,600	206,679,400	194,152,100
\$ 50,297,600	\$ 116,899,100	\$ 97,709,000	\$ 119,073,800	\$ 167,810,600	\$ 206,679,400	\$ 194,152,100	\$ 201,359,400
48,950,000	48,079,000	46,865,000	51,520,000	49,197,000	49,699,000	50,231,000	50,792,000
			Minimum required in O&M, ER&R accounts				
			Debt service coverage:				
173.8%	207.0%	222.4%	213.4%	235.0%	248.8%	263.2%	278.7%
123.1%	140.0%	151.5%	155.2%	170.9%	180.9%	191.1%	200.4%
103.1%	117.1%	126.5%	127.3%	138.0%	146.1%	152.1%	159.7%

See accompanying summaries of significant assumptions and accounting policies and accountant's report.

Great Lakes Water Authority/Detroit Water and Sewerage Department
Five-year Financial Forecast

Historical results:			Combined Water and Sewer System Forecast				
2013 audited	2014 Unaudited	2015 Estimate	Forecasted results:				
			2016	2017	2018	2019	2020
			CASH INFLOWS				
\$ 788,078,300	\$ 816,065,900	\$ 847,700,000	\$ 918,397,300	\$ 955,133,200	\$ 993,338,600	\$ 1,033,072,200	\$ 1,074,395,100
8,312,600	9,074,300	8,700,000	9,750,000	9,750,000	9,750,000	9,750,000	9,750,000
6,425,600	4,276,700	2,600,000	5,088,600	5,905,400	6,094,900	5,985,400	6,395,000
802,816,500	829,416,900	859,000,000	933,235,900	970,788,600	1,009,183,500	1,048,807,600	1,090,540,100
			CASH OUTFLOWS				
360,989,400	351,319,700	352,352,000	386,600,000	378,400,600	382,399,100	386,632,900	391,092,200
441,827,100	478,097,200	506,648,000	546,635,900	592,388,000	626,784,400	662,174,700	699,447,900
			Debt service:				
263,689,300	270,498,000	269,321,900	283,735,900	292,090,500	291,440,900	281,720,500	289,173,200
95,402,500	102,278,000	105,215,200	96,392,100	96,420,300	96,974,300	105,650,400	107,404,500
38,292,600	40,524,000	40,896,800	45,778,300	49,935,100	49,961,000	54,748,000	54,847,400
12,400,000	13,956,800	87,156,000	Nonoperating expense:				
-	-	21,400,000	21,400,000	21,400,000	21,400,000	21,400,000	21,400,000
-	-	-	4,592,000	4,775,700	4,966,700	5,165,400	5,372,000
-	-	8,123,100	4,013,400	4,013,400	4,013,400	4,013,400	4,013,400
770,773,800	778,576,500	884,465,000	842,511,700	847,035,600	851,155,400	859,330,600	873,302,700
32,042,700	50,840,400	(25,465,000)	90,724,200	123,753,000	158,028,100	189,477,000	217,237,400
-	-	-	-	17,732,000	115,697,000	128,409,000	141,413,000
-	-	-	50,000,000	50,000,000	50,000,000	50,000,000	50,000,000
22,316,600	80,987,900	381,700	Cash differences from accrual records				
54,359,300	131,828,300	(25,083,300)	40,724,200	56,021,000	(7,668,900)	11,068,000	25,824,400
			Cash and investments available for operations:				
43,612,700	97,972,000	229,800,300	204,717,000	245,441,200	301,462,200	293,793,300	304,861,300
\$ 97,972,000	\$ 229,800,300	\$ 204,717,000	\$245,441,200	\$ 301,462,200	\$ 293,793,300	\$ 304,861,300	\$ 330,685,700
84,231,000	81,975,000	82,215,000	90,207,000	88,293,000	89,226,000	90,214,000	91,255,000
			Debt service coverage:				
167.6%	176.7%	188.1%	192.7%	202.8%	215.1%	235.0%	241.9%
123.0%	128.3%	135.3%	143.8%	152.5%	161.4%	170.9%	176.4%
111.2%	115.7%	122.0%	128.3%	135.1%	143.0%	149.8%	154.9%

See accompanying summaries of significant assumptions and accounting policies and accountant's report.

**Financial Forecast of the
Stand-Alone Operations of
the Great Lakes Water Authority
Cash basis - July 1, 2015 through June 30, 2020**

Great Lakes Water Authority (Stand-Alone)
Five-year Financial Forecast

	Water System Forecast				
	Forecasted results:				
	2016	2017	2018	2019	2020
CASH INFLOWS					
Revenues from sales	\$ 346,889,500	\$ 361,004,400	\$ 374,129,200	\$ 387,814,300	\$ 403,354,700
Misc. operating revenue	-	-	-	-	-
Nonoperating revenue	2,805,300	3,189,800	3,184,900	3,145,400	3,342,500
Total inflows	349,694,800	364,194,200	377,314,100	390,959,700	406,697,200
CASH OUTFLOWS					
Operation & maintenance	113,158,200	114,583,400	116,102,700	117,702,000	119,312,500
Net revenue	236,536,600	249,610,800	261,211,400	273,257,700	287,384,700
Debt service:					
Senior lien bonds	139,102,500	147,442,600	146,847,900	137,363,100	145,230,100
Second lien bonds	42,185,200	42,200,300	42,754,300	51,194,400	51,183,500
SRF junior lien	2,165,500	2,553,000	2,549,900	3,761,400	3,764,000
Nonoperating expense:					
Nonoperating pension reimbursement	5,392,300	5,392,300	5,392,300	5,392,300	5,392,300
Water Residential Assistance Program (WRAP)	1,981,200	2,060,500	2,142,900	2,228,600	2,317,800
Note B & C payments (OPEB, POC)	1,051,900	1,051,900	1,051,900	1,051,900	1,051,900
Total outflows	305,036,800	315,284,000	316,841,900	318,693,700	328,252,100
Available for capital improvts. & lease payments	44,658,000	48,910,200	60,472,200	72,266,000	78,445,100
Revenue-financed capital improvements	-	40,232,200	86,146,100	30,908,800	43,913,300
Lease payments	22,500,000	22,500,000	22,500,000	22,500,000	22,500,000
Net resources	22,158,000	(13,822,000)	(48,173,900)	18,857,200	12,031,800
Cash and investments available for operations:					
Beginning of year	101,598,000	123,756,000	109,934,000	61,760,100	80,617,300
End of year	\$ 123,756,000	\$ 109,934,000	\$ 61,760,100	\$ 80,617,300	\$ 92,649,100
<i>Minimum required in O&M, ER&R accounts</i>	<i>26,404,000</i>	<i>26,736,000</i>	<i>27,091,000</i>	<i>27,464,000</i>	<i>27,840,000</i>

See accompanying summaries of significant assumptions and accounting policies and accountant's report.

Great Lakes Water Authority (Stand-Alone)
Five-year Financial Forecast

Sewer System Forecast

	Forecasted results:				
	2016	2017	2018	2019	2020
CASH INFLOWS					
Revenues from sales	\$ 487,637,800	\$ 506,594,200	\$ 525,939,100	\$ 546,392,900	\$ 567,453,500
Misc. operating revenue	-	-	-	-	-
Nonoperating revenue	2,283,300	2,715,600	2,910,000	2,840,000	3,052,500
Total inflows	489,921,100	509,309,800	528,849,100	549,232,900	570,506,000
CASH OUTFLOWS					
Operation & maintenance	174,691,800	167,162,400	168,883,300	170,690,000	172,588,100
Net revenue	315,229,300	342,147,400	359,965,800	378,542,900	397,917,900
Debt service:					
Senior lien bonds	144,633,400	144,647,900	144,593,000	144,357,400	143,943,100
Second lien bonds	54,206,900	54,220,000	54,220,000	54,456,000	56,221,000
SRF junior lien	43,612,800	47,382,100	47,411,100	50,986,600	51,083,400
Nonoperating expense:					
Nonoperating pension reimbursement	9,651,700	9,651,700	9,651,700	9,651,700	9,651,700
Water Residential Assistance Program (WRAP)	2,610,800	2,715,200	2,823,800	2,936,800	3,054,200
Note B & C payments (OPEB, POC)	2,126,000	2,126,000	2,126,000	2,126,000	2,126,000
Total outflows	431,533,400	427,905,300	429,708,900	435,204,500	438,667,500
Available for capital improvts. & lease payments	58,387,700	81,404,500	99,140,200	114,028,400	131,838,500
Revenue-financed capital improvements	-	-	57,050,700	97,500,000	97,500,000
Lease payments	27,500,000	27,500,000	27,500,000	27,500,000	27,500,000
Net resources	30,887,700	53,904,500	14,589,500	(10,971,600)	6,838,500
Cash and investments available for operations:					
Beginning of year	78,015,000	108,902,700	162,807,200	177,396,700	166,425,100
End of year	\$ 108,902,700	\$ 162,807,200	\$ 177,396,700	\$ 166,425,100	\$ 173,263,600
<i>Minimum required in O&M, ER&R accounts</i>	<i>40,761,000</i>	<i>39,005,000</i>	<i>39,406,000</i>	<i>39,828,000</i>	<i>40,271,000</i>

See accompanying summaries of significant assumptions and accounting policies and accountant's report.

**Great Lakes Water Authority (Stand-Alone)
Five-year Financial Forecast**

	Combined Water and Sewer Forecast				
	Forecasted results:				
	2016	2017	2018	2019	2020
CASH INFLOWS					
Revenues from sales	\$ 834,527,300	\$ 867,598,600	\$ 900,068,300	\$ 934,207,200	\$ 970,808,200
Misc. operating revenue	-	-	-	-	-
Nonoperating revenue	5,088,600	5,905,400	6,094,900	5,985,400	6,395,000
Total inflows	839,615,900	873,504,000	906,163,200	940,192,600	977,203,200
CASH OUTFLOWS					
Operation & maintenance	287,850,000	281,745,800	284,986,000	288,392,000	291,900,600
Net revenue	551,765,900	591,758,200	621,177,200	651,800,600	685,302,600
Debt service:					
Senior lien bonds	283,735,900	292,090,500	291,440,900	281,720,500	289,173,200
Second lien bonds	96,392,100	96,420,300	96,974,300	105,650,400	107,404,500
SRF junior lien	45,778,300	49,935,100	49,961,000	54,748,000	54,847,400
Nonoperating expense:					
Nonoperating pension reimbursement	15,044,000	15,044,000	15,044,000	15,044,000	15,044,000
Water Residential Assistance Program (WRAP)	4,592,000	4,775,700	4,966,700	5,165,400	5,372,000
Note B & C payments (OPEB, POC)	3,177,900	3,177,900	3,177,900	3,177,900	3,177,900
Total outflows	736,570,200	743,189,300	746,550,800	753,898,200	766,919,600
Available for capital improvts. & lease payments	103,045,700	130,314,700	159,612,400	186,294,400	210,283,600
Revenue-financed capital improvements	-	40,232,200	143,196,800	128,408,800	141,413,300
Lease payments	50,000,000	50,000,000	50,000,000	50,000,000	50,000,000
Net resources	53,045,700	40,082,500	(33,584,400)	7,885,600	18,870,300
Cash and investments available for operations:					
Beginning of year	179,613,000	232,658,700	272,741,200	239,156,800	247,042,400
End of year	\$ 232,658,700	\$ 272,741,200	\$ 239,156,800	\$ 247,042,400	\$ 265,912,700
<i>Minimum required in O&M, ER&R accounts</i>	<i>67,165,000</i>	<i>65,741,000</i>	<i>66,497,000</i>	<i>67,291,000</i>	<i>68,110,000</i>

See accompanying summaries of significant assumptions and accounting policies and accountant's report.

Great Lakes Water Authority/Detroit Water and Sewerage Department Five-year Financial Forecast

Basis of Accounting

The financial forecast is presented on the cash basis of accounting. Revenue is recognized when it is collected, so forecasted amounts include an estimate of uncollectible amounts. Expenses are recognized when incurred; debt service payments include both principal and interest; capital outlay is presented as an outflow, except for the portion financed through a bond issuance. Depreciation is not presented.

The focus of the forecast (as shown at the bottom of the forecast) is “Cash and investments available for operations.” This term is meant to include all cash and investments other than those restricted by the various bond covenants so as to be unavailable to finance operations. As a result, the following cash accounts are included in the forecast as available for operations: the Receiving account, Operations & maintenance account, extraordinary repair and replacement account, and the Improvement & extensions account. The following accounts are excluded from the forecast: the debt service accounts, bond reserve accounts, interest and redemption accounts, or any construction accounts (unspent bond proceeds). It should be noted that the Operation & maintenance account requires one month’s operating expenses to be maintained in the account so that if amounts are spent to bring the account balance below this amount, the system has an obligation to refill the account until it reaches that level. Similarly, the extraordinary repairs and replacement account may be spent for operations if needed, but would need to be replenished if the balance falls below 15 percent of annual operating expenses. These minimum balance requirements are included in the forecast to compare to each year’s forecasted cash balances.

This forecast does not include cash activity related to any bond financing that is expected to be issued to construct system assets. Such bond proceeds do not represent cash available for operating activities, and so are not considered here. However, any amounts paid from operations to fund the above accounts (such as debt service, pension funding, the control payment, or revenue-financed capital improvements) would be included as cash outflows.

The Water and Sewer Funds have been presented using a basis of accounting that is different than the basis of accounting used in DWSD’s historical financial statements. The Water and Sewer Funds have been presented in a manner to assist DWSD in forecasting the cash available for operating activities throughout the forecasted period, to coincide with DWSD’s bond covenants.

Great Lakes Water Authority/Detroit Water and Sewerage Department Five-year Financial Forecast

Significant Risks

The assumptions used to create the forecast are detailed below. The most significant assumptions, which if not achieved would cause the actual results to differ significantly from the forecasted amounts, include:

- Capital improvement needs (whether revenue-financed or debt-financed) – this forecast assumes a level of capital replacement that will not require any additional sewer bonds, and that will require \$520 million of water bonds to be issued. Appendix C presents the detail of planned capital improvements. The Water system has recently completed a comprehensive Master Plan; this forecast has used capital estimates somewhat in excess of the Master Plan amounts. The sewer system capital improvements are based on a 2014 independent review, and are significantly higher than the currently approved CIP plan.
- Operational costs – The forecast has assumed approximately \$7 million of losses in efficiencies as a result of operating the wholesale system (GLWA) separately from the Detroit retail system (DWSD-R). It has also assumed that the system will continue to allow attrition to reduce the number of full time equivalent employees. Attrition has been assumed to be 5% per year, until such point that total FTE's reaches 1,000.
- Revenue – The forecast assumes that revenues will be raised to the maximum 4% limitation each year. With declining usage, this is expected to result in commodity charge increases in excess of 4%. If actual customer usage is lower than predicted, this would generally impact results for a two year period, because rates would be adjusted to make up for volume shortfalls, but there is a lag for those rate adjustments.
- Bad debts – The forecast assumes bad debts of approximately 15 percent for the Detroit retail customers. If actual bad debts are significantly higher than that, rates may have to be adjusted to make up for it. Again, there could be a two-year lag before rates would be adjusted. The City and each wholesale customer shall retain responsibility for all obligations associated with their individual revenue requirements. Accordingly, the City of Detroit rate base remains responsible for its allocated portion of the revenue requirement, and will bear the impact of bad debts related to retail customers in the City of Detroit. The suburban wholesale customers will be responsible for each of their allocated portions of the revenue requirement, and will bear the impact of any bad debts within each retail system. Any bad debts from suburban wholesale customers such as the City of Highland Park are expected to impact the GLWA. The Highland Park bad debts of approximately \$7 million annually have been spread to the suburban wholesale customers and are included in their rates.

Great Lakes Water Authority/Detroit Water and Sewerage Department Five-year Financial Forecast

Significant Opportunities

The governing body of GLWA is expected to actively manage the operations. To the extent that some or all of the above significant risks come to pass, there are several steps within the control of the Authority that would be enacted to positively impact financial results. These include:

- Operational changes: The Authority is in receipt of two reports that evaluate opportunities to optimize the operations of the water and sewer treatment systems. Implementing some or all of these changes could result in significant cost savings.
- Financing changes: The Authority could choose to utilize bond financing instead of revenue-financing for capital improvements. In addition, the Authority could refinance existing debt issues through refunding bonds, thereby reducing the net interest cost of its long term debt. Finally, the Authority could issue debt to fund some or all of its pension and retiree health care obligations, in a scenario in which the annual debt service on the new debt would be less than the required contributions into the pension and OPEB systems.

General Assumptions and Information

- Historical data for fiscal year 2013 has been compiled from DWSD's audited financial reports. Historical data for fiscal year 2014 has been compiled from DWSD's unaudited financial records. 2015 information is based on management's estimates used in the rate setting process for FY 2016 rates.
- The assumptions presented are what management considers to be "significant assumptions" and are not all-inclusive.
- Estimates for the fiscal years 2016 through 2020 were developed based on DWSD's current rate making model, and represent management's estimates as to the likely cash inflows and outflows. Those assumptions are described in more detail on the following pages.
- Data has been collected and financial estimates have been developed utilizing a number of sources including the chief financial officer and other professional sources.
- Assumptions are based on management's judgment given the most recent and best information known at the time of completion, which was May 29, 2015. Because these projected results are based on management's estimates and assumptions, actual results will likely differ from what is projected. Further, management may update these forecasted numbers as the development of the regional system progresses and significant operational and financing decisions are made.

Great Lakes Water Authority/Detroit Water and Sewerage Department
Five-year Financial Forecast

Description of Key Assumptions

Revenue

User charge revenue

The Memorandum of Understanding (MOU) allows for annual revenue requirement increases of 4% each year. The forecast assumes that revenues will be raised to the maximum 4% limitation each year, as shown in Appendix A. With declining water usage, this is expected to result in commodity charge increases in excess of 4%.

The historical and estimated volume of water and sewer usage in thousands of cubic feet is as follows:

FYE June 30,	Water volumes		Billable Sewer Volumes	
	Suburban Wholesale	Detroit Retail	Suburban Wholesale	Detroit Retail
Actual:				
2010	15,676,308	3,923,976	13,544,174	3,928,447
2011	16,094,683	4,217,523	15,070,513	3,695,168
2012	16,280,269	3,903,096	15,058,787	3,328,040
2013	15,687,868	3,660,327	13,286,460	3,087,199
2014	14,778,513	3,410,624	14,329,201	2,949,477
Estimated:				
2015	13,572,300	3,153,100	14,036,200	2,818,100
Forecasted:				
2016	14,010,850	3,300,000	14,036,200	3,025,000
2017	13,895,900	3,266,900	14,036,200	2,941,400
2018	13,250,600	3,234,000	14,036,200	2,860,200
2019	13,141,100	3,201,200	14,036,200	2,781,100
2020	13,032,100	3,168,600	14,036,200	2,704,300

The declining usage, as shown in the above table, is expected to result in commodity charge increases in excess of 4 percent, in order to achieve a 4 percent revenue requirement increase. This includes 2018, when Genesee County is expected to leave the water system. Currently the County purchases approximately 607 million cubic feet of water per year.

The 4 percent revenue requirement increase includes the impact of bad debts (future increases in bad debts will cause higher charges, and decreases will result in lower charges). The suburban wholesale portion of the water system is assumed to have bad debts solely related to the City of Highland Park. The cost of providing services to the City of Highland Park has been effectively allocated to the suburban wholesale customers. All other bad debts are assumed to relate to City of Detroit retail customers and represent approximately 15 percent of Detroit billings.

Great Lakes Water Authority/Detroit Water and Sewerage Department
Five-year Financial Forecast

Miscellaneous Operating

Miscellaneous operating revenue was based on the preliminary 2016 budget and assumed not to change through fiscal year 2020.

Nonoperating Revenue

Base nonoperating revenue was based on the preliminary 2016 budget and assumed not to change through fiscal year 2020. In addition to the base nonoperating revenue, it is assumed available funds will earn 0.75% interest.

Expenses

Operation and Maintenance Costs

Operations and maintenance costs include all costs other than capital, debt service, and nonoperating expense (discussed below).

Personnel costs (salaries and fringe benefits)

The salaries and wages component of this cost is driven primarily by the number of employees and the wage level. The number of employees historically and forecasted is shown below:

	Historical actual			Forecasted:				
	6/30/2013	6/30/2014	2/28/2015	2016	2017	2018	2019	2020
Administration	117	101	94	102	97	92	87	83
Water treatment	211	201	192	196	186	177	168	160
Wastewater treatment	629	545	482	443	383	364	346	328
Field services	409	362	344	294	279	265	252	239
Compliance	22	21	22	23	22	21	20	19
Information technology	42	39	27	22	21	20	19	18
Finance	106	92	77	98	93	88	84	80
Customer service	170	151	134	182	173	164	156	148
Total	1,706	1,512	1,372	1,360	1,254	1,191	1,132	1,075

This forecast assumes an attrition of 5% of the FTEs per year, without replacement, until such point that total FTEs reaches 1,000. In addition, a biosolids project becoming operational in 2016-2017 is expected to reduce staffing levels of the wastewater treatment function, as well as chemical costs. In general, wages are assumed to increase at an inflationary 2.5 percent per year.

Great Lakes Water Authority/Detroit Water and Sewerage Department Five-year Financial Forecast

The pension costs allocated to each function (approximately \$32 million in 2014) have been replaced with (a) the cost of the new pension system, and (b) the Plan of Adjustment requirement to pay \$45.4 million each year into the pension system (\$42.9 million base pension contribution plus \$2.5 million in annual administrative expenses). Of this annual payment, \$24 million has been treated as an operating expense, and \$21.4 million as a nonoperating expense. This payment is not allocated to the various functions; as a result, the fringe benefits allocated to each function represent approximately 42% of base wages in this forecast, compared to approximately 78% in 2013 and 2014. The fringe benefit rate of 42% does include the cost of the new post-bankruptcy pension plan. All other fringe benefits are assumed to increase at the same level as wages (2.5% per year).

Contractual Services, Utilities, Supplies & Other

As discussed above, this forecast assumes implementation of a biosolids project that is expected to reduce the cost of the wastewater treatment (both chemicals and personnel) by approximately \$6.2 million per year starting in 2016-2017. This forecast does not include any other significant changes in the operations or maintenance of water or sewer activities. Costs are expected to increase at 2.5% inflation.

Allocation of Operating Costs to the Stand-Alone GLWA activities

The allocation of Operations and Maintenance between GLWA and the new DWSD retail system is still being negotiated. When finalized, the allocation will also directly impact the portion of retail revenues that are allocable to GLWA (and reported as stand-alone GLWA operating charge to DWSD-R). This forecast includes management's estimate of the current status of the negotiations.

Capital Improvements

Appendix C presents the capital improvement plan and the intended methods of financing. This includes the issuance of \$520 million of new water bonds. The sewer system improvements funded through debt all relate to previously issued (unspent) bond proceeds or currently generated revenue.

The Water system has recently completed a comprehensive Master Plan; this forecast has used capital estimates somewhat in excess of the Master Plan amounts. The sewer system capital improvements are based on a 2014 independent review, and are significantly higher than the currently approved CIP plan.

Great Lakes Water Authority/Detroit Water and Sewerage Department

Five-year Financial Forecast

It should be noted that in the past decade, DWSD has written off capital assets that were impaired in several years (totaling \$564 million over that period). Management is not currently aware of any additional assets that will be written off as impaired, but is well aware of the possibility that as the capital assets records are analyzed for bifurcation into the Great Lakes Water Authority, there may be additional recorded amounts that will be written off. This forecast does not include a cash outflow item for these transactions, because all such transactions would have been reported as cash outflows in the year the original expenditure was incurred.

Bond Financing

In order to implement the capital improvement plan, this forecast assumes that the water system will issue \$520 million of additional debt during the term of this forecast. Management will attempt to secure low-interest State Revolving Fund financing; however, since no commitments have been received, this forecast assumes that any new debt is assumed to carry an interest rate of 5.5%. The additional principal and interest payments resulting from these bonds have been included in the forecasted debt service. There is no new debt assumed to be necessary for the sewer system.

There may be potential for refunding existing bond issues, as well as for issuing debt to finance the \$45.4 million annual pension obligation. This forecast does not include any potential cash requirement reductions from such a financing. However, these financing options continue to be considered.

Nonoperating expenses

The nonoperating expense includes a Water Residential Assistance Program (WRAP), which is a requirement to set aside 0.5% of base annual system-wide revenue (approximately \$4.5 million) with an independently-administered Water Residential Assistance Program (WRAP) fund to provide assistance to indigent residential customers. This amount is included in the rate bases for both Detroit and suburban wholesale customers.

Also included below operating expenses is the \$50 million annual lease payment. As discussed above, this is a requirement of the MOU to deposit \$50 million per year into restricted bank accounts that may be used by the City at its discretion for any combination of the following: Detroit local system infrastructure improvements, debt service associated with such improvements or the City's share of the cost of common-to-all improvements.

The historical nonoperating expenses also include an adjustment in 2015 for bankruptcy related charges (\$14 million water, \$19 million sewer), a biosolids dryer project (\$32 million sewer) and other one-time charges (\$8 million water and \$14 million sewer).

See accompanying summaries of significant assumptions and accounting policies and accountant's report.

Great Lakes Water Authority/Detroit Water and Sewerage Department
Five-year Financial Forecast

Historical results - Cash differences from accrual records

The historical results for 2013 and 2014 use accrual based amounts for operation and maintenance expenses, in order to be consistent with the amounts reported in the financial statements; similarly, the 2015 estimated operation and maintenance amounts are full accrual based. The actual cash flows have been significantly different for several reasons. Between the water and sewer systems, amounts are often paid out of a single cash account and subsequently allocated to the appropriate function, resulting in significant due to's and due from's between the two systems. In addition, the total combined cash outflows have been significantly different than the accrual based amounts because of significant payments that are reported as expenses in one year, and liquidated in the following. The 2014 unaudited financial statements report approximately \$53.2 million of increases in accounts payable and other O&M accrual accounts that would be expected to be liquidated in 2015.

Additional Operating Concerns

This forecast is focused on cash and investments available for operations. However, there are several non-cash items that are expected to significantly impact the long-term financial sustainability of the system. These include:

Deficit net position – In the preliminary unaudited financial statements at June 30, 2014 (prepared as of May 20, 2015), DWSD reports a deficit net position, as shown below:

	<u>Water</u>	<u>Sewer</u>	<u>Combined</u>
Net position:			
Net investment in capital assets	\$ (209,212,631)	\$ 22,834,100	\$ (186,378,531)
Restricted	243,876,197	220,764,674	464,640,871
Unrestricted	<u>(72,559,999)</u>	<u>(172,555,324)</u>	<u>(245,115,323)</u>
Total	<u>\$ (37,896,433)</u>	<u>\$ 71,043,450</u>	<u>\$ 33,147,017</u>

While cash is in a positive position, the system will likely need to evaluate the cause of this deficit unrestricted net position, and work towards eliminating it. Some of the causes include: capital asset costs that were subsequently abandoned or impaired, and written off; and interest rate swap contract losses. It might also be noted that in the fiscal year ended June 30, 2015 the DWSD will report the impact of the net pension liability and the Plan of Adjustment. These will have a significant positive impact on the above reported amounts.

Great Lakes Water Authority/Detroit Water and Sewerage Department Five-year Financial Forecast

Pension funding – The Memorandum of Understanding requires the DWSD/GLWA to fund \$42.9 million for 9 years (plus \$2.5m in annual administrative expenses) into the pension system, beginning in the fiscal year ended June 30, 2015. The Authority is currently working through the impact that this will have on pension costs after the year 2023. If this payment stream does not fund the full amount of the pension obligation for water and sewer employees, then this would add another burden to the GLWA cost structure after 2023.

**Great Lakes Water Authority/Detroit Water and Sewerage Department
Schedule of User Charge Revenue Collections**

Appendix A

User Charge Revenue Collections for the combined operations:

WATER	2016	2017	2018	2019	2020
Suburban wholesale revenue requirement:					
Estimated sales volume	\$ 14,010,900	\$ 13,895,900	\$ 13,250,600	\$ 13,141,100	\$ 13,032,100
Average rate	8.33	9.03	9.85	10.33	10.83
Commodity charge	116,748,500	125,467,100	130,485,800	135,705,200	141,133,400
Fixed charge	184,855,200	188,200,700	195,728,700	203,557,900	211,700,200
Total	301,603,700	313,667,800	326,214,500	339,263,100	352,833,600
Detroit retail customer revenue requirement:					
Estimated sales volume	3,300,000	3,266,900	3,234,500	3,201,200	3,168,600
Average rate	22.88	24.47	26.15	27.93	29.80
Commodity charge	75,496,700	79,950,500	84,582,399	89,399,498	94,409,397
Fixed charge	35,845,400	35,845,400	35,845,401	35,845,402	35,845,403
Bad debts	(16,701,300)	(17,369,400)	(18,064,200)	(18,786,700)	(19,538,200)
Total	94,640,800	98,426,500	102,363,600	106,458,200	110,716,600
Total Revenues collected	\$ 396,244,500	\$ 412,094,300	\$ 428,578,100	\$ 445,721,300	\$ 463,550,200
SEWER					
Suburban wholesale revenue requirement:					
Estimated sales volume	14,036,200	14,036,200	14,036,200	14,036,200	14,036,200
Average rate	-	-	-	-	-
Commodity charge	-	-	-	-	-
Fixed charge	278,646,700	289,569,800	300,929,800	312,744,200	325,031,200
Bad debts	(5,569,200)	(5,569,200)	(5,569,200)	(5,569,200)	(5,569,200)
Total	273,077,500	284,000,600	295,360,600	307,175,000	319,462,000
Detroit retail customer revenue requirement:					
Estimated sales volume	3,025,000	2,941,400	2,860,200	2,781,100	2,704,300
Average rate	56.27	61.86	67.87	74.36	81.35
Commodity charge	170,222,900	181,944,000	194,134,200	206,811,800	219,996,500
Fixed charge	122,806,900	122,806,900	122,806,900	122,806,900	122,806,900
Bad debts	(43,954,500)	(45,712,600)	(47,541,200)	(49,442,800)	(51,420,500)
Total	249,075,300	259,038,300	269,399,900	280,175,900	291,382,900
Total Revenues collected	\$ 522,152,800	\$ 543,038,900	\$ 564,760,500	\$ 587,350,900	\$ 610,844,900

**Great Lakes Water Authority/Detroit Water and Sewerage Department
Schedule of User Charge Revenue Collections**

Appendix A

User Charge Revenue Collections for the GLWA stand-alone operations:

	2016	2017	2018	2019	2020
WATER					
Revenue (net of bad debts) collected from:					
Charge to Suburban customers	\$ 301,603,700	\$ 313,667,800	\$ 326,214,500	\$ 339,263,100	\$ 352,833,600
Operating charge to DWSD-R	14,066,000	14,628,600	15,213,700	15,822,200	16,455,100
Additional debt charge to DWSD-R	<u>31,219,800</u>	<u>32,708,000</u>	<u>32,701,000</u>	<u>32,729,000</u>	<u>34,066,000</u>
Total revenue collections	346,889,500	361,004,400	374,129,200	387,814,300	403,354,700
SEWER					
Revenue (net of bad debts) collected from:					
Charge to Suburban customers	273,077,500	284,000,600	295,360,600	307,175,000	319,462,000
Operating charge to DWSD-R	191,992,900	199,672,600	207,659,500	215,965,900	224,604,500
Additional debt charge to DWSD-R	<u>22,567,400</u>	<u>22,921,000</u>	<u>22,919,000</u>	<u>23,252,000</u>	<u>23,387,000</u>
Total revenue collections	487,637,800	506,594,200	525,939,100	546,392,900	567,453,500
TOTAL					
Charge to Suburban customers	574,681,200	597,668,400	621,575,100	646,438,100	672,295,600
Operating charge to DWSD-R	206,058,900	214,301,200	222,873,200	231,788,100	241,059,600
Additional debt charge to DWSD-R	<u>53,787,200</u>	<u>55,629,000</u>	<u>55,620,000</u>	<u>55,981,000</u>	<u>57,453,000</u>
Total revenue collections	834,527,300	867,598,600	900,068,300	934,207,200	970,808,200

**Great Lakes Water Authority/Detroit Water and Sewerage Department
Schedule of Operating and Maintenance Costs**

Appendix B

Schedule of Operating and Maintenance Costs for the Combined GLWA/DWSD operations:

	2016	2017	2018	2019	2020
WATER					
FTE	557	529	503	478	454
Personnel costs	\$ 41,677,100	\$ 40,586,900	\$ 39,518,300	\$ 38,483,800	\$ 37,471,900
Contractual services	48,979,800	50,204,300	51,459,400	52,745,900	54,064,500
Purchased services	3,834,000	3,929,900	4,028,100	4,128,800	4,232,000
Repairs & maintenance	4,150,300	4,254,100	4,360,500	4,469,500	4,581,200
Utilities	35,639,100	36,530,100	37,443,400	38,379,500	39,339,000
Chemicals	8,174,500	8,378,900	8,588,400	8,803,100	9,023,200
Supplies	4,328,700	4,436,900	4,547,800	4,661,500	4,778,000
Services (Insur, etc.)	3,280,700	3,362,700	3,446,800	3,533,000	3,621,300
Other	1,197,500	1,227,400	1,258,100	1,289,600	1,321,800
Damage claims	946,500	970,200	994,500	1,019,400	1,044,900
Miscellaneous	1,409,300	1,444,500	1,480,600	1,517,600	1,555,500
Other	1,882,500	1,929,600	1,977,800	2,027,200	2,077,900
Subtotal	155,500,000	157,255,500	159,103,700	161,058,900	163,111,200
Pension reimbursement	10,300,000	10,300,000	10,300,000	10,300,000	10,300,000
Total O&M	<u>\$ 165,800,000</u>	<u>\$ 167,555,500</u>	<u>\$ 169,403,700</u>	<u>\$ 171,358,900</u>	<u>\$ 173,411,200</u>
SEWER					
FTE	803	725	689	654	622
Personnel costs	\$ 60,450,800	\$ 55,943,300	\$ 54,478,700	\$ 53,051,900	\$ 51,660,900
Contractual services	61,215,200	65,253,600	66,884,900	68,557,000	70,270,900
Purchased services	6,561,000	6,725,000	6,893,100	7,065,400	7,242,000
Repairs & maintenance	10,349,600	10,608,300	10,873,500	11,145,300	11,423,900
Utilities	32,020,400	31,077,700	31,854,600	32,651,000	33,467,300
Chemicals	22,284,300	16,363,000	16,772,100	17,191,400	17,621,200
Supplies	3,076,400	3,153,300	3,232,100	3,312,900	3,395,700
Services (Insur, etc.)	4,399,100	4,509,100	4,621,800	4,737,300	4,855,700
Other	1,339,100	1,372,600	1,406,900	1,442,100	1,478,200
Damage claims	1,419,700	1,455,200	1,491,600	1,528,900	1,567,100
Miscellaneous	2,104,500	2,157,100	2,211,000	2,266,300	2,323,000
Other	1,879,900	1,926,900	1,975,100	2,024,500	2,075,100
Subtotal	207,100,000	200,545,100	202,695,400	204,974,000	207,381,000
Pension reimbursement	13,700,000	10,300,000	10,300,000	10,300,000	10,300,000
Total O&M	<u>\$ 220,800,000</u>	<u>\$ 210,845,100</u>	<u>\$ 212,995,400</u>	<u>\$ 215,274,000</u>	<u>\$ 217,681,000</u>

See accompanying summaries of significant assumptions and accounting policies and accountant's report

**Great Lakes Water Authority/Detroit Water and Sewerage Department
Schedule of Operating and Maintenance Costs**

Appendix B

Schedule of Operating and Maintenance Costs for the Combined GLWA/DWSD operations
(cont'd):

COMBINED WATER AND SEWER					
FTE	1,360	1,254	1,192	1,132	1,075
Personnel costs	\$ 102,127,900	\$ 96,530,200	\$ 93,997,000	\$ 91,535,700	\$ 89,132,800
Contractual services	110,195,000	115,457,900	118,344,300	121,302,900	124,335,400
Purchased services	10,395,000	10,654,900	10,921,200	11,194,200	11,474,000
Repairs & maintenance	14,499,900	14,862,400	15,234,000	15,614,800	16,005,100
Utilities	67,659,500	67,607,800	69,298,000	71,030,500	72,806,300
Chemicals	30,458,800	24,741,900	25,360,500	25,994,500	26,644,400
Supplies	7,405,100	7,590,200	7,779,900	7,974,400	8,173,700
Services (Insur, etc.)	7,679,800	7,871,800	8,068,600	8,270,300	8,477,000
Other	2,536,600	2,600,000	2,665,000	2,731,700	2,800,000
Damage claims	2,366,200	2,425,400	2,486,100	2,548,300	2,612,000
Miscellaneous	3,513,800	3,601,600	3,691,600	3,783,900	3,878,500
Other	3,762,400	3,856,500	3,952,900	4,051,700	4,153,000
Subtotal	362,600,000	357,800,600	361,799,100	366,032,900	370,492,200
Pension reimbursement	24,000,000	20,600,000	20,600,000	20,600,000	20,600,000
Total O&M	<u>\$ 386,600,000</u>	<u>\$ 378,400,600</u>	<u>\$ 382,399,100</u>	<u>\$ 386,632,900</u>	<u>\$ 391,092,200</u>

**Great Lakes Water Authority/Detroit Water and Sewerage Department
Schedule of Operating and Maintenance Costs**

Appendix B

Schedule of Operating and Maintenance Costs for the GLWA Stand-alone operations:

	2016	2017	2018	2019	2020
WATER					
FTE's	363	345	328	312	296
Personnel costs	\$ 24,295,300	\$ 23,649,700	\$ 23,046,500	\$ 22,470,300	\$ 21,850,900
Contractual services	31,830,800	32,626,600	33,442,300	34,278,400	35,135,400
Purchased services	2,787,200	2,856,900	2,928,300	3,001,500	3,076,500
Repairs & maintenance	2,938,800	3,012,300	3,087,600	3,164,800	3,243,900
Utilities	35,568,000	36,457,200	37,368,600	38,302,800	39,260,400
Chemicals	8,172,200	8,376,500	8,585,900	8,800,500	9,020,500
Supplies	1,018,500	1,044,000	1,070,100	1,096,900	1,124,300
Services (Insur, etc.)	1,762,600	1,806,700	1,851,900	1,898,200	1,945,700
Other	946,400	970,100	994,400	1,019,300	1,044,800
Damage claims	666,200	682,900	700,000	717,500	735,400
Miscellaneous	993,900	1,018,700	1,044,200	1,070,300	1,097,100
Subtotal	110,979,900	112,501,600	114,119,800	115,820,500	117,534,900
Pension reimbursement	6,037,100	6,037,100	6,037,100	6,037,100	6,037,100
Net shared services	(3,858,800)	(3,955,300)	(4,054,200)	(4,155,600)	(4,259,500)
Total O&M	113,158,200	114,583,400	116,102,700	117,702,000	119,312,500
SEWER					
FTE's	524	460	437	415	394
Personnel costs	\$ 47,406,600	\$ 42,679,600	\$ 41,559,300	\$ 40,453,700	\$ 39,366,800
Contractual services	47,071,700	50,756,500	52,025,400	53,326,000	54,659,200
Purchased services	4,769,700	4,888,900	5,011,100	5,136,400	5,264,800
Repairs & maintenance	9,498,800	9,736,300	9,979,700	10,229,200	10,484,900
Utilities	31,193,700	30,230,300	30,986,100	31,760,800	32,554,800
Chemicals	22,283,100	16,361,800	16,770,800	17,190,100	17,619,900
Supplies	1,165,400	1,194,500	1,224,400	1,255,000	1,286,400
Services (Insur, etc.)	2,642,000	2,708,100	2,775,800	2,845,200	2,916,300
Other	1,126,000	1,154,200	1,183,100	1,212,700	1,243,000
Damage claims	999,400	1,024,400	1,050,000	1,076,300	1,103,200
Miscellaneous	1,481,200	1,518,200	1,556,200	1,595,100	1,635,000
Subtotal	169,637,600	162,252,800	164,121,900	166,080,500	168,134,300
Pension reimbursement	10,838,400	10,838,400	10,838,400	10,838,400	10,838,400
Net shared services	(5,784,200)	(5,928,800)	(6,077,000)	(6,228,900)	(6,384,600)
Total O&M	174,691,800	167,162,400	168,883,300	170,690,000	172,588,100

See accompanying summaries of significant assumptions and accounting policies and accountant's report

**Great Lakes Water Authority/Detroit Water and Sewerage Department
Schedule of Operating and Maintenance Costs**

Appendix B

Schedule of Operating and Maintenance Costs for the GLWA Stand-alone operations (cont'd):

TOTAL						
FTE's		887	805	765	727	690
Personnel costs	\$	71,701,900	\$ 66,329,300	\$ 64,605,800	\$ 62,924,000	\$ 61,217,700
Contractual services		78,902,500	83,383,100	85,467,700	87,604,400	89,794,600
Purchased services		7,556,900	7,745,800	7,939,400	8,137,900	8,341,300
Repairs & maintenance		12,437,600	12,748,600	13,067,300	13,394,000	13,728,800
Utilities		66,761,700	66,687,500	68,354,700	70,063,600	71,815,200
Chemicals		30,455,300	24,738,300	25,356,700	25,990,600	26,640,400
Supplies		2,183,900	2,238,500	2,294,500	2,351,900	2,410,700
Services (Insur, etc.)		4,404,600	4,514,800	4,627,700	4,743,400	4,862,000
Other		2,072,400	2,124,300	2,177,500	2,232,000	2,287,800
Damage claims		1,665,600	1,707,300	1,750,000	1,793,800	1,838,600
Miscellaneous		2,475,100	2,536,900	2,600,400	2,665,400	2,732,100
Subtotal		280,617,500	274,754,400	278,241,700	281,901,000	285,669,200
Pension reimbursement		16,875,500	16,875,500	16,875,500	16,875,500	16,875,500
Net shared services		(9,643,000)	(9,884,100)	(10,131,200)	(10,384,500)	(10,644,100)
Total O&M		287,850,000	281,745,800	284,986,000	288,392,000	291,900,600

**Great Lakes Water Authority/Detroit Water and Sewerage Department
Capital Improvement Program (amounts in thousands)**

Appendix C

Capital improvements for the combined GLWA/DWSD system:

	2016	2017	2018	2019	2020
WATER SYSTEM:					
Facilities improvements:					
Metro area construction	\$ 37,000	\$ 65,247	\$ 50,150	\$ 36,700	\$ 10,000
Urban system improvements	39,060	25,823	14,800	14,000	14,000
Computer systems	6,142	1,000	2,250	250	-
Plant replacement and renovation:					
General plant	16,486	25,418	24,260	21,000	21,000
Water works park	5,200	13,200	14,375	5,000	-
Springwells	21,700	22,850	30,344	32,641	10,000
Northeast	500	4,200	333	-	-
Southwest	870	4,300	2,400	-	-
Lake Huron	900	5,300	9,400	7,715	2,600
Pumping stations and reservoirs	4,955	7,311	3,500	300	-
Unspecified capital improvements	-	7,251	27,388	9,494	111,900
Total capital improvements	\$ 132,813	\$ 181,900	\$ 179,200	\$ 127,100	\$ 169,500

Funding sources:

Debt	\$ 132,813	\$ 141,668	\$ 70,554	\$ 73,691	\$ 103,087
Lease payments	-	22,500	22,500	22,500	22,500
Revenue-financed capital improvements	-	17,732	86,146	30,909	43,913
Total capital improvements	\$ 132,813	\$ 181,900	\$ 179,200	\$ 127,100	\$ 169,500

SEWER SYSTEM:

Plant improvements:					
Primary treatment	\$ 22,955	\$ 22,768	\$ 19,446	\$ 3,100	\$ 6,000
Secondary treatment	6,519	8,612	5,640	-	-
Solids handling	48,315	5,109	1,829	2,250	650
Disinfection	1,605	8,750	11,900	10,000	-
General purpose	21,464	21,168	23,460	17,200	10,000
Facilities improvements:					
Sewer interceptor system	5,000	5,000	5,000	5,000	5,000
Combined sewer system	6,015	5,100	-	-	-
Urban system improvements	10,465	21,000	25,000	30,000	24,000
Information technology	5,988	1,000	2,250	250	-
Unspecified capital improvements	-	20,293	-	57,200	79,350
Total capital improvements	\$ 128,326	\$ 118,800	\$ 94,525	\$ 125,000	\$ 125,000

Funding sources:

Debt	\$ 128,326	\$ 118,800	\$ 9,974	\$ -	\$ -
Lease payments	-	-	55,000	27,500	27,500
Revenue-financed capital improvements	-	-	29,551	97,500	97,500
Total capital improvements	\$ 128,326	\$ 118,800	\$ 94,525	\$ 125,000	\$ 125,000

See accompanying summaries of significant assumptions and accounting policies and accountant's report.

**Great Lakes Water Authority/Detroit Water and Sewerage Department
Capital Improvement Program (amounts in thousands)**

Appendix C

Capital improvements for the GLWA Stand-alone system:

	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>
WATER					
Capital improvement plan	\$ 92,037,800	\$ 150,759,200	\$ 146,441,800	\$ 93,579,800	\$ 131,769,300
Funding sources:					
Debt	92,037,800	110,527,000	60,295,700	62,671,000	87,856,000
Revenue-financed capital improvements	<u>-</u>	<u>40,232,200</u>	<u>86,146,100</u>	<u>30,908,800</u>	<u>43,913,300</u>
Total capital improvements	<u>92,037,800</u>	<u>150,759,200</u>	<u>146,441,800</u>	<u>93,579,800</u>	<u>131,769,300</u>
SEWER					
Capital improvement plan	117,846,000	93,483,800	69,525,000	100,000,000	100,000,000
Funding sources:					
Debt	117,846,000	93,483,800	12,474,300	2,500,000	2,500,000
Revenue-financed capital improvements	<u>-</u>	<u>-</u>	<u>57,050,700</u>	<u>97,500,000</u>	<u>97,500,000</u>
Total capital improvements	<u>\$ 117,846,000</u>	<u>\$ 93,483,800</u>	<u>\$ 69,525,000</u>	<u>\$ 100,000,000</u>	<u>\$ 100,000,000</u>

See accompanying summaries of significant assumptions and accounting policies and accountant's report.

**Great Lakes Water Authority/Detroit Water and Sewerage Department
Debt Financing (amounts in millions)**

Appendix D

Debt financing is the same for either the combined GLWA/DWSD system or the GLWA stand-alone system:

	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>
WATER					
Existing debt service requirements:					
Senior lien bonds	\$ 134.9	\$ 134.9	\$ 134.3	\$ 124.8	\$ 124.7
Second lien bonds	42.2	42.2	42.8	51.2	51.2
SRF junior lien	<u>1.8</u>	<u>1.8</u>	<u>1.8</u>	<u>1.8</u>	<u>1.8</u>
Total	<u>178.9</u>	<u>178.9</u>	<u>178.9</u>	<u>177.8</u>	<u>177.7</u>
Debt service on new debt:					
Senior lien bonds	4.2	12.6	12.6	12.6	20.5
SRF junior lien	0.4	0.8	0.8	2.0	2.0
Forecasted debt service requirements:					
Senior lien bonds	139.1	147.5	146.9	137.4	145.2
Second lien bonds	42.2	42.2	42.8	51.2	51.2
SRF junior lien	<u>2.2</u>	<u>2.6</u>	<u>2.6</u>	<u>3.8</u>	<u>3.8</u>
Total	<u>183.5</u>	<u>192.3</u>	<u>192.3</u>	<u>192.4</u>	<u>200.2</u>
SEWER					
Existing debt service requirements:					
Senior lien bonds	144.6	144.6	144.6	144.4	143.9
Second lien bonds	54.2	54.2	54.2	54.5	56.2
SRF junior lien	37.9	37.8	37.9	37.9	38.0
Total	<u>236.7</u>	<u>236.6</u>	<u>236.7</u>	<u>236.8</u>	<u>238.1</u>
Debt service on new debt:					
Senior lien bonds	0.0	0.0	0.0	0.0	0.0
SRF junior lien	5.7	9.6	9.6	13.1	13.1
Forecasted debt service requirements:					
Senior lien bonds	144.6	144.6	144.6	144.4	143.9
Second lien bonds	54.2	54.2	54.2	54.5	56.2
SRF junior lien	<u>43.6</u>	<u>47.4</u>	<u>47.5</u>	<u>51.0</u>	<u>51.1</u>
Total	<u>242.4</u>	<u>246.2</u>	<u>246.3</u>	<u>249.9</u>	<u>251.2</u>

See accompanying summaries of significant assumptions and accounting policies and accountant's report.

In order to evaluate the sensitivity of the GLWA stand-alone forecast to changes in assumptions, we have included two alternative scenarios, one with more pessimistic assumptions, and one with more optimistic ones. Since this is a relatively high-level evaluation, we have included the impact to the forecast of the combined water and sewer systems, and have excluded the individual water and sewer systems.

Description of Scenario Alternatives:

Scenario 1, the more pessimistic scenario, makes the following assumption changes:

1. The volume of water usage is assumed to be the “worst worst” case from the water master plan. This uses population estimates that are 4% lower than SEMCOG’s projections, and per capita water consumption decline of 10% by 2035. We also assume that the lower consumption is not foreseen, so that the rates are not adjusted to make up for the volume loss.
2. Assumes that there will be no employee attrition, so that personnel costs continue to climb 2.5% per year. For 2017, we assume there will be a one-time increase of 10% in utility rates and chemical costs.
3. Assumes the replacement portion of the capital improvement plan will be double the baseline estimates. This adds \$230 million of water transmission lines, and \$30 million of sewer interceptor work. This assumption required the issuance of an additional \$250 million in bonds, along with the accompanying debt service (5.5% over 20 years)

Scenario 2, the more optimistic scenario, makes the following assumption changes:

1. Assumes 0.25% annual growth in volumes (from any combination of usage per capita or new customers). It is assumed that the higher volume results in lower rates, but with a two year lag.
2. Assumes that beginning 7/1/2016 we will realize the operation & maintenance savings identified in the Veolia report, Table ES-1.
3. Assumes the same level of capital improvements as the baseline, but that half of the “revenue financed” capital improvements will be financed through bonds.
4. Assumes that the \$42.9 million pension obligation will be replaced with a pension bond bearing interest at 4.65% over 20 years.
5. Because of the cost reductions above, this scenario assumes that there will be no revenue requirement increases over the five year period.

Great Lakes Water Authority
Alternative I - Pessimistic

Appendix E

	Forecasted results:				
	2016	2017	2018	2019	2020
CASH INFLOWS					
Revenues from sales	\$ 834,527,300	\$ 866,907,100	\$ 898,623,300	\$ 931,962,500	\$ 967,697,600
Nonoperating revenue	5,088,600	5,905,400	6,094,900	5,985,400	6,395,000
Total inflows	839,615,900	872,812,500	904,718,200	937,947,900	974,092,600
CASH OUTFLOWS					
Operation & maintenance	287,850,000	300,898,200	307,999,100	315,277,400	322,737,500
Net revenue	551,765,900	571,914,300	596,719,100	622,670,500	651,355,100
Debt service:					
Senior lien bonds	283,735,900	294,582,400	298,916,600	297,502,500	308,277,700
Second lien bonds	96,392,100	96,420,300	96,974,300	105,650,400	107,404,500
SRF junior lien	45,778,300	49,935,100	49,961,000	54,748,000	54,847,400
Nonoperating expense:					
Nonoperating pension pmt.	15,044,000	15,044,000	15,044,000	15,044,000	15,044,000
WRAP program	4,592,000	4,775,700	4,966,700	5,165,400	5,372,000
Note B & C payments (OPEB, POC)	3,177,900	3,177,900	3,177,900	3,177,900	3,177,900
Total outflows	736,570,200	764,833,600	777,039,600	796,565,600	816,861,000
Available for capital & lease pmts.	103,045,700	107,978,900	127,678,600	141,382,300	157,231,600
Rev-financed capital improv'mnts	10,440,200	42,573,200	107,686,000	135,559,000	149,504,000
Lease payments	50,000,000	50,000,000	50,000,000	50,000,000	50,000,000
Net resources	42,605,500	15,405,700	(30,007,400)	(44,176,700)	(42,272,400)
Cash and investments available for operations:					
Beginning of year	179,613,000	222,218,500	237,624,200	207,616,800	163,440,100
End of year	\$ 222,218,500	\$ 237,624,200	\$ 207,616,800	\$ 163,440,100	\$ 121,167,700
<i>Min.required in O&M, ER&R accts</i>	<i>67,165,000</i>	<i>70,210,000</i>	<i>71,866,000</i>	<i>73,565,000</i>	<i>75,305,000</i>

See accompanying summaries of significant assumptions and accounting policies and accountant's report

Great Lakes Water Authority
Alternative 2 - Optimistic

Appendix E

	Forecasted results:				
	2016	2017	2018	2019	2020
CASH INFLOWS					
Net revenue from sales	\$ 834,527,300	\$ 837,850,900	\$ 837,275,900	\$ 838,332,800	\$ 839,874,200
Nonoperating revenue	5,088,600	5,905,400	6,094,900	5,985,400	6,395,000
Total inflows	839,615,900	843,756,300	843,370,800	844,318,200	846,269,200
CASH OUTFLOWS					
Operation & maintenance	273,474,500	231,570,300	232,310,500	234,716,500	236,125,100
Net revenue	566,141,400	612,186,000	611,060,300	609,601,700	610,144,100
Debt service:					
Senior lien bonds	283,735,900	292,090,500	293,102,200	288,780,900	314,507,500
Second lien bonds	96,392,100	96,420,300	96,974,300	105,650,400	107,404,500
SRF junior lien	45,778,300	49,935,100	49,961,000	54,748,000	54,847,400
Pension bond debt service	22,000,700	22,000,700	22,000,700	22,000,700	22,000,700
Nonoperating expense:					
Nonoperating pension pmt.	-	-	-	-	-
WRAP program	4,592,000	4,775,700	4,966,700	5,165,400	5,372,000
Note B & C payments (OPEB, POC)	3,177,900	3,177,900	3,177,900	3,177,900	3,177,900
Total outflows	729,151,400	699,970,500	702,493,300	714,239,800	743,435,100
Available for capital & lease pmts.	110,464,500	143,785,800	140,877,500	130,078,400	102,834,100
Rev-financed capital improv'mnts	-	20,232,200	78,196,800	63,408,800	71,413,300
Lease payments	50,000,000	50,000,000	50,000,000	50,000,000	50,000,000
Net resources	60,464,500	73,553,600	12,680,700	16,669,600	(18,579,200)
Cash and investments available for operations:					
Beginning of year	179,613,000	240,077,500	313,631,100	326,311,800	342,981,400
End of year	\$ 240,077,500	\$ 313,631,100	\$ 326,311,800	\$ 342,981,400	\$ 324,402,200
<i>Min.required in O&M, ER&R accts</i>	<i>63,811,000</i>	<i>54,033,000</i>	<i>54,206,000</i>	<i>54,767,000</i>	<i>55,096,000</i>

See accompanying summaries of significant assumptions and accounting policies and accountant's report