WATER

ERIE COUNTY WATER AUTHORITY

INTEROFFICE MEMORANDUM

April 19, 2021

To: Terrence D. McCracken, Secretary to the Authority

From: Leonard F. Kowalski, Executive Engineer

Karen A. Prendergast, Chief Financial Officer

Subject: Water Infrastructure Finance and Innovation Act (WIFIA)

On January 8th, the Authority received an invitation from the EPA to apply for up to \$24,000,000 in financing through their WIFIA program. At the February 4, 2021 Board meeting, Rick Ganci of Capital Markets Advisors presented an analysis of potential savings by issuing debt through the WIFIA program.

The attached analysis shows an All-Inclusive Cost (AIC) of 1.56% for the WIFIA loan compared to an AIC of 2.39% for stand-alone debt. Even with higher issuance costs, the WIFIA issued debt provides a present value savings of \$2.3 million on a 25-year issuance.

The Engineering and Finance Departments have prepared an application for \$22,883,000 in funding for \$46,700,000 in projects including,

- ➤ Contract MP-085 Sturgeon Point Piping and Filter Valve Improvements
- ➤ Contract GHD-009 Powdered Activated Carbon System Upgrades
- ➤ Contract MP-086 Ball Pump Station Improvements

The attached application requires Finance Committee review and, if acceptable, a recommendation for approval to the full Board at their April 29, 2021 meeting. A list of attachments which will be submitted to the EPA with the application is included with this memo. Those attachments which can be found on the website have not been included in the Board meeting folder.

The adopting resolution should include authorization for Russell Stoll, Chief Operating Officer to sign the application and for Joyce Tomaka, Comptroller to pay the required application fee of \$100,000.

cc M. Murphy

R. Stoll

Erie County Water Authority

\$22,883,000 WIFIA Loan - 2021 13yr SLG rate as of 1-19-21 plus 1 bps

Project Summary

Dated 07/15/2021 | Delivered 07/15/2021

Sources	Of Funds	
Sources	OTFUNGS	

Par Amount of Bonds	\$22,883,000.00
Planned Issuer Equity contribution	23,817,000.00
	·

Total Sources \$46,700,000.00

Uses Of Funds

Costs of Issuance	425,000.00
Construction Costs	42,030,000.00
Contingency	4,245,000.00

Total Uses	\$46,700,000.00
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Flow of Funds Detail

State and Local Government Series (SLGS) rates for
Date of OMP Candidates

Bond Statistics

Average Life	13.686 Years
Average Coupon	1.3300000%
Net Interest Cost (NIC)	1.3300000%
Bond Yield for Arbitrage Purposes	1.3296421%
True Interest Cost (TIC)	1.3296421%
All Inclusive Cost (AIC)	1.5577725%

WIFIA Loan | SINGLE PURPOSE | 1/19/2021 | 2:57 PM

Erie County Water Authority

\$18,810,000 Revenue Bonds - 2021(Stand Alone) MMD' Aa' Rates plus 25 bps as of 1-19-21

Project Summary

Dated 07/15/2021 | Delivered 07/15/2021

Sources	Of F	und	ls
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Par Amount of Bonds	\$18,810,000.00
Reoffering Premium	3,976,263.56
Planned Issuer Equity contribution	23,817,000.00

Total Sources \$46,603,263.56

Uses Of Funds

Total Underwriter's Discount (0.400%)	75,240.00
Costs of Issuance	225,000.00
Construction Costs	42,030,000.00
Contingency	4,270,000.00
Rounding Amount	3,023.56

Total Uses \$46,603,263.56

Flow of Funds Detail

State and Local Government Series (SLGS) rates for

Date of OMP Candidates

Bond Statistics

Average Life	15.007 Years
Average Coupon	4.0000000%
Net Interest Cost (NIC)	2.6180825%
Bond Yield for Arbitrage Purposes	1.2240349%
True Interest Cost (TIC)	2.3010888%
All Inclusive Cost (AIC)	2.3872123%

Stand-alone bond | SINGLE PURPOSE | 1/19/2021 | 3:00 PM

Erie County Water Authority Debt Service Present Value Calculation WIFIA Loan vs Standalone Revenue Bond Discount Rate: WIFIA Loan AIC Yield

PV of Debt Service on WIFIA Loan

PV of Debt Service on Standalone Revenue Bond

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24,792,085.46 30,101,625.12 Total

22,457,999.89 27,284,187.44

Total

\$24,792,085.46 \$22,457,999.89 PV Standalone PV WIFIA

\$2,334,085.57 Net PV Difference

ATTACHMENT INDEX

Attachment 01 – Customers by Class	
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Attachment 04 – Annual Water Bill Burden	
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Attachment 07 – Capital Budget 2019	https://my.ecwa.org/AnnualBudget
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Attachment 09 – Capital Budget 2021	https://my.ecwa.org/AnnualBudget
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For the WIFIA Application Instructions

The U.S. Environmental Protection Agency (EPA) will invite selected applicants to submit an application for Water Infrastructure Finance and Innovation Act (WIFIA) loans. Unsolicited applications will not be considered. Following selection, each selected applicant will be assigned a transaction team led by an underwriter. The transaction team can answer the applicant's questions regarding the application form, its attachments, and the project review, negotiation, and closing processes.

The applicable to its project. Narrative answers can reference source documents by including the name of the document and relevant pages or sections and providing any referenced documents as attachments. The applicant must sign the Certification in the appropriate space and submit a scanned version of the signature pages to EPA. If the applicant anticipates a delay in one or more source documents, it should discuss the situation with its transaction team and indicate the anticipated date of submitting that document in the application. Additionally, the applicant is required to notify and submit to EPA any updated application materials that become available during the review period. EPA may request additional items from applicants on a case-by-case basis.

The applicant may assert a Confidential Business Information (CBI) claim covering part or all of the information submitted to EPA as part of its letter of interest, in a manner consistent with 40 C.F.R. 2.203, 41 Fed. Reg. 36902 (Sept. 1, 1976), by placing on (or attaching to) the information a cover sheet, stamped or typed legend, or other suitable form of notice employing language such as trade secret, proprietary, or company confidential. The applicant should also state whether it desires confidential treatment until a certain date or until the occurrence of a certain event. Information covered by a business confidentiality claim will be disclosed by EPA only to the extent and only by means of the procedures set forth under 40 C.F.R. Part 2, Subpart B. Information that is not accompanied by a business confidentiality claim when it is received by EPA may be made available to the public by EPA without further notice to the applicant. More information about CBI is available in the WIFIA program handbook and frequently asked questions (FAQ) available at http://www.epa.gov/wifia.

The applicant must submit a non-refundable application fee. The application fee is \$25,000 for an application for a project serving small communities (population of not more than 25,000 people). For all other project applications, the application fee is \$100,000. For further information regarding the application fee, as well as the credit processing fee which will be charged at loan closing, and any other applicable fees, please see the WIFIA fee rule.

WIFIA Application Submission

The final application submission must include:

- 1. Completed application form;
- 2. All attachments requested and referenced in this form; and
- 3. The application fee.

The applicant should reference the supporting document checklist provided on page 4 to ensure all needed information is provided in the application submission. Upon receipt of the application fee and

materials, EPA will provide a confirmation email.

Application Form and Attachment Submittal: When finished, the application form and attachments must be uploaded to EPA's SharePoint site. To be granted access to the WIFIA SharePoint site, the applicant should email the WIFIA Underwriter assigned to the applicant with the names and emails of all staff that need access.

Application Fee Submittal: The applicant should use of Pay.gov to make electronic payments to EPA. In Pay.gov, the applicant can track its payments to EPA and schedule recurring or automatic payments. Although it is not mandatory to register for a user id to access and use Pay.Gov, registration is recommended to have access to all Pay.gov system functionality. To use Pay.gov, follow these instructions:

- 1. Access the Pay.gov system by going to https://www.pay.gov and search for WIFIA or click on the following hyperlink to directly launch the WIFIA Loan Collection & Fees Form.
- 2. Provide the following information on the payment to ensure proper credit:
 - Remitter's contact phone number
 - Company/Organization Name as it appears on EPA document
 - Complete address, including city, state, zip code
 - Project Name
 - Loan Number: this is EPA WIFIA Loan number, NOT the remitter's number
 - From the "Payment Type" drop down menu select "Application Fee (Fee01)"
 - Other Description: please enter the EPA WIFIA Loan number followed by -FEE01, for example 16123DC-FEE01
- 3. Follow the remaining on-screen instructions to successfully process the payment to EPA.
- 4. Send an email to OCFO-OC-ACD-WIFIA@epa.gov and wifia_portfolio@epa.gov informing that a payment has been made.

The application fee may also be paid via FEDWIRE; for questions about payments, email to OCFO-OC-ACD-WIFIA@epa.gov and wifia.gov portfolio@epa.gov. For detailed payment instructions, contact the WIFIA program.

Burden

The public reporting and recordkeeping burden for this collection of information is estimated to average 200 hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Regulatory Support Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed form to this address.

Warning



Falsification or misrepresentation of information or failure to file or report information required to be reported may be the basis for denial of financial assistance by the Environmental Protection Agency. Knowing and willful falsification of information required to be submitted and false statements to a Federal Agency may also subject you to criminal prosecution. See, for example, 18 U.S.C. §1001.

Additional information is available at https://epa.gov/wifia and by contacting wifia@epa.gov.



SUPPORTING DOCUMENT CHECKLIST

The applicant should submit its completed application form plus all relevant supporting documents listed in the checklist as attachments.

Question	Supporting Document(s)*	Included	
Application Fee – Refer to fee instructio	ns on page 2		
Section A: Key Applicant and Loan Info	rmation* (No attachments)		
9. System for Award Management	Screen shot verifying active SAM	\boxtimes	
(SAM) registration	registration ¹ *		
Section B: Applicant Background			
5. Capital Improvement Planning	Current year and previous 3 years	\boxtimes	
Process	Capital Improvement Plans		
7. Liabilities	Liabilities Description	\boxtimes	
8. System Condition	System Master Plan		
	System Condition Assessment	\boxtimes	
10. Organization Chart	Organization Chart		
Section C: Financing Plan			
4. Preliminary Rating Letter	Preliminary Rating Letter*	\boxtimes	
5. Audited Financial Statements	 Audited Financial Statements (3 years)* 	\boxtimes	
6. Cash flow pro forma(s)	Cash flow pro forma*	\boxtimes	
7. Rate Setting Process	Rate Studies	\boxtimes	
	Rate Schedules	\boxtimes	
8. Flow of Funds	Flow of Funds	\boxtimes	
9. Loan Agreement	Master Indenture	\boxtimes	
	Bond Ordinance		
Section D: Federal Requirements			
1.National Environmental Policy Act	Environmental Assessment (Draft or		
(NEPA)/ Programmatic Environmental	Final)		
Assessment Questionnaire	Environmental Impact Statement (Draft		
	or Final)		
	Supporting Documentation		
	Programmatic Environmental		
	Assessment Questionnaire		
2. SRF Environmental Review	SRF Findings		
	SRF Consultation Documentation		
4. Cross-Cutter Consultation Agencies	State Historic Preservation Officer		
	Fish and Wildlife Service		
	National Marine and Fisheries Service		
	Coastal Zone Management Agency		
	Other: Click or tap here to enter text.		
5. Additional Permits	Click or tap here to enter text.		

¹ Applicants must have an active registration in SAM to do business with the Federal Government. Registration information is available at https://sam.gov/SAM/.

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7. Additional Forms		
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8. Uniform Act	Narrative of Compliance	
Section E: Contract Information (Refer		
·	indicate which of the following attachments	
are included:		
 Project Map 		
 Preliminary Engineering Report 		
 Preliminary Design Report 		
 Planning Document 		
 Executed Contract Documents 		
 Procurement Documents 		
Detailed project schedule(s)*		\boxtimes
Engineer's Cost Estimate associated with detailed project scope*		\boxtimes
Existing Operation and Maintenance Plan		
Professional Service Contract or similar evidence of new Operation and		
Maintenance Plan to be developed		
Risk Mitigation Plan/Matrix		
Project Management Plan		
Evidence of Experience with Similar Projects		
Draft of Final Bid Specifications with required language		
Sample of Final Bid Specifications with required language		
Certifications		

^{*}Required

APPLICATION FORM

Provide the following information in this form. Narrative answers can reference source documents (include the name of the document and relevant pages or sections). Provide any referenced documents as attachments.

Section A: Key Applicant and Loan Information

6. Applicant Contact Information

1.	Legal name of prospective borrower:
	Erie County Water Authority
2.	Project name (for purposes of identification assign a short name to the project):
	ECWA Strategic Plan Improvements Project
3.	Estimated total eligible project costs (in dollars):
	46,700,000
	☐ Check here if total eligible project costs have changed since the letter of interest submittal
4.	Requested amount of the WIFIA loan (in dollars):
	22,883,000
5.	Anticipated Closing Date and what is driving date: 11/30/2021

Team Member	Name and Title	Email	Phone Number
Authorized Signatory	Jerome D Schad, Chairman	jschad@ecwa.org	716-849-8430
WIFIA Point of	Karen A Prendergast,	kprendergast@ecwa.org	716-849-8461
Contact	Chief Financial Officer		
Financial Advisor	Rick Ganci – Capital Markets	rganci@capmark.org	716-662-3910
	Advisors		
Bond Counsel	TBD	Click or tap here to	Click or tap here to enter
		enter text.	text.
Project Manager	Leonard F Kowalski,	lkowalski@ecwa.org	716-685-8220
	Executive Engieer		
Environmental	Click or tap here to enter	Click or tap here to	Click or tap here to enter
Review Contact	text.	enter text.	text.



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7.	Employer/	taxpayer/	identification	number	(EIN/TIN):
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16-6000337

8. Dun and Bradstreet Data Universal Number System (DUNS) number:

071478119

yes, provide

	071478113			
9.	Is the applica	ant registered in the System	for Award M	Nanagement (SAM)? If
	Yes	No		
xisting Entity R	SAM 32D2 Registrations System for Award	- •	https://sam.go	ov/SAM/pages/secured/entity/mySAMRegistrations.j
		View assistance for Entity Registrations~Exist	ing Entity Registration	<u>s</u>
		Download Your Active SAM Registrations (XML) Download Your Expired SAM Registrations (XML)	Download Your Active	Use this field to search entities with which
		P	ntity List	The Commercial and Government Entity
		ERIE COUNTY WATER AUTHORITY (071478119)		(CAGE) Code is a five-character ID used to support a variety of mechanized systems throughout the government and provides a standardized method of identifying a given facility at a specific location.
		Registration Details for Complete Record Entity Name: ERIE COUNTY WATER AUTHORITY DUNS Number: 07:4781:9 CAGE: 32DZ4 Address: 295 MAIN ST BUFFALO, NY 14203-2412	Your entity registration	is Active. Please select Update Entity is for Complete Record if you want to

2 of 3 3/25/2021, 8:21 AM

Section B: Applicant Background

- 1. Describe the authorizing actions required by the applicant in order to enter into a loan agreement with the WIFIA program (e.g., board vote, local vote, ordinance).
 - Affirmative vote of the Board of Commissioners and approval of the New York State Comptroller
- 2. Disclose any current, threatened, or pending litigation involving the applicant related to permitting, public involvement, environmental irregularities, construction defects, securities fraud, conflict of interest, failure to perform under a State or Federal contract, or other charges which may reflect on the applicant's financial position or ability to complete the project(s).
 - There is no current, threatened or pending litigation related to any of the above which would reflect on the Authority's financial position or ability to complete the project.
- 3. List the historical, if available, or projected customer concentration analysis, including a breakdown of customers by class (residential, non-residential, commercial, bulk, etc.), usage, and revenues for the past 12 months and a list of the top ten (10) customers by percentage of revenues.
 - Attachment 01 Customers by Class; Attachment 02 Largest Customers
- 4. Provide the average residential customer combined water and sewer rates as a percentage of Median Household Income.
 - Attachment 03 Affordability Metrics; Attachment 04 Annual Water Bill Burden
- 5. Describe the applicant's capital improvement planning process. Include a capital improvement plan, other planning documents, and capital budgets produced in the current year and previous three (3) years as attachments.
 - Capital budgets are prepared based on a prioritized Capital Improvement Plan (Attachment 05) and funded through generated revenue and periodic debt issuance. The current and last three capital budgets are attached. (Attachment 06; Attachment 07; Attachment 08; Attachment 09)
- Describe accounts receivables outstanding, including the 12-month trailing average of on-time
 payment amounts as a percentage of amount billed per period. Include a brief description of the
 process for collections.
 - Attachment 10 On-time Payment Analysis The analysis illustrates, while our on-time payments remain high, those customers who were delinquent at the beginning of the COVID-19 pandemic have been less likely to make payments.
 - Attachment 11 ECWA Tariff. The Authority's Tariff, contains the following collection provision.

9.06 All bills are to be payable net cash when rendered. In case any water bill or charges, except those billed under Service Classification No. 1C and 3, provided for in and by these rules shall not be paid within fifteen (15) days following the rendering of the bill, the Authority or its agents may discontinue water service to the customer and service will not be reestablished until such unpaid charges, together with the charge for restoration of service as elsewhere provided herein are fully paid, and the deposit as specified in paragraph 14.06 has been paid. Bills and charges provided for in and by these rules billed under Service Classification No. 1C shall be paid within thirty (30) days following the rendering of the bill. Bills and charges provided for in and by these rules billed Service Classification No. 3 shall be paid within forty-five (45) days following the rendering of the bill.

7. Describe or provide an attachment with the status of liabilities and funding for pension contributions, defined benefits, and other post-employment benefits.

The Footnotes and Required Supplemental Information from the Authority's December 31, 2020 audited Financial Statements describe the Authority's liability and funding status.

Attachment 12 - OPEB Footnote;

Attachment 13 – Pension Footnote

8. Provide the latest system condition assessment report or master plan available for the water and/or wastewater system this project supports. If a report or plan is unavailable, provide a brief description of significant facilities (i.e. pump stations or treatment plants) within the system, including construction and major rehabilitation dates, and any asset management processes utilized for the system.

Attachment 14 - System Condition Assessment was completed in conjunction with our 2018 Series bond issuance.

9. If applicable, describe community outreach efforts conducted to date and planned for the project(s). Include community meetings, outreach sessions and groups contacted.

Under the New York State Environmental Quality Review process, all three projects qualify as a Type 2 action, which involves replacement, rehabilitation or reconstruction of a structure or facility, in kind, on the same site. Therefore, no community outreach efforts are required.

For Project and Corporate Financing Transactions Only:

10. Provide a project-level organizational chart, include the major parties involved in planning, owning, financing, providing supply and/or offtake, constructing, operating, and/or maintaining the project(s). Include the major service contractors that have been, or will be, retained for the project (e.g., architects, developers, engineers, attorneys, financial advisors and underwriters, environmental consultants). Please also disclose if there is a financial relationship between the project sponsor and any key project partners.

Click or tap here to enter text.

Section C: Financing Plan

1. Provide a sources and uses of funds table for the construction period(s), including the proposed WIFIA assistance. For applicants other than Public Entities, please identify the amount and source(s) of project equity, letters of credit, and other sources of debt as applicable. Note any ineligible project costs. More information about eligible costs is available in the WIFIA program handbook. If other debt is being issued, describe the timing and certainty.

Sources Category	Estimated Dollar Value
1. WIFIA Loan (cannot exceed 49% of eligible costs)	\$ 22,883,000
2. Revenue Bonds	Click or tap here to enter text.
3. SRF Loan	Click or tap here to enter text.
4. Borrower Cash	\$ 23,817,000
5. Previously Incurred Eligible Costs*	Click or tap here to enter text.
6. Other (please specify) Click or tap here to enter text.	Click or tap here to enter text.
TOTAL SOURCES	\$ 46,700,000
Uses Category	Estimated Cost
1. Construction	\$ 42,030,000
2. Design	Click or tap here to enter text.
3. Planning	Click or tap here to enter text.
4. Land Acquisition	Click or tap here to enter text.
5. Other Capital Costs	Click or tap here to enter text.
6. Contingency	\$ 4,670,000
7. Total Capital Costs	\$ 46,700,000
8. Financing Costs	Click or tap here to enter text.
8. Ineligible Costs (if applicable)	Click or tap here to enter text.
9. Other (please specify) Click or tap here to enter text.	Click or tap here to enter text.
10. Other (please specify) Click or tap here to enter text.	Click or tap here to enter text.
TOTAL USES	\$ 46,700,000

^{*}Previously Incurred Eligible Costs are project related costs incurred prior to the WIFIA loan's execution. Please see the WIFIA Program Handbook for additional information on Eligible Costs.

2. Describe the proposed credit terms of the WIFIA assistance. Complete the following table and include additional text below.

Credit Term	Proposed
	Senior Lien
Lien Priority	Subordinate Lien: all project debt having the same priority as the WIFIA loan.

	Subordinate Lien: not all project debt has the same priority as the WIFIA loan. A springing lien will be used in a bankruptcy related event.
Security Pledge	Click or tap here to enter text.
WIFIA Loan Maturity Date	Click or tap here to enter text.

3. Describe all dedicated revenue sources to be used to repay project financing, the expected rate(s), and the base to which such rates will be applied (e.g. average monthly consumption). Include rate covenant requirements that may affect these revenue sources.

All of the Authority's debt is secured by water revenue under the Fourth General Water Revenue Bond Resolution (Attachment 15) and subsequent supplemental resolutions. The rates are set by the Board of Commissioners annually in conjunction with the budget adoption. Subsequent rate increases, although not adopted, are projected for the next four years. Projections are based on historical consumption assumptions.

4. Provide the file name for and submit a new or recent preliminary rating letter from a nationally recognized statistical rating organization opining on the proposed WIFIA financing and describing the applicant's ability to obtain an investment grade rating on the project's senior obligations. An existing rating may be used in place of a preliminary rating letter if it is recent and actively maintained. The applicant should discuss using an existing rating with its transaction team prior to application submittal.

In March of 2021, Fitch Ratings affirmed their AA+ rating on outstanding debt and assigned an AA+ issuer default rating to the Authority. Attachment 16

5. Provide the year-end audited financial statement for the applicant for past three (3) years, as an attachment, and enter the file names below.

Attachment 17 - 2018 Financial Statements; Attachment 18 - 2019 Financial Statements; Attachment 19 - 2020 Financial Statements

- 6. Attach the financial model for the project(s) and provide its file name below. All amounts should be expressed on a cash (year-of-expenditure) basis and should clearly show assumptions used to arrive at such estimates. A sample pro forma can be found here. The pro forma(s) should include:
 - Details on projected revenues, operations and maintenance expense, capital
 expenditures and other key line items. Include rate changes and inflation factors as
 appropriate;
 - b. Estimated total debt service coverage. Also show senior and junior lien debt coverages separately, if applicable;

- Disbursement and repayment schedule for all debt sharing the WIFIA security, addressing, as applicable, senior- and junior-lien debt. Same lien debt amounts may be aggregated;
- d. Anticipated disbursement and repayment schedule of the requested WIFIA loan.

Attachment 20 - Financial Model; Attachment 21 - WIFIA Cash Flow

7. Describe the rate setting process, including regulations governing rate setting, approval requirements, timing for implementation, etc. Include 10 years of rate schedule history for the applicant and specify if recommended rate increases were ever rejected.

Rate increases are recommended to the Board of Commissioners by the executive staff through the budget process or through a formal Rate Study. A ten-year rate history is attached. A rate study completed in 2016 resulted in a restructuring of Authority rates, assigning infrastructure investment charges by meter size and volumetric rates by meter size and customer class. A new rate study was completed in 2020 to support a new capital improvement plan.

Attachment 22 - Raftelis Rate Study

Attachment 23 – Rate History

8. If available, provide a flow of funds diagram or description and summarize key obligations in the flow of funds.

There is no flow of funds diagram available. All money collected by the Authority is pledged to bondholders, used to pay operating and maintenance expenses, and repair and replace infrastructure. The Powers of the Authority are outlined in §1054 of the Authority's Enabling Legislation.

Attachment 24 – ECWA Enabling Legislation

Standard WIFIA loan agreement.

9.	Describe what document(s)	will be the starting point for	the WiriA loan agreement.

Existing Master Indenture or Bond Ordinance. Included as an attachment is the Existing Master Indenture or Bond Ordinance.
Customized loan agreement for the project(s) and applicant.
Other. Click or tap here to enter text.
Additional notes for loan agreement: Click or tap here to enter text.



Sec

ctio	n D: Federal Requir	rements Co	ompliance			
1.	Describe the status of the environmental review in accordance with the National Environmental Policy Act (NEPA). If applicable, submit the <u>Programmatic Environmental Assessment (PEA)</u> <u>Questionnaire form</u> , Environmental Assessment (draft or final), or Environmental Impact Statement (draft or final),					
	Click or tap here to e	nter text.				
2.	Describe the status o Findings and/or SRF of			v, if applicable. S	ubmit the available SRF	
	Click or tap here to e	nter text.				
3.	. If the environmental review for the project is underway or complete, complete the following table to identify the anticipated impacts and mitigations. Mark a "X" in the appropriate column to identify the impacts anticipated for each resource type and, if applicable, provide a short explanation of the mitigations.					
			Anticipated Impa	acts		
			Less Than	Potentially		
		No	Significant	Significant		
	Resource Type	Impact	Impact	Impact	Mitigations	
Vate					Enter text here.	
	gical				Enter text here.	
ultu					Enter text here.	
)the	rs as Applicable				Enter text here.	
4.	Identify any agencies project and include so	upporting do	cumentation as at			
	☐ State Historic		n Officer			
	☐ Fish and Wild					
	☐ National Mar					
	☐ Coastal Zone ☐ Other Click or	_				
5.						

Major Permits or Approvals	Approving Authority	Status	Expected
Required			Approval Date

Enter text here.	Enter text here.	Enter text here.	Enter date here.
Enter text here.	Enter text here.	Enter text here.	Enter date here.
Enter text here.	Enter text here.	Enter text here.	Enter date here.

Click or tap here to enter text.

6. If applicable, specify if a new or relocated discharge, either permanent or temporary, to surface or groundwater is expected or new or relocated water intakes are expected.

Click or tap here to enter text.

7. Additional forms will need to be completed and submitted prior to closing the WIFIA loan. Check all that are included with the application:



8. If the project(s) include acquisition of real property, identify how the project complies or will comply with Uniform Relocation Assistance and Real Property Acquisition Policies Act (Uniform Act).

Click or tap here to enter text.

Section E: Contract Information

Complete the "Section E: Supplemental Spreadsheet." Instructions for each column are available on the first tab labeled "Instructions – Section E". Provide answers for each project in the application using separate rows designated, "Contract 1, Contract 2, etc."

CERTIFICATIONS

1. National Environmental Policy Act: The applicant acknowledges that any project receiving credit assistance under this program must comply with all provisions of the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.)

- **2.** American Iron and Steel: The applicant acknowledges that any project receiving credit assistance under this program for the construction, alteration, maintenance, or repair of a project may only use iron and steel products produced in the United States and must comply with all applicable guidance.
- **3.** Prevailing Wages: The applicant acknowledges that all laborers and mechanics employed by contractors or subcontractors on projects receiving credit assistance under this program shall be paid wages at rates not less than those prevailing for the same type of work on similar construction in the immediate locality, as determined by the Secretary of Labor, in accordance with sections 3141-3144, 3146, and 3147 of Title 40 (Davis-Bacon wage rules).
- **4.** *Credit Ratings:* This applicant has received a preliminary rating opinion letter(s) on the project's senior debt instrument, from one or more rating agencies. These letters or ratings are attached.
- **5.** *Credit Processing Fees:* The undersigned certifies that it will reimburse EPA for its costs incurred in negotiating the credit agreement, irrespective of whether the credit agreement is executed.
- **6.** *Lobbying:* Section 1352 of Title 31, United States Code provides that none of the funds appropriated by any Act of Congress may be expended by a recipient of a contract, grant, loan, or cooperative agreement to pay any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, or an employee of a Member of Congress in connection with the award or making of a Federal contract, grant, loan, or cooperative agreement or the modification thereof. EPA interprets this provision to include the use of appropriated funds to influence or attempt to influence the selection for assistance under the WIFIA program.

WIFIA applicants must file a declaration: (a) with the submission of an application for WIFIA credit assistance; (b) upon receipt of WIFIA credit assistance (unless the information contained in the declaration accompanying the WIFIA application has not materially changed); and (c) at the end of each calendar quarter in which there occurs any event that materially affects the accuracy of the information contained in any declaration previously filed in connection with the WIFIA credit assistance.

The undersigned certifies, to the best of his or her knowledge and belief, that:

- 1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- 2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement,



the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

- 3. The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.
 This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.
- 7. Debarment: The undersigned further certifies that it is not currently: 1) debarred or suspended from participating in any Federal programs; 2) formally proposed for debarment, with a final determination still pending; or 3) indicted, convicted, or had a civil judgment rendered against it for any of the offenses listed in the Regulations Governing Debarment and Suspension (Governmentwide Nonprocurement Debarment and Suspension Regulations: 2 C.F.R. Part 180 and Part 1532).
- **8.** Default/Delinquency: The undersigned further certifies that neither it nor any of its subsidiaries or affiliates are currently in default or delinquent on any debt or loans provided or guaranteed by the Federal Government.
- **9.** Other Federal Requirements: The applicant acknowledges that it must comply with all other federal statutes and regulations, as applicable. A non-exhaustive list of federal cross-cutting statutes and regulations can be found at: https://www.epa.gov/wifia/wifia-resources#complianceanchor.
- **10.** Signature: By submitting this application, the undersigned certifies that the facts stated and the certifications and representations made in this application are true, to the best of the applicant's knowledge and belief after due inquiry, and that the applicant has not omitted any material facts. The undersigned is an authorized representative of the applicant.

Name:	
Title:	
Organization:	
Street Address:	
City/State/Zip:	
Phone:	
E-mail:	
gnature:	
ate Signed:	

KEY DEFINITIONS

- (a) Administrator means the Administrator of EPA.
- (b) *Community water system* has the meaning given the term in section 1401 of the Safe Drinking Water Act (42 U.S.C. 300f).
- (c) Credit assistance means a secured loan or loan guarantee under WIFIA.
- (d) *Credit agreement* means a contractual agreement between EPA and the project sponsor (and the lender, if applicable) that formalizes the terms and conditions established in the term sheet (or conditional term sheet) and authorizes the execution of a secured loan or loan guarantee.
- (e) *Eligible project costs* mean amounts, substantially all of which are paid by, or for the account of, an obligor in connection with a project, including the cost of:
 - (1) Development-phase activities, including planning, feasibility analysis (including any related analysis necessary to carry out an eligible project), revenue forecasting, environmental review, permitting, preliminary engineering and design work, and other preconstruction activities;
 - (2) Construction, reconstruction, rehabilitation, and replacement activities;
 - (3) The acquisition of real property or an interest in real property (including water rights, land relating to the project, and improvements to land), environmental mitigation (including acquisitions pursuant to section 33 U.S.C. §3905(7)), construction contingencies, and acquisition of equipment; and
 - (4) Capitalized interest necessary to meet market requirements, reasonably required reserve funds, capital issuance expenses, and other carrying costs during construction.
- (f) Investment-grade rating means a rating category of BBB minus, Baa3, bbb minus, BBB (low), or higher assigned by a nationally recognized statistical rating organization (NRSRO) to project obligations offered into the capital markets.
- (g) Iron and steel products means the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials.
- (h) Nationally Recognized Statistical Rating Organization (NRSRO) means a credit rating agency identified and registered by the Office of Credit Ratings in the Securities and Exchange Commission.
- (i) *Project* means:
 - (1) Any project for flood damage reduction, hurricane and storm damage reduction, environmental restoration, coastal or inland harbor navigation improvement, or inland and intracoastal waterways navigation improvement that the Secretary determines is technically sound, economically justified, and environmentally acceptable, including—



- (A) a project to reduce flood damage;
- (B) a project to restore aquatic ecosystems;
- (C) a project to improve the inland and intracoastal waterways navigation system of the United States; and
- (D) a project to improve navigation of a coastal or inland harbor of the United States, including channel deepening and construction of associated general navigation features.
- (2) 1 or more activities that are eligible for assistance <u>under section 1383(c) of this title</u>, notwithstanding the public ownership requirement under paragraph (1) of that subsection.
- (3) 1 or more activities described in section 300j-12(a)(2) of title 42.
- (4) A project for enhanced energy efficiency in the operation of a public water system or a publicly owned treatment works.
- (5) A project for repair, rehabilitation, or replacement of a treatment works, community water system, or aging water distribution or waste collection facility (including a facility that serves a population or community of an Indian reservation).
- (6) A brackish or sea water desalination project, including chloride control, a managed aquifer recharge project, a water recycling project, or a project to provide alternative water supplies to reduce aquifer depletion.
- (7) A project to prevent, reduce, or mitigate the effects of drought, including projects that enhance the resilience of drought-stricken watersheds.
- (8) Acquisition of real property or an interest in real property—
 - (A) if the acquisition is integral to a project described in paragraphs (1) through (6); or
 - (B) pursuant to an existing plan that, in the judgment of the Administrator or the Secretary, as applicable, would mitigate the environmental impacts of water resources infrastructure projects otherwise eligible for assistance under this section.
- (9) A combination of projects, each of which is eligible under paragraph (2) or (3), for which a State infrastructure financing authority submits to the Administrator a single application.
- (10) A combination of projects secured by a common security pledge, each of which is eligible under paragraph (1), (2), (3), (4), (5), (6), (7), or (8), for which an eligible entity, or a combination of eligible entities, submits a single application.
- (j) *Public entity* means:
 - (1) a Federal, State, or local Governmental entity, agency, or instrumentality; or
 - (2) a Tribal Government or consortium of Tribal Governments.
- (k) Publicly sponsored means the obligor can demonstrate, to the satisfaction of the Administrator that it has consulted with the affected State, local or Tribal Government in which the project is located, or is otherwise affected by the project, and that such government supports the proposed project. Support can be shown by a certified letter signed by the approving municipal department or similar agency, mayor or other similar designated authority, local ordinance, or any other means by which local government approval can be evidenced.



- (I) Small Community means a community with a population of no more than 25,000 individuals.
- (m) *State* means any one of the fifty states, the District of Columbia, Puerto Rico, or any other territory or possession of the United States.
- (n) State infrastructure financing authority means the State entity established or designated by the Governor of a State to receive a capitalization grant provided by, or otherwise carry out the requirements of, title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et. seq.) or section 1452 of the Safe Drinking Water Act (42 U.S.C. 300j–12).
- (o) *Term sheet* means a contractual agreement between EPA and the project sponsor (and the lender, if applicable) that sets forth the key business terms and conditions of a Federal credit instrument. Execution of this document represents a legal obligation of budget authority.
- (p) *Treatment works* has the meaning given the term in section 212 of the Federal Water Pollution Control Act (33 U.S.C. 1292).
- (q) WIFIA means the Water Infrastructure Finance and Innovation Act of 2014, Pub. L. 113-121, 128 Stat, 1332, codified at 33 U.S.C. §§ 3901-3914.

Section E

General Project Information (Columns A-I)

COLUMN A: Replace "Project Component X" with the project component name.

COLUMN B: Describe each of the Project components including dimensions, quantities, capacities, square footage, etc. Indicate whether the contract involves the construction of new facilities or the renovation or replacement of existing ones.

COLUMN C: Describe the location of the project(s); specify if the location is within an existing facility. Include location address(es), and/or latitude and longitude details for all project components or sub-projects included in the contract. Attach a project map(s) for all project components or sub-projects included in the contract, if available.

COLUMN D: Replace "Contract X" with the contract name and/or number.

COLUMN E: Describe each of the contract components including dimensions, quantities, capacities, square footage, etc. Indicate whether the contract involves the construction of new facilities or the renovation or replacement of existing ones.

COLUMN F: Provide design criteria and useful life information for all contract components.

COLUMN G: Pick your project delivery method. If your project delivery method is not on the drop-down list, type your response in the project cell for Column E.

Column H: List the file names of technical reports (such as Plannning Documents, Preliminary Design Reports or Conceptual Design Reports) and design documentation (such as executed or draft contract documents). For alternative project delivery method contracts (i.e., design-build, construction manager at-risk, design-bid-build), provide the file names of procurement documentation (including contractor selection materials such as Request for Qualifications and Request for Proposals) available for review. Attach all listed documents.

Column I: List the file names of environmental reports (such as Biological Resource Survey Reports, Cultural Resource Survey Reports) and environmental documentation (such as NEPA documents completed by another federal agency or reviews completed for the State Revolving Fund or under a State environmental review process, such as CEQA). Attach all listed documents.

Schedule (Columns J-P)

COLUMNS J-O: Present the overall project schedule start and end dates for key milestones in Columns G-N. Attach the detailed project schedule for each contract (required).

COLUMN P: Provide additional notes about the schedule, if needed.
Cost Information (Columns Q-X) COLUMNS Q-V: Present the overall project costs in the Columns Q-V.
COLUMN R: Provide the file name for the Engineer's Cost Estimate or similar, which verify the costs listed in Columns N-Q. The estimate should include quantities, unit prices, and total costs. Attach the cost estimate for each contract (required).
COLUMN V: If previously incurred costs are included in the overall project cost, indicate the amount. Attach the executed contract documents.
COLUMN W: Describe the process the applicant implements for overseeing scope/schedule/costs of projects. Attach Project Management Plan or similar document, if available.
COLUMN X: Provide additional notes about the project costs, if needed.
Other Project Information (Columns Y-AC)
COLUMN Y: Describe how the applicant has developed a plan for operating, maintaining, and repairing the project over the useful life of the project. Attach either existing operations and maintenance plans or professional service contracts or similar evidence that a plan will be developed.
COLUMN Z: For loans which include assets to be operated and/or maintained by a third party, provide the file names for any contractual arrangements that the applicant plans to execute for the operation and maintenance of the project(s), key performance indicators, insurance policies that may be used to cover the project(s), and reserves that will be set aside for the maintenance of the project(s). Attach listed files.
COLUMN AA: Choose the risk mitigation strategies implemented for this project from the drop-down list. Sample risks might include construction schedule delays, cost escalation, delayed approvals, and litigation. If you chose "Risk Mitigation Plan and/or Project Mgmt Plan has been developed", attach the plans. If you chose "Risk Mitigation Plan and/or Project Mgmt Plan has not been developed," explain how the applicant intends to mitigate major risks for the project.

COLUMN AB: List any state or local agencies conducting reviews of the project design that must review final plans and specifications prior to construction. Describe any applicable statutory references and expected timelines.

COLUMN AC: Use Column Z to provide any additional notes in the Other Project Information section.

Bid Specifications (Columns AD-AE)

COLUMN AD: Select all federal requirements listed in Column AA are in final or draft bid specifications (or project procurement documents) and drawings developed for the project(s). To select multiple choices, enable spreadsheet macros. If bid specifications, draft or final, are not available, skip this question and proceed to Column AB. Attach the draft of Final Bid Specifications with required language.

Links to more information about the federal requirements:

Davis-Bacon and Related Acts

American Iron and Steel (AIS) Requirements

Disadvantaged Business Enterprises (DBE) Requirements

Debarment and Suspension Requirements

Equal Employment Opportunity (EEO) Requirements

New Restrictions on Lobbying

COLUMN AE: If draft or final bid specifications (or procurement documents) have not yet been developed, indicate whether or not the applicant is aware of how to comply with the federal requirements identified in Column AA. Attach sample of final bid specifications with required language.

			General Project Info	ormation				
roject Component Name	Project Component Description	Project Component Location	Contract Name/Number	Contract Scope of Work	Design Criteria/Useful Life	Project Delivery Method	Names of Technical Reports/Design Documentation	Names of Environmental Reports/ Documentation
ontract MP-85 Sturgeon Point Filter Valve and Piping (PN202000166)		Sturgeon Point WTP	Contract 1	Letter of Interest - Attachment 02	AWWA Standards	Design-Bid-Build		
ontract GHD-009 Powdered Activated Carbon System Upgrades (PN202000133)		Sturgeon Point WTP & VanDeWater WTP	Contract 2	Letter of Interest - Attachment 05	AWWA Standards	Design-Bid-Build		
ontract MP-86 Ball Pump Station Improvements (PN202000177		Ball Pump Station	Contract 3	Letter of Interest - Attachment 07	AWWA Standards	Design-Bid-Build		
			Contract 4					
			Contract 5					
			Contract 6					
			Contract 7					
			Contract 8					
			Contract 9					
			Contract 10					
ote: Add more components as applicable			Note: Add more contracts as applicable			•		•

General Project Information				Schedule			
Project Component Name	Planning Start	Planning End	Design Start	Design End	Construction Start	Construction End Date	Schedule Notes
Contract MP-85 Sturgeon Point Filter Valve and Piping (PN202000166)			6/4/2020		Tentative Jan 2022	Tentative April 2023	Attachment 25
			- /- / /				
Contract GHD-009 Powdered Activated Carbon System Upgrades (PN20200013			5/21/2020		Tentative July 2021	Tentative August 2022	Attachment 27
			6/10/2020		T	Tarabatina Danasahan 2022	A++
Contract MP-86 Ball Pump Station Improvements (PN202000177			6/18/2020		Tentative March 2022	Tentative December 2023	Attachment 29

General Project Information					Cost Information			
Project Component Name	Planning Cost	Design Cost	Construction Cost	Other Cost	Names of Attached Cost Documents	Previously Incurred Costs	Project Management	Cost Notes
	-	-				·		
Control MD OF Street Deint Filter Value and Dining (DN202000155)			\$ 26,700,000.00		MP -085 Preliminary Cost Estimate.pdf			Attachment 26
Contract MP-85 Sturgeon Point Filter Valve and Piping (PN202000166)			\$ 26,700,000.00		WP -065 Preliminary Cost Estimate.pui			Attacriment 26
Contract GHD-009 Powdered Activated Carbon System Upgrades (PN202000133)			\$ 2,400,000.00		GHD- 009 Cost Estimate.pdf			Attachment 28
Contract MP-86 Ball Pump Station Improvements (PN202000177			\$ 17,600,000.00		MP-086 Preliminary Cost Estimate.pdf			Attachment 30
Contract MP-60 Ball Pullip Station Improvements (PN202000177			3 17,000,000.00		Wr-060 Freiiiilliary Cost Estillate.pui			Attaciment 30

General Project Information		Other Projec	t Information		
Project Component Name	Operations and Maintenance Plan	Operations and Maintenance Contracts	Risk Mitigation Plan	Agency Reviews	Notes
Contract MP-85 Sturgeon Point Filter Valve and Piping (PN202000166)	A new O&M plan will be developed to include requirements for the project	NA	Risk Mitigation Plan and/or Project Mgmt Plan has not been d	New York State DOH & Erie County DOH	
Contract GHD-009 Powdered Activated Carbon System Upgrades (PN202000133	A new O&M plan will be developed to include requirements for the project	NA	Risk Mitigation Plan and/or Project Mgmt Plan has not been d	New York State DOH & Erie County DOH	
	A consideration will be developed to be described as a constant for the constant		Distriction District Advantages	New York Chata BOULS Edu County BOUL	
Contract MP-86 Ball Pump Station Improvements (PN202000177	A new O&M plan will be developed to include requirements for the project	NA .	Risk Mitigation Plan and/or Project Mgmt Plan has not been d	New York State DOH & Erie County DOH	

General Project Information		Bid Specifications
Project Component Name	Federal Requirements	Federal Requirement Compliance Awareness
	Davis-Bacon and Related	
	Acts, American Iron and	
Contract MP-85 Sturgeon Point Filter Valve and Piping (PN202000166)	Steel Requirements	No. The applicant will work with WIFIA to include the correct required language in bid specification as the project progresses.
	Davis-Bacon and Related	
	Acts, American Iron and	
Contract GHD-009 Powdered Activated Carbon System Upgrades (PN202000133)	Steel Requirements	No. the applicant will work with WIFIA to include the correct required language in bid specification as the project progresses
	Davis-Bacon and Related	
	Acts, American Iron and	
Contract MP-86 Ball Pump Station Improvements (PN202000177	Steel Requirements	No. the applicant will work with WIFIA to include the correct required language in bid specification as the project progresses
Note: Add more components as applicable		

ERIE COUNTY WATER AUTHORITY

Customers by Classification For the Year Ended December 31, 2020

		Billed	Rever	nue from	Total	
	No. of Customers	Consumption	Water Sales	Infrastructure Chg	Revenue	
Customer Class						
Residential	162,340	11,576,260	40,992,521	14,349,628	55,342,149	
Commercial	7,669	2,063,484	7,573,037	2,118,749	9,691,786	
Industrial	332	735,307	2,304,405	197,496	2,501,901	
Public authorities	719	637,501	2,277,491	564,768	2,842,259	
Fire protection (unmetered)	1,491	-	4,575,284		4,575,284	
Bulk sales	21	1,539,118	4,094,815	93,550	4,188,365	
Total	172,572	16,551,670	61,817,553	17,324,191	79,141,744	

ERIE COUNTY WATER AUTHORITY

Largest Customers
Current Year and Nine Years Ago
(Unaudited)

Year End December 31, 2020			Year End December 31, 2011				
Non-Municipal Customers			Non-Municipal Customers				
Upstate Farms Cooperative	\$ 4	39,935	Benderson Development Co.	\$	267,121		
Benderson Development Co.	4	34,910	Upstate Farms Cooperative		266,689		
Republic Engineered Products	4	31,376	Republic Engineered Products		173,694		
Mayer Brothers Apple Products, Inc.	2	95,496	Rosina Food Products, Inc		164,533		
Delta Sonic	2	57,379	Mayer Brothers Apple Products, Inc.		144,703		
Rosina Food Products, Inc	2	41,011	Delta Sonic		132,657		
BGMHC, LLC	1	45,383	Uniland Development Co		123,663		
Uniland Development Co	1	44,593	DDR Corp.		120,724		
Sky Harbor Property, LLC	1	24,200	BGMHC, LLC		107,602		
Buffalo Tungsten, Inc	1	20,603	Pyramid Company of Buffalo		107,010		
Total of Largest Non-Municipal Customers	\$ 2,6	34,886	Total of Largest Non-Municipal Customers	\$	1,608,396		
Percent of total billings	3.3	3%	Percent of total billings		2.9%		
Governmental Customers			Governmental Customers				
Town of Elma	\$ 1,9	30,583	Town of Elma	\$	1,345,110		
State University of New York at Buffalo		1 5 5 40			1 120 005		
	6	15,542	Town of Evans*		1,128,807		
Village of East Aurora		02,302	Town of Evans* Village of East Aurora		535,812		
	6						
Village of East Aurora	6 4	02,302	Village of East Aurora		535,812		
Village of East Aurora Village of Angola	6 4 3	02,302	Village of East Aurora State University of New York at Buffalo		535,812 531,126		
Village of East Aurora Village of Angola Village of Orchard Park	6 4 3 2	02,302 17,237 03,150	Village of East Aurora State University of New York at Buffalo Village of Williamsville *		535,812 531,126 479,805		
Village of East Aurora Village of Angola Village of Orchard Park Monroe County Water Authority	6 4 3 2 2	02,302 17,237 03,150 52,149	Village of East Aurora State University of New York at Buffalo Village of Williamsville * Village of Angola		535,812 531,126 479,805 381,513		
Village of East Aurora Village of Angola Village of Orchard Park Monroe County Water Authority Town of Amherst	6 4 3 2 2 2	02,302 17,237 03,150 52,149 47,368	Village of East Aurora State University of New York at Buffalo Village of Williamsville * Village of Angola Seneca Nation of Indians		535,812 531,126 479,805 381,513 319,519		
Village of East Aurora Village of Angola Village of Orchard Park Monroe County Water Authority Town of Amherst Village of Silver Creek	6 4 3 2 2 2 1	02,302 17,237 03,150 52,149 47,368 27,388	Village of East Aurora State University of New York at Buffalo Village of Williamsville * Village of Angola Seneca Nation of Indians Monroe County Water Authority		535,812 531,126 479,805 381,513 319,519 291,102		
Village of East Aurora Village of Angola Village of Orchard Park Monroe County Water Authority Town of Amherst Village of Silver Creek Seneca Nation of Indians	6 4 3 2 2 2 1 1	02,302 17,237 03,150 52,149 47,368 27,388 66,553	Village of East Aurora State University of New York at Buffalo Village of Williamsville * Village of Angola Seneca Nation of Indians Monroe County Water Authority Village of Orchard Park		535,812 531,126 479,805 381,513 319,519 291,102 237,595		

^{*} These municipalities converted from bulk sale to direct service or lease managed customers.

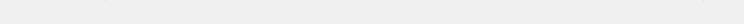
Source: Erie County Water Authority Business Office Records

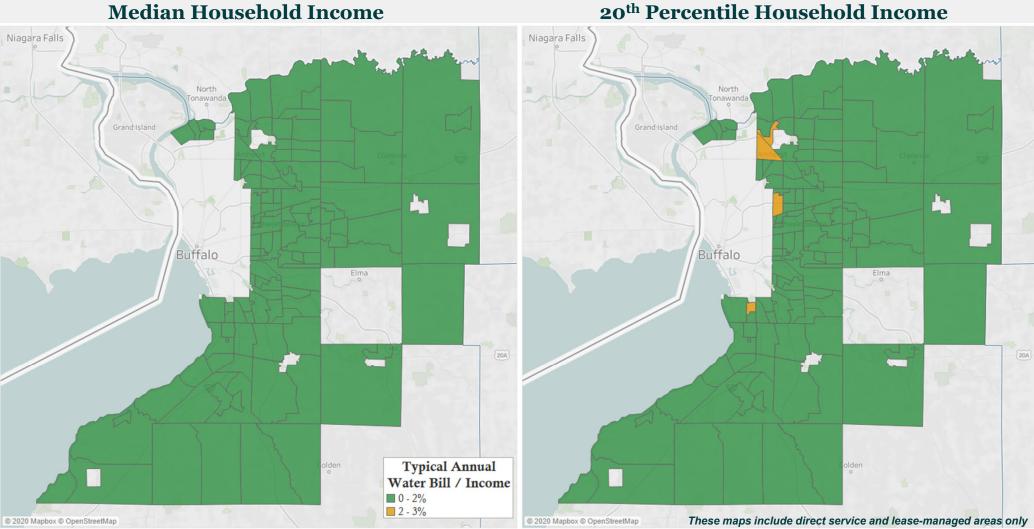
Affordability Metrics

- A residential customer with median consumption (12 Kgal/quarter), pays \$241 per year for water service from ECWA
- The 2020 Median Household Income of the service area is estimated to be \$74,851* and the Lowest Quintile Income is \$34,809*
- MHI Burden is 0.3% of annual income and LQI Burden is 0.7%
- ECWA water service is very affordable in 2020 according to EPA and AWWA industry affordability metrics
- However, there are likely still customers struggling to pay their water bill

*Raffelis calculated service area incomes by taking 2018 American Community Survey data for every census tract in ECWA's service area, then applying a weight based on the number of residential ECWA accounts in that tract, then escalating incomes to 2020 based on historical trends.

ECWA 2020 Annual Water Bill Burden On:





BUDGET ESTIMATES 4/20/21 Date: **Candidate Project List - Capital Improvements** by: **Current Year for Estimates** 2020 25% Legal/Admin/Eng Projects in **bold** are in active study/design/construction **ECWA** 12% 3% Inflation rate **Project Cost Estimate Total Project Cost -**Current Construction Engineering/ Total Project Cost **Escalated to Current Estimate Contract** Consultant **Estimate** for Estimate Year Year **Status ECWA** Location **Project Description** Year **Estimate Source Powdered Activated Carbon System Rehab** Design 30% GHD-9 2020 900,000 191,550 108,000 1,199,550 1,199,550 **GHD BOD report** SPt Filters 1-10 Valve/Piping Replacement (incl FTW, air gap, inlet and drain valves) **BOD 50% MP-85** 2020 5,860,000 1,465,000 703,200 8,028,200 8,028,200 Arcadis - prelim SPt 2019 2,000,000 240,000 2,740,000 Interconnection of 42" and 48" Transmission Mains at Sturgeon Point WTP Design 30% **WSA-16** 500,000 2,780,796 SPt placeholder **SPt Clearwell By-Pass Line BOD 50% MP-85** 2020 2,000,000 500,000 240,000 2,740,000 2,740,000 placeholder SPt Filter Washwater Tank Rehabilitation 2019 1,500,000 375,000 180,000 2,055,000 2,085,597 placeholder 2019 125,000 685,000 SPt Alternative Oxidant System 500,000 60,000 695,199 placeholder Air/Water Backwash System; Blowers, Media Replacement (Filters 1-10) **BOD 50% MP-85** 2020 6,674,000 1,668,500 800,880 9,143,380 9,143,380 Arcadis - prelim SPt 2019 400,000 100,000 48,000 548,000 placeholder SPt Chemical Feed Line to Intake - Replacement 556,159 2019 200,000 50,000 24,000 274,000 278,080 SPt Flash Mixer Upgrades placeholder 625,000 300,000 3,425,000 3,425,000 Sedimentation Basin Discharge Valve Replacement/Automation **BOD 50%** MP-85 2020 2,500,000 SPt placeholder SPt Residuals Treatment Improvements - Lagoon Rehab 2019 3,000,000 750,000 360,000 4,110,000 4,171,194 placeholder SPt Alternate Corrosion Control **Study 2020** MP-79 2019 1,000,000 250,000 120,000 1,370,000 1,390,398 placeholder 2020 500,000 240,000 2,740,000 SPt Filter Backwash Pumping Rehabilitation/Replacement/Interconnection **BOD 50% MP-85** 2,000,000 2,740,000 placeholder 2010 1,000,000 250,000 120,000 1,370,000 1,588,205 SPt HVAC Upgrades - WTP and Raw Water placeholder 2019 350,000 87,500 42,000 479,500 486,639 SPt **Quonset Hut Building Replacement** placeholder 200,000 50,000 24,000 274,000 278,080 SPt Filter Gallery Ceiling Replacement/Doors and Windows/HVAC RFP Study 2021 2019 placeholder Raw Water Intake Extension 2019 10,000,000 2,500,000 1,200,000 13,700,000 13,903,981 SPt placeholder SPt **Electrical Upgrades** 2019 1,000,000 250,000 120,000 1,370,000 1,390,398 placeholder 500,000 2019 240,000 2,740,000 SPt Buildings and Grounds - Building Envelope/Condition Assessment RFP Study 2021 2,000,000 2,780,796 placeholder Line Maintenance Storage Building - Satellite Location RFP Study 2021 750,000 90,000 1,027,500 1,042,799 2019 187,500 SPt placeholder 43,834,000 10,925,050 5,260,080 60,019,130 60,704,453 **Subtotal - Sturgeon Point WTF** VdW Filters 1-4 Valve/Piping Replacement (incl FTW, air gap, inlet and drain valves) **BOD 10%** HS-1 2019 1,500,000 375,000 180,000 2,055,000 2,085,597 placeholder VdW **Residuals Treatment Improvements - Belt Press** Design 90% GHD-8 2020 6,000,000 1,500,000 720,000 8,220,000 8,220,000 **GHD BOD Report** GHD-9 800,000 191,550 96,000 1,087,550 1,087,550 VdW **Powdered Activated Carbon System Rehab** Design 30% 2020 placeholder 7,500,000 900,000 10,275,000 VdW Second 48-inch Raw Water Pipeline Design 30% NC-40 2019 1,875,000 10,427,986 **N&C BOD report** HVAC Upgrades - WTP and Raw Water 2019 1,000,000 250,000 120,000 1,370,000 1,390,398 VdW Design 0% LA-3 placeholder 2019 500,000 125,000 685,000 695,199 VdW Alternative Oxidant System 60,000 placeholder 2010 2,230,000 557,500 267,600 3,055,100 3,541,698 VdW Filter Washwater Pump/Tank **MPI Capital Plan** Chemical Feed Line to Intake - Replacement 2019 400,000 100,000 48,000 548,000 556,159 placeholder VdW 1,589,200 VdW Delivered Water Pumping Improvements (VFDs 2 pumps) RFP 2021 2010 1,160,000 290,000 139,200 1,842,318 **MPI Capital Plan** 2019 1,000,000 250,000 120,000 1,370,000 VdW Raw Water Pumping Improvements (VFDs 2 pumps) RFP 2021 1,390,398 placeholder VdW Filter 1-4 Air/Water Backwash System; Media Replacement **Study 2020** 2019 3,500,000 875,000 420,000 4,795,000 4,866,394 placeholder **Study 2020** MP-79 2019 1,000,000 250,000 120,000 1,370,000 1,390,398 VdW **Alternate Corrosion Control** placeholder Clearwell Baffling/Contact Time Improvements 2019 500,000 125,000 60,000 685,000 695,199 VdW placeholder 22,590,000 5,647,500 2,710,800 30,948,300 VdW Addition of Filters 5 & 6 **BOD 10%** 2010 35,877,562 **MPI Capital Plan** HS-1 VdW **Addition of Coagulation Basin 4 BOD 10%** HS-1 2010 25,060,000 6,265,000 3,007,200 34,332,200 39,800,429 **MPI Capital Plan** RFP Study 2021 VdW Buildings and Grounds - Building Envelope/Condition Assessment 2010 2,000,000 500,000 240,000 2,740,000 3,176,411 **MPI Capital Plan**

Subtotal - Van de Water WTP

76.740.000

19,176,550

105.125.350

117,043,697

9,208,800

			Current Contract			Project Cos	st Estimate			
Location	Project Description	Status		Estimate Year	Construction Estimate	Engineering/ Consultant	ECWA	Total Project Cost for Estimate Year	Total Project Cost - Escalated to Current Year	Estimate Source
SvCtr	Salt/Cold Patch Building	Hold		2019	\$ -	\$ -	\$ -	\$ -	\$ -	placeholder
SvCtr	Service Center Renovations - Short Term Electrical/HVAC	Hold		2019	\$ -	\$ -	\$ -	\$ -	\$ -	placeholder
SvCtr	Service Center Renovations - Comprehensive Facilities Plan	Study 90%	CPL-6	2020	\$ -	\$ 100,000	\$ -	\$ 100,000	\$ 100,000	Study fee
SvCtr	Service Center Facility - New/Renovated Concept Plans	RFP 2021		2020		\$ 400,000	\$ -	\$ 400,000	\$ 400,000	placeholder
SvCtr	Service Center Facility - New/Renovated Design and Construction			2020	\$ 20,000,000	\$ 5,000,000	\$ 2,400,000	\$ 27,400,000	\$ 27,400,000	placeholder
		Subtotal - S	ervice Center		\$ 20,000,000	\$ 5,500,000	\$ 2,400,000	\$ 27,900,000	\$ 27,900,000	
Sta/Sto	Ball North Tank Replacement	Construct 2020	W-31	2019	\$ 5,900,000	\$ 3,300,000 \$ 120,000		\$ 6,728,000		Wendel
Sta/Sto	Ball Pump Station Improvements - Projects 1 and 2 Pumps/VFDs/HVAC	Design 10%	MP-86	2019	\$ 8,770,000	\$ 2,192,500	\$ 1,052,400	\$ 12,014,900	\$ 12,193,792	Arcadis MP-80
Sta/Sto	Guenther Pump Station Pump Improvements	Design 30%	GHD-7	2019	\$ 15,000,000	\$ 3,750,000		\$ 20,550,000	\$ 20,855,972	GHD/placeholder
Sta/Sto	Flow/Pressure Monitoring Stations - Phase I - Sites 1-12	Install 2020	ECWA	2019	\$ 100,000	\$ 25,000		\$ 137,000		placeholder
PSta/Sto	Ball Pump Station Improvements - Projects 3, 4, 5 Int/Ext Piping, Storage Bldg		MP-80	2019	\$ 5,250,000	\$ 1,312,500		\$ 7,192,500	\$ 7,299,590	Arcadis MP-80
Sta/Sto	Furhman Blvd/Hancock Tank Interconnection w City/Pump Station	RFP Study 2020		2019	\$ 10,000,000	\$ 2,500,000	\$ 1,200,000	\$ 13,700,000	\$ 13,903,981	placeholder
Sta/Sto	Castle Hill Pump Station Replacement/Generator	Design 10%	LA-2	2019	\$ 700,000	\$ 175,000		\$ 959,000	\$ 973,279	placeholder
Sta/Sto	Aurora/Elma Meter Pits			2019	\$ 150,000	\$ 37,500		\$ 205,500	\$ 208,560	placeholder
Sta/Sto	Flow/Pressure Monitoring Stations - Phase II - Sites 13-40+/-	Install 2020/21	ECWA	2019	\$ 500,000	\$ 125,000		\$ 685,000	\$ 695,199	placeholder
Sta/Sto	Genesee County Expansion (Tank and Pump Station)	RFP Study 2020		2019	\$ 15,000,000	\$ 3,750,000	\$ 1,800,000	\$ 20,550,000	\$ 20,855,972	placeholder
PSta/Sto	Ball Pump Station Improvements - Projects 6 ,7 Exterior Bldg/Paving		MP-80	2019	\$ 1,430,000	\$ 357,500		\$ 1,959,100	\$ 1,988,269	Arcadis
PSta/Sto	City of North Tonawanda Interconnection			2019	\$ 250,000	\$ 62,500		\$ 342,500		placeholder
·Sta/Sto	Newstead Pump Station	RFP 2021		2020	\$ 500,000	\$ 125,000		\$ 685,000		placeholder
		Subtotal - Pump Station	and Storage		\$ 63,550,000	\$ 14,532,500	\$ 7,626,000	\$ 85,708,500	\$ 86,974,428	

					Project Cos	st Estimate			
								Total Project Cost -	
		Current	Estimate	Construction	Engineering/		Total Project Cost	Escalated to Current	
Location Project Description	Status	Contract	Year	Estimate	Consultant	ECWA	for Estimate Year	Year	Estimate Source
Large Main 36-inch Transmission Main - Sheridan to Millersport	In Construction	W-27	2020	\$ 4,190,820	\$ 1,047,705	\$ 502,898	\$ 5,741,423	\$ 5,741,423	As-bid
Large Main 36-inch Main - Millersport to Ball	Design 30%	W-30	2019	\$ 7,200,000	\$ 1,800,000	\$ 864,000	\$ 9,864,000	\$ 10,010,867	Wendel 30% est
Large Main 30-inch Transmission Main - Sheridan to Main	Design 0%	CH-13?	2019	\$ 6,000,000	\$ 1,500,000	\$ 720,000	\$ 8,220,000	\$ 8,342,389	placeholder
Large Main 48-inch Transmission Main - VdW 48" Mudflats Full Redundancy	Design 10%	MP-84	2019	\$ 5,500,000	\$ 1,375,000	\$ 660,000	\$ 7,535,000	\$ 7,647,190	Arcadis MP-81 est.
Large Main Large Diameter Main Replacement/Rehab/Twin - Vulnerable Locations Phase II			2019	\$ 8,000,000	\$ 2,000,000	\$ 960,000	\$ 10,960,000	\$ 11,123,185	placeholder
Large Main Large Diameter Main Replacement/Rehab/Twin - Vulnerable Locations Phase III			2019	\$ 8,000,000	\$ 2,000,000	\$ 960,000	\$ 10,960,000	\$ 11,123,185	placeholder
Large Main 48-inch Transmission Main - VdW 48" Colvin to Ball Full Redundancy	Study - 90%	Arcadis	2019	\$ 23,100,000	\$ 5,775,000	\$ 2,772,000	\$ 31,647,000	\$ 32,118,197	Arcadis MP-81 est.
Large Main Large Diameter Transmission Main - to serve Genesee Co/East - Phase I			2019	\$ 10,000,000	\$ 2,500,000	\$ 1,200,000	\$ 13,700,000	\$ 13,903,981	placeholder
Large Main Large Diameter Transmission Main - to serve Genesee Co/East - Phase II			2019	\$ 10,000,000	\$ 2,500,000	\$ 1,200,000	\$ 13,700,000	\$ 13,903,981	placeholder
Large Main Large Diameter Transmission Main - to serve Genesee Co/East - Phase III			2019	\$ 10,000,000	\$ 2,500,000	\$ 1,200,000	\$ 13,700,000	\$ 13,903,981	placeholder
Large Main 2029 Large Diameter Main Replacement/Rehab			2019	\$ 8,000,000	\$ 2,000,000	\$ 960,000	\$ 10,960,000	\$ 11,123,185	placeholder
Large Main 2030 Large Diameter Main Replacement/Rehab			2019	\$ 8,000,000	\$ 2,000,000	\$ 960,000	\$ 10,960,000	\$ 11,123,185	placeholder
Large Main 2031 Large Diameter Main Replacement/Rehab			2019	\$ 8,000,000			\$ 10,960,000		placeholder
Large Main 2032 Large Diameter Main Replacement/Rehab			2019	\$ 8,000,000		\$ 960,000	\$ 10,960,000	\$ 11,123,185	placeholder
Large Main 2033 Large Diameter Main Replacement/Rehab			2019	\$ 8,000,000	\$ 2,000,000	\$ 960,000	\$ 10,960,000	\$ 11,123,185	placeholder
Large Main 2034 Large Diameter Main Replacement/Rehab			2019	\$ 8,000,000	\$ 2,000,000	\$ 960,000	\$ 10,960,000	\$ 11,123,185	placeholder
Large Main 2035 Large Diameter Main Replacement/Rehab			2019	\$ 8,000,000	\$ 2,000,000		\$ 10,960,000		placeholder
Large Main 2036 Large Diameter Main Replacement/Rehab			2019	\$ 8,000,000			\$ 10,960,000		placeholder
Large Main 2007 Large Diameter Main Replacement/Rehab			2019	\$ 8,000,000			\$ 10,960,000	\$ 11,123,185	placeholder
Large Main 2038 Large Diameter Main Replacement/Rehab			2019	\$ 8,000,000		\$ 960,000	\$ 10,960,000	\$ 11,123,185	placeholder
Large Main 2008 Large Diameter Main Replacement/Rehab			2019	\$ 8,000,000	\$ 2,000,000	\$ 960,000	\$ 10,960,000	\$ 11,123,185	placeholder
Large Main 2040 Large Diameter Main Replacement/Rehab			2019	\$ 8,000,000		\$ 960,000	\$ 10,960,000	\$ 11,123,185	placeholder
Large Main 2040 Large Diameter Main Replacement, Nerlas		<u> </u>	2019	\$ 8,000,000	\$ 2,000,000	3 300,000	3 10,300,000	3 11,123,163	placefloidei
	Subtotal - Large Diamete	r Water Main		\$ 187,990,820	\$ 46,997,705	\$ 22,558,898	\$ 257,547,423	\$ 261,296,602	
Small Main 2020 Small Diameter Main Replacement/Rehab -see detail tab for list	Design/Bidding	multiple	2019	\$ 10,000,000					placeholder
Small Main 2021 Small Diameter Main Replacement/Rehab	RFP 2021		2019	\$ 17,500,000		\$ 2,100,000	\$ 23,975,000	\$ 24,331,968	placeholder
Small Main 2022 Small Diameter Main Replacement/Rehab			2019	\$ 10,000,000	\$ 2,500,000		\$ 13,700,000		placeholder
Small Main 2023 Small Diameter Main Replacement/Rehab			2019	\$ 10,000,000		\$ 1,200,000	\$ 13,700,000	\$ 13,903,981	placeholder
Small Main 2024 Small Diameter Main Replacement/Rehab			2019	\$ 10,000,000		\$ 1,200,000	\$ 13,700,000		placeholder
Small Main 2025 Small Diameter Main Replacement/Rehab			2019	\$ 10,000,000			\$ 13,700,000		placeholder
Small Main 2026 Small Diameter Main Replacement/Rehab			2019	\$ 10,000,000		\$ 1,200,000	\$ 13,700,000		placeholder
Small Main 2027 Small Diameter Main Replacement/Rehab			2019	\$ 10,000,000		\$ 1,200,000	\$ 13,700,000	\$ 13,903,981	placeholder
Small Main 2028 Small Diameter Main Replacement/Rehab			2019	\$ 10,000,000	\$ 2,500,000	\$ 1,200,000	\$ 13,700,000	\$ 13,903,981	placeholder
Small Main 2029 Small Diameter Main Replacement/Rehab			2019	\$ 10,000,000		\$ 1,200,000	\$ 13,700,000	\$ 13,903,981	placeholder
Small Main 2030 Small Diameter Main Replacement/Rehab			2019	\$ 10,000,000			\$ 13,700,000		placeholder
Small Main 2031 Small Diameter Main Replacement/Rehab			2019	\$ 10,000,000		\$ 1,200,000	\$ 13,700,000		placeholder
							•		
Small Main 2032 Small Diameter Main Replacement/Rehab			2019	\$ 10,000,000		\$ 1,200,000	\$ 13,700,000	\$ 13,903,981	placeholder
Small Main 2033 Small Diameter Main Replacement/Rehab			2019	\$ 10,000,000		\$ 1,200,000	\$ 13,700,000	\$ 13,903,981	placeholder
Small Main 2034 Small Diameter Main Replacement/Rehab			2019	\$ 10,000,000		\$ 1,200,000	\$ 13,700,000	\$ 13,903,981	placeholder
Small Main 2035 Small Diameter Main Replacement/Rehab			2019	\$ 10,000,000			\$ 13,700,000		placeholder
Small Main 2036 Small Diameter Main Replacement/Rehab			2019	\$ 10,000,000		\$ 1,200,000	\$ 13,700,000		placeholder
Small Main 2037 Small Diameter Main Replacement/Rehab			2019	\$ 10,000,000		\$ 1,200,000	\$ 13,700,000		placeholder
Small Main 2038 Small Diameter Main Replacement/Rehab			2019	\$ 10,000,000		\$ 1,200,000	\$ 13,700,000	\$ 13,903,981	placeholder
Small Main 2039 Small Diameter Main Replacement/Rehab			2019	\$ 10,000,000		\$ 1,200,000	\$ 13,700,000	\$ 13,903,981	placeholder
Small Main 2040 Small Diameter Main Replacement/Rehab			2019	\$ 10,000,000	\$ 2,500,000	\$ 1,200,000	\$ 13,700,000	\$ 13,903,981	placeholder
	Subtotal - Small Di	ameter Main		\$ 217,500,000	\$ 54,375,000	\$ 26,100,000	\$ 297,975,000	\$ 302,411,596	
	Subtotal - Siliali Di	ameter wall		÷ 217,500,000	₹ 34,373,000	γ 20,100,000	297,975,000	7 302,411,390	
		Total		\$ 600 614 020	\$ 151,506,805	¢ 72 152 770	¢ 924 27E 402	\$ 856,330,777	
		iotai		7 003,014,020	÷ ±3±,300,605	7 13,133,110	7 034,273,403	7 030,330,111	

ON-TIME PAYMENT ANALYSIS

	01/19	02/19	03/19	04/19	05/19	06/19	07/19	08/19	09/19	10/19	11/19	12/19	Average
		· · · · · · · · · · · · · · · · · · ·			· · · · · · · · · · · · · · · · · · ·			·					
Total Billed	9,077,729	5,846,472	5,986,518	6,767,225	5,461,058	6,602,219	7,093,405	6,304,012	7,331,090	7,135,362	5,566,477	6,181,312	6,612,740
Total Paid	6,098,127	6,903,787	7,339,669	6,655,751	6,364,651	5,568,255	6,256,176	7,268,138	5,378,883	9,070,166	6,356,039	5,623,732	6,573,615
Payments/Billing	67.18%	118.08%	122.60%	98.35%	116.55%	84.34%	88.20%	115.29%	73.37%	127.12%	114.18%	90.98%	101.35%
	01/20	02/20	03/20	04/20	05/20	06/20	07/20	08/20	09/20	10/20	11/20	12/20	Average
Total Billed	9,392,718	5,852,516	6,012,660	6,678,396	5,318,904	6,489,722	7,086,919	6,532,652	8,250,923	8,254,175	5,713,747	6,374,885	6,829,851
Total Paid	7,330,065	6,682,935	7,858,575	6,661,420	6,071,148	5,766,317	6,378,122	5,877,732	7,827,082	7,531,496	6,848,134	6,731,481	6,797,042
Payments/Billins	78.04%	114.19%	130.70%	99.75%	114.14%	88.85%	90.00%	89.97%	94.86%	91.24%	119.85%	105.59%	101.43%
	01/21	02/21	03/21	04/21	05/21	06/21	07/21	08/21	09/21	10/21	11/21	12/21	Average
Total Billed	9,637,894	5,935,816											7,786,855
Total Paid	6,105,184	7,265,778											6,685,481
Payments/Billing	63.35%	122.41%											92.88%

ACCOUNTS RECEIVABLE ANALYSIS

	01/19	02/19	03/19	04/19	05/19	06/19	07/19	08/19	09/19	10/19	11/19	12/19	Average
Total AR	7,435,306	6,377,991	5,024,839	5,136,314	4,232,721	5,266,685	6,103,913	5,139,787	7,091,995	5,157,191	4,367,630	4,925,210	5,521,632
Current AR	6,726,416	5,727,242	4,466,986	4,447,687	3,541,192	4,739,034	5,504,019	4,422,199	6,488,377	4,558,046	3,770,973	4,102,500	4,874,556
AR % Current	90.47%	89.80%	88.90%	86.59%	83.66%	89.98%	90.17%	86.04%	91.49%	88.38%	86.34%	83.30%	88.28%
_	01/20	02/20	03/20	04/20	05/20	06/20	07/20	08/20	09/20	10/20	11/20	12/20	Average
Total AR	6,987,863	6,157,444	4,584,529	4,601,505	3,849,260	4,572,666	5,281,462	5,936,381	6,360,222	7,082,900	5,948,513	5,591,918	5,579,555
Current AR	6,127,072	5,350,329	3,831,086	3,591,305	2,689,549	3,428,019	3,950,557	4,334,009	4,745,408	5,487,630	4,409,992	3,664,723	4,300,806
AR % Current	87.68%	86.89%	83.57%	78.05%	69.87%	74.97%	74.80%	73.01%	74.61%	77.48%	74.14%	65.54%	76.72%
	01/21	02/21	03/21	04/21	05/21	06/21	07/21	08/21	09/21	10/21	11/21	12/21	Average
Total AR	9,124,628	7,794,666											8,459,647
Current AR	7,152,544	5,897,474											6,525,009
AR % Current	78.39%	75.66%											77.02%

7. LABOR RELATIONS

Certain Authority employees are represented by two bargaining units, Brotherhood of Western New York Water Workers (BWNYWW), and Civil Service Employees Association, Inc. (CSEA). The CSEA and the Authority entered into a five-year collective bargaining agreement dated May 1, 2017.

On December 13, 2018, the Authority entered into a seven-year collective bargaining agreement with the BWNYWW.

8. OTHER POSTEMPLOYMENT BENEFITS ("OPEB") LIABILITY

Plan Description and Benefits Provided—The Authority provides retiree health plans through Labor Management Healthcare Fund (LMHF). Retirees must meet age and years of service requirements to qualify for health benefits under this cost-sharing multiple-employer defined benefit healthcare plan ("the Plan"). Retiree benefits continue for the lifetime of the retiree and spousal benefits continue for their lifetime unless they remarry. Retirees can also elect to receive an annual payment in lieu of health insurance. There were 180 and 185 retirees or spouses receiving health care benefits at December 31, 2020 and December 31, 2019 respectively.

Authorization for the Authority to pay a portion, or all, of retiree health insurance premiums was enacted by resolution of the Authority's Board of Commissioners or through union contracts, which are ratified by the Board of Commissioners. Retired employees that met the age and years of service requirements and were enrolled in any healthcare plan prior to June 1, 2004 are not required to make a contribution. Retirees enrolling in the Traditional Blue PPO 812 plan after June 1, 2004 are required to make contributions equal to the difference between the Traditional Blue PPO 812 plan premium and the highest premium of any other plan offered to that retiree.

The table below defines employee eligibility and the required contribution level for each class of employee.

Eligib				
Health Benefits				
	Years	15%		
Age	of Service	Contribution		
55	10	No		
58	15	No		
58	15	Yes		
56	35	No		
58	15	No		
58	20	No		
58	20	Yes		
55	15	Yes		
e + Years of	Service =70	Yes		
	Age 55 58 58 56 58 58 58 58 58	Health Benefits Years Age of Service 55 10 58 15 58 15 56 35 58 15 58 20 58 20 58 20		

Employees Covered by Benefit Terms—At December 31, 2020 and 2019, the following employees were covered by the benefit terms:

2020

	2020	2019
Inactive employees or beneficiaries currently receiving benefit payments	180	185
Active employees	221	212
Total	401	397

Total OPEB Liability—The Authority's total OPEB liability of \$89,032,011 was measured as of December 31, 2020 and was determined by an interim actuarial valuation as of that date. For purposes of determining benefit obligations and costs as of the December 31, 2020 measurement date, participant data as of January 1, 2020 is used. Benefit obligations are projected to measurement date using roll forward techniques by assuming no actuarial gains and losses in the interim, except for those assumption changes necessary to reflect the assumptions as of the measurement date.

Actuarial Methods and Other Inputs—The total OPEB liability in the December 31, 2020 actuarial valuation was determined using the following actuarial assumptions and other inputs, applied to all periods in the measurement, unless otherwise specified:

```
Reporting date — December 31, 2020

Measurement date — December 31, 2020

Actuarial valuation date — January 1, 2020

Discount rate as of the measurement date — 2.00%

Rate of compensation increase — 2.5%

Consumer price index (CPI) — 2.25%

Inflation rate (chained CPI) — 2.0%

Actuarial cost method — Entry age normal

Amortization method — Level percentage

Amortization period — 6.207 years
```

Mortality — The sex-distinct Pri.H-2012 Mortality Tables for employees and healthy annuitants, adjusted for mortality improvements with Scale MP-2020 mortality improvement scale on a generational basis.

Disability — Rates of decrement due to disability are assumed to be 0%.

Turnover — Rates of turnover are based on experience under the New York State Employees' Retirement System (State Plan).

Retirement incidence — Rates of retirement are based on the experience under the State Plan.

Election percentage — It was assumed 97% of future retirees eligible for coverage will elect postretirement healthcare coverage.

Spousal coverage — 80% of future retirees are assumed to elect spousal coverage upon retirement.

Per capita costs — All retiree health plans are offered through LMHF. Actual claims experience from LMHF was used to develop retiree claim costs for ECWA.

Annual rate of increase in the consumer price index — CPI of 2.25% was assumed for purposes of developing the rate of increase in healthcare costs. This assumptions are consistent with historical CPI and chained CPI as well as future expectations.

Healthcare cost trend rate — The assumed rates of increase in health care costs are presented in the table below. The trend rate schedule has been developed based on a review of published National trend survey data in relation to the retiree health plan offerings and updated long-term rates based on the Society of Actuaries Long Term Healthcare Cost Trends Model v2018c (The Getzen model), as well as Labor Management Healthcare Fund's expectations.

	Pre-65	Post-65	Prescription
Year	Medical	Medical	Drug
2021	7.000%	4.500%	7.000%
2022	6.750%	4.400%	6.750%
2023	6.500%	4.300%	6.500%
2024	6.250%	4.200%	6.250%
2025	6.012%	4.200%	6.012%
2035	4.822%	4.200%	4.822%
2045	4.720%	4.200%	4.720%
2055	4.400%	4.200%	4.400%
2065	4.469%	4.469%	4.469%
2075+	3.784%	3.784%	3.784%

Changes In the Total OPEB Liability — The following table presents the changes to total OPEB liability for fiscal years ending December 31, 2020 and December 31, 2019.

	Total OPEB Liability				
	Decem	ber 31,			
	2020	2019			
Beginning balance	\$ 90,082,536	\$ 89,646,879			
Changes for the year:					
Service cost	2,785,643	2,766,281			
Interest cost	2,121,823	3,389,502			
Change of benefit terms	463,249	-			
Differences between expected and actual experience	(15,064,932)	(13,271,429)			
Changes of assumptions or other inputs	10,396,743	9,655,142			
Actual benefit payments	(1,753,051)	(2,103,839)			
Net changes	(1,050,525)	435,657			
Ending balance	\$ 89,032,011	\$ 90,082,536			

Sensitivity of the Total OPEB Liability to the Change in the Discount Rate and Healthcare Cost Trend Rate—The discount rate and healthcare cost trend assumptions can have an impact on the net OPEB liability. Healthcare costs can be subject to considerable volatility over time. The table on the following page presents the effect on the net OPEB liability of a 1% change in the discount rate and a 1% change in the initial (7.0%)/ultimate (3.78%) healthcare cost trend rates.

	2020	2019
Current discount rate	2.00%	2.75%
Current healthcare cost trend rates - initial/ultimate	7.00%/3.78%	7.00%/3.78%
OPEB liability at:		
Current discount rate	\$ 89,032,011	\$ 90,082,536
1% increase in discount rate	75,365,109	76,088,814
1% decrease in discount rate	106,346,433	108,354,454
OPEB liability at:		
Current healthcare cost trend rates	\$ 89,032,011	\$ 90,082,536
1% increase in healthcare cost trend rates	108,386,656	109,157,347
1% decrease in healthcare cost trend rates	74,194,251	75,235,186

OPEB Expense and Deferred Outflows of Resources and Deferred Inflows of Resources related to OPEB—For the years ended December 31, 2020 and 2019 the Authority recognized annual OPEB expense of \$1,807,715 and \$3,344,867, respectively. The Authority reports deferred outflows of resources and deferred inflows of resources due to differences during the measurement period between certain of the employer's contributions and its proportionate share of the total of certain contributions from employers included in the collective net OPEB liability are required to be determined. The table below presents the Authority's deferred outflows and inflows of resources at December 31, 2020 and 2019:

		Deferred			Deferred	l Inflows ources	
	of Resources					sources	
		2020	2019		2020	2019	
Differences between expected							
and actual experience	\$	104,995	\$	133,777	\$ 21,430,222	\$ 11,031,903	
Changes in assumptions	1	5,118,312		8,025,857	8,133,061	10,362,518	
Total	\$ 1	5,223,307	\$	8,159,634	\$ 29,563,283	\$ 21,394,421	

The amounts reported as deferred outflows of resources and deferred inflows of resources related to OPEB will be recognized in OPEB expense as follows:

Year Ending December 31,									
2021	\$ (3,563,000)								
2022	(3,563,000)								
2023	(3,563,000)								
2024	(2,743,207)								
2025	(752,084)								
2026	(155,685)								

ERIE COUNTY WATER AUTHORITY Schedule of Changes in the Authority's Total OPEB Liability and Related Ratios

Last Three Fiscal Years*

	Year Ended December 31,						
		2020		2019		2018	
Total OPEB Liability		_		_		_	
Service cost	\$	2,785,643	\$	2,766,281	\$	3,378,431	
Interest cost		2,121,823		3,389,502		3,372,947	
Change of benefit terms		463,249		-		119,294	
Differences between expected and actual experience		(15,064,932)		(13,271,429)		191,341	
Change of assumptions or other inputs		10,396,743		9,655,142		(14,821,432)	
Actual benefit payments		(1,753,051)		(2,103,839)		(2,234,009)	
Net change in total OPEB Liability		(1,050,525)		435,657		(9,993,428)	
Total OPEB liability—beginning		90,082,536		89,646,879		99,640,307	
Total OPEB liability—ending	\$	89,032,011	\$	90,082,536	\$	89,646,879	
Plan fiduciary net position							
Contributions—employer	\$	1,753,051	\$	2,103,839	\$	2,234,009	
Actual benefit payments		(1,753,051)		(2,103,839)		(2,234,009)	
Net change in plan fiduciary net position		_		-		-	
Plan fiduciary net position—beginning							
Plan fiduciary net position—ending	\$		\$	-	\$	-	
	_		_		_		
Authority's net OPEB liabilility—ending	<u>\$</u>	89,032,011	\$	90,082,536	<u>\$</u>	89,646,879	
Plan's fiduciary net position as a percentage							
of the total OPEB liability		0.00%		0.00%		0.00%	
er 11.0 te 11.2 te 11.0 te 11.		0.007		0.0070		0.007	
Covered-employee payroll	\$	18,402,790	\$	16,908,970	\$	16,271,826	
Total OPEB liability as a percentage							
of covered-employee payroll		483.80%		532.75%		550.93%	

The note to the Required Supplementary Information is an integral part of this schedule.

^{*}Information prior to the year ended December 31, 2018 is not available.

ERIE COUNTY WATER AUTHORITY Note to the Required Supplementary Information Year Ended December 31, 2020

1. OPEB LIABILITY

Changes of assumptions—The assumption changes as of December 31, 2020 include a change in the discount rate from 2.75% to 2.00% resulting in a deferred inflow of resources, a change to sex distinct Pri.H-12 mortality tables with projected mortality improvement scale MP-2020, and updated health care trends resulted in deferred outflows of resources.

Changes in expected versus actual experience—Expected benefit payments to retirees used to calculate the OPEB liability were higher than the actual payments resulting in a deferred inflow of resources.

Changes in benefit terms—A change to the provision of the retiree group health benefits program is reflected at the first measurement date after adoption and/or ratification. It is shown as a change in benefit terms in the annual OPEB expense and recognized in full immediately.

Summary of changes in long-term debt—The following is a summary of changes in water revenue bonds and other long-term debt for the years ended December 31, 2020 and December 31, 2019:

	Balance	Ad	ditions and			Balance	D	ue Within
	 1/1/2020	Ap	preciation	I	Reductions	12/31/2020	(One Year
2003F Series	\$ 4,228,384	\$	-	\$	(805,000)	\$ 3,423,384	\$	830,000
2016 Series	25,455,000		-		(2,055,000)	23,400,000		2,155,000
2018 Series	 24,600,000				(310,000)	 24,290,000		320,000
Total bonds payable	54,283,384		-		(3,170,000)	51,113,384		3,305,000
Bond premiums	6,614,730		-		(318,820)	6,295,910		318,820
Bond discounts	 (113,841)				6,193	 (107,648)		(6,193)
Net bonds payable	\$ 60,784,273	\$	-	\$	(3,482,627)	\$ 57,301,646	\$	3,617,627
Compensated absences	\$ 4,672,611	\$	2,021,370	\$	(1,489,147)	\$ 5,204,834	\$	1,758,116
	Balance		ditions and			Balance		ue Within
	 Balance 1/1/2019		ditions and opreciation	I	Reductions	Balance 12/31/2019		oue Within One Year
1998D Series	\$			<u> </u>	Reductions (1,170,000)	\$		
1998D Series 2003F Series	\$ 1/1/2019	Ap					(
	\$ 1/1/2019 1,170,000	Ap			(1,170,000)	12/31/2019	(One Year
2003F Series	\$ 1/1/2019 1,170,000 5,008,384	Ap			(1,170,000) (780,000)	12/31/2019 - 4,228,384	(One Year - 805,000
2003F Series 2016 Series	\$ 1/1/2019 1,170,000 5,008,384 27,410,000	Ap			(1,170,000) (780,000) (1,955,000)	4,228,384 25,455,000	(One Year - 805,000 2,055,000
2003F Series 2016 Series 2018 Series	\$ 1/1/2019 1,170,000 5,008,384 27,410,000 24,900,000	Ap			(1,170,000) (780,000) (1,955,000) (300,000)	- 4,228,384 25,455,000 24,600,000	(One Year - 805,000 2,055,000 310,000
2003F Series 2016 Series 2018 Series Total bonds payable	\$ 1/1/2019 1,170,000 5,008,384 27,410,000 24,900,000 58,488,384	Ap			(1,170,000) (780,000) (1,955,000) (300,000) (4,205,000)	4,228,384 25,455,000 24,600,000 54,283,384	(0ne Year 805,000 2,055,000 310,000 3,170,000
2003F Series 2016 Series 2018 Series Total bonds payable Bond premiums	\$ 1/1/2019 1,170,000 5,008,384 27,410,000 24,900,000 58,488,384 6,933,549	Ap			(1,170,000) (780,000) (1,955,000) (300,000) (4,205,000) (318,819)	4,228,384 25,455,000 24,600,000 54,283,384 6,614,730	(805,000 2,055,000 310,000 3,170,000 318,820
2003F Series 2016 Series 2018 Series Total bonds payable Bond premiums Bond discounts	 1/1/2019 1,170,000 5,008,384 27,410,000 24,900,000 58,488,384 6,933,549 (120,034)	Ap. \$		\$	(1,170,000) (780,000) (1,955,000) (300,000) (4,205,000) (318,819) 6,193	\$ 4,228,384 25,455,000 24,600,000 54,283,384 6,614,730 (113,841)	\$	0ne Year 805,000 2,055,000 310,000 3,170,000 318,820 (6,193)

6. PENSION PLAN

Plan Description—The Authority participates in the New York State and Local Employees' Retirement System ("State Plan"), which is a cost-sharing, multiple-employer, public employee retirement system. The State Plan provides retirement, disability, and death benefits to members as authorized by the New York State Retirement and Social Security Law (NYSRSSL). The net position of the State Plan is held in the New York State Common Retirement Fund (the Fund), which was established to hold all net assets and record changes in plan net position allocated to the State Plan. The Comptroller of the State of New York ("Comptroller") serves as the trustee of the Fund and is the administrative head of the State Plan. The Comptroller is an elected official determined in a direct statewide election and serves a four year term. Once a public employer elects to participate in the State Plan, the election is irrevocable. The New York State Constitution provides that pension membership is a contractual relationship and plan benefits cannot be diminished or impaired. Benefits can be changed for future members only by enactment of a State statute. The Authority also participates in the Public Employees' Group Life Insurance Plan (GLIP) which provides death benefits in the form of life insurance. The State Plan is included in the State's financial report as a pension trust fund. That report, including information with regard to benefits provided, may be found

As of December 31, 2019, the Authority reported deferred outflows of resources and deferred inflows of resources related to pensions from the following sources:

	Defer	red Outflows	Def	erred Inflows
	of Resources of Reso			Resources
Differences between expected and actual experience	\$	774,450	\$	264,001
Changes of assumptions		988,544		-
Net difference between projected and actual earnings on				
pension plan investments		-		1,009,373
Changes in proportion and differences between Authority				
contributions and proportionate share of contributions		385,123		55,425
Authority contributions subsequent to the measurement date		1,750,037		
Total deferred outflows/inflows of resources	\$	3,898,154	\$	1,328,799

The \$1,816,854 reported as deferred outflows of resources related to pensions resulting from Authority contributions subsequent to the measurement date will be recognized as a reduction of the net pension liability in the year ending December 31, 2021. Other amounts reported as deferred outflows of resources and deferred inflows of resources related to pensions will be recognized in pension expense as follows:

Year Ended December 31,	Amount
2021	\$1,500,244
2022	2,144,796
2023	2,711,060
2024	2,155,762

Actuarial assumptions—The total pension liability for the March 31, 2020 measurement dates was determined by using an actuarial valuation as of April 1, 2019, with update procedures used to roll forward the total pension liability to March 31, 2020. The valuation used the following actuarial assumptions:

Actuarial cost method	Aggregate Cost Method
Inflation	2.5%
Salary scale	4.2% average, indexed by service
Investment rate of return	6.8%
Cost of living adjustments	1.3%
Decrements	Based upon fiscal year 2011-2015 experience
Mortality improvement	with adjustments for mortality improvements
	based on the Society of Actuaries Scale MP-2018

The long-term expected rate of return on pension plan investments was determined using a building-block method in which best estimate ranges of expected future real rates of return (expected return, net of investment expenses and inflation) are developed for each major asset class. These ranges are combined to produce the long term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation.

The target allocation and best estimates of arithmetic real rates of return for each major asset class are summarized on the following page for the measurement date of March 31, 2019.

		Long-term
	Target	expected real
Asset class	allocation	rate of return
Domestic equity	36.00%	4.05%
International equity	14.00%	6.15%
Private equity	10.00%	6.75%
Real estate	10.00%	4.95%
Absolute return strategies	2.00%	3.25%
Opportunistic portfolio	3.00%	4.65%
Real assets	3.00%	5.95%
Bonds and mortgages	17.00%	0.75%
Cash	1.00%	0.00%
Inflation-indexed bonds	4.00%	0.50%
	100.00%	

Discount rate—The discount rate used to calculate the total pension liability at December 31, 2020 and 2019 was 6.8% and 7.0%, respectively. The projection of cash flows used to determine the discount rate assumes that contributions from plan members will be made at the current contribution rates and that contributions from employers will be made at the statutorily required rates, actuarially determined. Based upon the assumptions, the State Plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Sensitivity of the proportionate share of the net pension liability to the discount rate assumption— The following presents the Authority's proportionate share of the net pension liability calculated using the discount rate of 6.8%, as well as what the Authority's proportionate share of the net pension liability would be if it were calculated using a discount rate that is 1% lower (5.8%) or 1% higher (7.8%) than the current rate:

	2020	2019
Current discount rate	6.8%	7.0%
Pension liability/(asset) at:		
Current discount rate	\$ 14,294,636	\$ 3,932,796
1% increase in discount rate	3,297,794	(7,208,238)
1% decrease in discount rate	26,234,704	17,194,812

Collective net position liability of participating employers and actuarial information—The components of the net position liability of the employers as of March 31, 2020 and 2019 were as follows:

	2020	2019
	(in thousands)	(in thousands)
Employers' total pension liability	\$ 194,596,261	\$ 189,803,429
Plan net position	(168,115,682)	(182,718,124)
Employers' net pension liability	\$ 26,480,579	\$ 7,085,305
Fiduciary net position as a percentage of total pension liability	86.4%	96.3%

ERIE COUNTY WATER AUTHORITY

Schedule of the Authority's Proportionate Share of the Net Pension Liability—New York State Employees' Retirement System Last Seven Fiscal Years*

	Year Ended December 31,							
	2020	2019	2018	2017	2016	2015	2014	
Measurement date	March 31, 2020	March 31, 2019	March 31, 2018	March 31, 2017	March 31, 2016	March 31, 2015	March 31, 2014	
Authority's proportion of the net pension liability/(asset)	0.0539816%	0.0555064%	0.0546663%	0.0561145%	0.0558137%	0.0572349%	0.0572349%	
Authority's proportionate share of the net pension liability/(asset)	\$ 14,294,642	\$ 3,932,796	\$ 1,764,324	\$ 5,272,641	\$ 8,958,247	\$ 1,933,536	\$ 2,586,366	
Authority's covered payroll	\$ 16,783,757	\$ 16,158,109	\$ 16,019,184	\$ 15,648,444	\$ 15,035,523	\$ 15,112,883	\$ 15,752,018	
Authority's proportionate share of the net pension liability/(asset) as a percentage of its covered payroll	85.2%	24.3%	11.0%	33.7%	59.6%	12.8%	16.4%	
Plan fiduciary net position as a percentage of the total pension liability	86.4%	96.3%	98.2%	94.7%	90.7%	97.9%	97.2%	

^{*} Information prior to the year ended December 31, 2014 is not available.

ERIE COUNTY WATER AUTHORITY

Schedule of Contributions to the New York State Employees' Retirement System Last Ten Fiscal Years

(Dollar amounts in thousands)

	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Contractually required contribution Contributions in relation to required contribution Contribution deficiency (excess)	\$ 2,422 2,422 \$ -	\$ 2,333 2,333 \$ -	\$ 2,327 2,327 \$ -	\$ 2,339 2,339 \$ -	\$ 2,387 2,387 \$ -	\$ 2,595 2,595 \$ -	\$ 2,996 2,996 \$ -	\$ 2,905 2,905 \$ -	\$ 2,564 2,564 \$ -	\$ 2,208 2,208 \$ -
Covered payroll	\$ 18,310	\$ 16,588	\$ 16,272	\$ 15,800	\$ 15,567	\$ 15,708	\$ 15,438	\$ 14,800	\$ 14,550	\$ 14,446
Contributions as a percentage of covered payroll	13.228%	14.064%	14.301%	14.804%	15.334%	16.520%	19.407%	19.628%	17.622%	15.285%



June 28, 2018

Robert J. Lichtenthal, Jr. Deputy Director Erie County Water Authority 295 Main Street Room 350 Buffalo, NY 14203-2494

SUBJECT: ERIE COUNTY WATER AUTHORITY

SERIES 2018 BONDS

ENGINEER'S OPINION LETTER

Dear Mr. Lichtenthal:

Wendel WD Architecture, Engineering, Surveying and Landscape Architecture, PC (Wendel) hereby submits this opinion letter on the condition of the existing water system of the Erie County Water Authority (Authority) in connection with the issuance of Series 2018 Bonds to finance the cost of development, acquisition, and construction of certain improvements and additions to the water system and to pay costs of issuance of the Series 2018 Bonds. Based on our experience with study, design, and construction activities associated with the Authority's water system, as described below, Wendel concludes that the overall water system continues to be operated in a professional and prudent manner.

Further, Wendel is of the opinion that:

- 1. Overall the Water System is rated adequate. However, due to the size, complexity, and age of various components of the water system, the Authority will need to make future capital investments for the continuous replacement and/or repair of aging infrastructure in a systematic and cost effective manner.
- 2. The expense allocations for fiscal year 2018 when compared to previous fiscal years are adequate for the continued reliable operation of the system.
- 3. Capital improvement planning is responsive to the long term operating requirements of the service area.
- 4. Current and projected budgeted staffing levels are adequate for proper operation and maintenance of the water system.
- 5. Based on our review of recent documents, the Authority is currently in compliance with the requirements governing safe drinking water regulations.

Wendel hereby consents to the inclusion of these opinions and statements attributed to it in the Official Statement relating to the Series 2018 Bonds.



CONSULTING ENGINEER

Wendel has served the Erie County Water Authority for over 25 years in various capacities concerning the water system including the study, design, construction, and overall planning of water treatment plant, finished water storage and pumping, energy management and building system components. For over 75 years, Wendel has been recognized nationally as a multi-disciplined leader in water system engineering.

Michael W. Wymer is a licensed Professional Engineer in the State of New York and is a Board Certified Environmental Engineer. Mr. Wymer has over 30 years of national and international experience in water treatment processes. He has extensive experience working with the Authority and works closely with Authority personnel on a number of current projects including capital improvement projects at the Sturgeon Point and Van de Water Treatment Plants, refurbishing of system storage tanks, and distribution system transmission main improvements. Recently, Mr. Wymer has worked closely with the Authority on the renewing of Standard Operating Procedures and capital improvement planning at each water treatment plant.

Gerald F. Summe's background includes over 40 years of experience in both private and municipal management. His government involvement encompasses 20 years as a councilman and town supervisor, including four years as Chief Financial Officer. His experience in this area includes a full range of government functions including the development of capital projects, consolidation of government services, negotiation of labor agreements and inter-municipal contracts.

METHODOLOGY

As a consulting engineer to the Authority, Wendel has provided engineering services in various capacities across a large cross-section of Authority facilities. Our recent work includes the following:

Sturgeon Point Water Treatment Plant

- Capital Improvement Planning
- Revisions to Standard Operating Procedures
- Gap analysis of Operation and Maintenance information
- Design and construction services for improvements for Filters 1-4 including filter underdrain and media replacement
- Filter performance review and media inspection of Filters 1-10.
- Filter pipe gallery valve and piping inspection and capital planning
- Filter backwash analysis including capital planning for alternate filter backwash methods.
- Pilot study on sludge depth measurement instruments
- Multi-discipline engineering assistance with maintenance and repairs to mixing, sludge collection, filtration, pumping and residuals systems
- Development of Beneficial Use Determination permit applications
- General consultation on operation and maintenance activities

Van de Water Treatment Plant

- Capital Improvement Planning
- Revisions to Standard Operating Procedures
- Gap analysis of Operation and Maintenance information



- Residual treatment system Master Planning
- Disinfectant contact time Tracer Study
- Design and construction of Plant Control and Server Room renovations
- Development of Beneficial Use Determination permit applications
- General consultation on operation and maintenance activities

Water Storage Facilities

- Capital improvement Planning
- Design and construction of the Ball South, Wehrle, and Newstead Water Storage Tanks,
- Design and Construction services for the renovation (including recoating, structural improvements and code compliance) at thirty of the Authority's forty owned or leasemanaged water storage tanks
- Condition assessment of multiple water storage tanks
- Third party review of water storage tank condition assessments by other consultants

Water Pumping Stations

- On-site inspections of multiple pump stations including Integrated Capital and Energy Improvement Studies at five of the largest capacity stations within the system
- Hydraulic analyses of the raw water and high service pumping stations at the Sturgeon Point Water Treatment Plant
- Consulting services for the implementation of system-wide SCADA and control philosophy improvements

Water Transmission

- Design and construction services for the replacement of key segments of the 36-inch transmission main from Ball Pump Station to the Wehrle Tank
- Analysis of pipe materials in relationship to soil conditions/corrosiveness.
- Review of pipe break history and proposed pipeline replacement schedule

Buildings and Grounds

- Energy efficiency study of the Service Center
- Study and preliminary design of buildings, material storage and traffic patterns related to Authority maintenance operations at the Service Center

Sincerely,

WENDEL

Michael W. Wymer, Pt. BCEE

Mellafah

Director of Drinking Water Services

Gerald F. Summe

Corporate Vice President

Cc: Russell J. Stoll, PE, Executive Engineer

ERIE COUNTY WATER AUTHORITY

FOURTH GENERAL WATER REVENUE BOND RESOLUTION

Adopted July 9, 1992

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FOURTH GENERAL WATER REVENUE BOND RESOLUTION

BE IT RESOLVED BY THE ERIE COUNTY WATER AUTHORITY, as follows:

ARTICLE I

DEFINITIONS

SECTION 1.1. <u>Definitions of Special Terms</u>. Unless the context shall clearly indicate some other meaning or may otherwise require, the terms defined in this Section shall, for all purposes of this resolution and of any resolution or other instrument amendatory hereof or supplemental hereto and of any certificate, opinion, instrument or document herein or therein mentioned, have the meanings herein specified, with the following definitions to be equally applicable to both the singular and plural forms of any terms herein defined and vice versa:

"Act" shall mean the Erie County Water Authority Act, Article 5, Title 3, Public Authorities Law, Sections 1050 through 1073, inclusive, and all laws amendatory or supplemental thereto.

"Additional Security" shall mean a letter of credit, line of credit, insurance policy, surety bond, standby purchase agreement or similar obligation or instrument or any combination of the foregoing.

"Authority" shall mean the Erie County Water Authority, a body corporate and politic constituting a public benefit corporation, created pursuant to Chapter 845 of the Laws of New York, 1949 and duly continued and existing under the Act.

"Authorized Officer" when used with reference to the Authority shall mean the Chairman, the Vice-Chairman, the Treasurer or the Secretary thereof or other officer designated by resolution of the Authority.

"Available Revenues" means (1) prior to the Retirement Date of the Second Prior Lien Bonds, all moneys at any time on deposit in the general fund established under the Water Works System Revenue Bond Resolution (2) on and after the Retirement Date of the Second Prior Lien Bonds and prior to the Retirement Date of the First Prior Lien Bonds, all moneys at any time on deposit in the general fund established under the Water Revenue

Bond Resolution and not required for any of the following purposes: payments required to be made from said general fund pursuant to subsection 1 of section 409 of the Water Revenue Bond Resolution to make up deficiencies in the debt service fund, the debt service reserve fund or the extension and improvement fund established under the Water Revenue Bond Resolution or the payments required to be made from the general fund pursuant to subsection 1 of section 404 of the Improvement and Extension Resolution or (3) on and after the Retirement Date of the Prior Lien Bonds, all Revenues.

"Bond Anticipation Notes" shall mean obligations issued pursuant to Section 3.7 hereof.

"Bond Fund" shall mean the Bond Fund created in Section 6.1 hereof and to be held and administered by the Trustee.

"Bondholder" or "holder of a Bond" shall mean the registered owner of any Bond which at the time shall be registered other than to bearer, or such holders' duly authorized attorney in fact, representative or assigns.

"Bonds" shall mean the Fourth Resolution Water Revenue Bonds issued from time to time pursuant to and under authority of Section 3.1 hereof.

"Capital Appreciation Bonds" shall mean Bonds issued pursuant to Section 3.10 hereof.

"Certified Interest Rate" shall mean the rate of interest as certified pursuant to Section 3.12 hereof which would have been borne by Variable Rate Bonds had such Variable Rate Bonds been issued at a fixed interest rate to their stated maturity.

"Change of Control" shall mean, after the date of the Resolution, the passage by either house of the New York State legislature of any bill which upon passage would authorize, or the enactment of any local law which authorizes, the occurrence of the events specified in either clause (A) or clause (B) below: (A) the transfer to any entity, public or private, of (i) any of the statutory powers, duties or functions of the Authority, (ii) all or any significant portion of the properties or assets of the Authority or (iii) any moneys or securities of the Authority, or (B) any increase in the number of the members of the Authority.

"Code" means the Internal Revenue Code of 1986, as amended and supplemented from time to time, and the applicable temporary, proposed, or final regulations promulgated thereunder by the United States Treasury Department.

"Compounded Amount" shall mean, as of any date of computation, the sum of (i) the Compounded Amount set forth in the Supplemental Resolution authorizing the issuance of such Capital Appreciation Bonds for the immediately preceding interest payment date (or the date of computation if an interest payment date), plus (ii) interest from such interest payment date to the date of computation at the rate provided in the applicable Supplemental Resolution calculated on the basis of 360 day year composed of twelve 30-day months.

"Consulting Engineer" shall mean the one or more engineers or engineering firms or corporations retained by or on behalf of the Authority pursuant to Section 8.5 hereof to perform the acts and carry out the duties provided for such Consulting Engineers in the Resolution.

"Cost of Acquisition and Construction" shall mean all costs of determining the feasibility of, and acquiring, constructing, financing, carrying out and operating the Water Works System and any additions, improvements, enlargements, extensions, expansions and betterments to the Water Works System, and shall include, but shall not be limited to, moneys required for:

- (i) working capital and reserves in such amounts as may be deemed necessary by the Authority;
- (ii) interest accruing in whole or in part on Bonds after the date such Bonds are issued, but only if, and to such extent as, the Authority may reasonably determine:
- (iii) deposits from the proceeds of Bonds in any fund or account established pursuant to the Resolution to meet reserve requirements for Bonds;
- (iv) deposits from the proceeds of Bonds in any funds or accounts established pursuant to the Resolution as reserves for renewals, repairs, replacements, modifications, betterments, additions and contingencies;
- (v) preliminary survey, investigation and development costs, engineering fees, contractors' fees, costs of permits, licenses and approvals, labor, materials, equipment, lands, rights of way, franchises, easements and other interests in land, utility services and supplies, payments to other public agencies,

training and testing costs, insurance premiums, principal of and interest on notes issued in anticipation of Bonds, fees and expenses of Trustees and Paying Agents, legal and financing costs, administrative and general costs, and all other costs incurred by the Authority and properly allocable to the Water Works System; and

- (vi) the cost of any Additional Security and any fees and expenses in connection therewith;
- (vii) costs associated with any injury or damage claims; and
- (viii) all items of expense directly or indirectly related to the authorization, issuance, offering and sale of Bonds, including, but not limited to, printing costs, costs of preparation and reproduction of documents, filing and recording fees, initial fees and charges of any fiduciary, legal fees and charges, fees and disbursements of consultants and professionals, costs of credit ratings, fees and charges for preparation, execution, transportation and safekeeping of Bonds, costs and expenses of refunding, or any other cost, charge or fee in connection with the original issuance of Bonds.

"Debt Service" shall mean, as of any particular date of computation, with respect to any Series of Bonds and with respect to any period, the sum of (i) interest accruing during such period on such Series of Bonds (to the extent not capitalized) and (ii) that portion of each installment of principal for such Series of Bonds deemed to accrue daily in equal amounts from a date one year (or such lesser period as shall be appropriate if such installments of principal for such Series of Bonds shall become due more frequently than annually) prior to its due date, or from the date of issuance of such Series of Bonds, whichever is later, except that, if any Refundable Principal Installment of such Series of Bonds is included in Debt Service for such period, Debt Service shall be determined as if such Refundable Principal Installment had been payable over a period extending 40 years from the date of issuance of such Refundable Principal Installment and as if such Refundable Principal Installment bears interest at the greater of (A) the rate or rates which were assumed by the Authority in the Authority's budget for the Fiscal Year during which such calculation is made to be borne by such Refundable Principal Installment during such Fiscal Year or (B) the actual rate or rates borne by such Refundable Principal Installment on such date of calculation. Such interest and installments of

principal shall be calculated on the assumption that no Bonds Outstanding at the date of such calculation will cease to be Outstanding except by reason of the payment of each installment of principal for such Series of Bonds on its due date and such calculation shall include interest and installments of principal on Parity Reimbursement Obligations.

"First Prior Lien Bonds" shall mean the Water Revenue Bonds and the Improvement and Extension Revenue Bonds, collectively.

"Fiscal Year" shall mean the period established by the Authority or provided by law from time to time as its fiscal year, and which, as of the date of adoption of this Resolution, is the twelve month period commencing on January 1 of any year and ending on December 31 of such year.

"General Fund" shall mean the General Fund created in Section 6.1 hereof and to be held and administered by the Authority.

"Improvement and Extension Resolution" shall mean the resolution adopted by the Authority on December 11, 1973, entitled "GENERAL IMPROVEMENT AND EXTENSION REVENUE BOND RESOLUTION", and any resolutions amendatory or supplemental thereto.

"Improvement and Extension Revenue Bonds" shall mean the outstanding bonds heretofore issued pursuant to the Improvement and Extension Resolution consisting of Improvement and Extension Revenue Bonds, First Series; Improvement and Extension Revenue Bonds, Second Series; and Improvement and Extension Revenue Bonds, Third Series.

"Investment Securities" shall mean any of the following, if and to the extent that the same are legal for the investment of funds of the Authority and are otherwise consistent with the Authority's investment guidelines:

- (i) direct obligations of, or obligations the principal of and interest on which are unconditionally quaranteed by, the United States of America;
- (ii) obligations of any agency, subdivision, department, division or instrumentality of the United States of America; or obligations fully guaranteed as to interest and principal by any agency, subdivision, department, division or instrumentality of the United States of America;

- (iii) New Housing Authority Bonds issued by public agencies or municipalities and fully secured as to the payment of both principal and interest by a pledge of annual contributions under an annual contributions contract or contracts with the United States of America or any agency thereof; or Project Notes issued by public agencies or municipalities and fully secured as to the payment of both principal and interest by a requisition or payment agreement with the United States of America or any agency thereof;
- (iv) direct obligations of, or obligations guaranteed as to principal and interest by, any state or direct obligations of any agency or public authority thereof, provided such obligations are rated, at the time of purchase, in one of the two highest rating categories by at least two nationally recognized Bond Rating Agencies;
- bank time deposits evidenced by certificates of deposit and bankers' acceptances issued by any bank or trust company (which may include the Trustee) which a member of the Federal Deposit Insurance is Corporation, provided that such time deposits bankers' acceptances (a) do not exceed at any one time in the aggregate five percent (5%) of the total of the capital and surplus of such bank or trust company, or (b) are secured by obligations described in items (i), (iii) of this definition of Investment (i4), or Securities, which such obligations at all times have a market value (exclusive of accrued interest) at least equal to such time deposits so secured;
- (vi) repurchase agreements with any bank or trust company (which may include the Trustee) which is a member of the Federal Deposit Insurance Corporation, which agreements are secured by securities which are obligations described in items (i), (ii) or (iii) of this definition of Investment Securities provided that each such repurchase agreement (A) is in commercially reasonable form and is for a commercially reasonable period, and (B) results in transfer to the Trustee or the Authority of legal title to, or the grant to the Trustee or the Authority of a prior perfected security interest in, identified securities referred to in items (i), (ii) or (iii) above which are free and clear of any claims by third parties and are segregated in a custodial or trust account held by a third party (other than the repurchaser) as the agent solely of, or in trust solely for the benefit of, the Trustee or the

Authority; provided that such securities acquired pursuant to such repurchase agreements shall be valued at the lower of the then current market value of such securities or the repurchase price thereof set forth in the applicable repurchase agreement;

- (vii) obligations consisting of notes, bonds and debentures which are direct obligations of a solvent corporation existing under the laws of the United States or any state thereof, provided that such investments shall be rated in the two highest rating categories established by at least two nationally recognized bond rating agencies;
- (viii) certificates or other obligations that evidence ownership of the right to payments principal of or interest on obligations of the United States of America or any state of the United States of America or any political subdivision thereof or any agency or instrumentality of the United States of America or any state or political subdivision, provided that such obligations shall be held in trust by a bank or trust company or a national banking association meeting the requirements for a Trustee under Section 7.1 hereof, and provided further that, in the case of other obligations of a state or certificates or political subdivision, the payments of all principal of and interest on such certificates or such obligations shall be fully insured or unconditionally guaranteed by, or otherwise unconditionally payable pursuant to a credit support arrangement provided by, one or more institutions or insurance companies financial associations which shall be rated in the highest rating category by Moody's Investors Service, Inc. Standard & Poor's Corporation, or, in the case of an insurer providing municipal bond insurance policies insuring the payment, when due, of the principal of and interest on municipal bonds, such insurance policy shall result in such municipal bonds being rated in the highest rating category by Moody's Investors Service, Inc. and Standard & Poor's Corporation;
- (ix) investment agreements rated, or the issuer of which is rated, in one of the two highest rating categories by at least two nationally recognized rating agencies and if rated by Moody's Investors Service or Standard & Poor's Corporation such investment agreements or the long term unsecured debt obligations of the issuer thereof must be rated in one of the two highest rating categories by the respective agency rating such investment agreements; and

(x) such other investments with respect to any Series of Bonds as shall be specified in the supplemental resolution pursuant to which such Series of Bonds was issued.

"Net Revenues" shall mean, with respect to any period, (i) prior to the Retirement Date of the First Prior Lien Bonds, the Revenues for such period less the amounts paid from the revenue fund under the Water Revenue Bond Resolution into the operating and maintenance fund under the Water Revenue Bonds Resolution during such period, (ii) subsequent to the Retirement Date of the First Prior Lien Bonds and prior to the Retirement Date of the Second Prior Lien Bonds, the Revenues for such period less the amounts paid from the revenue fund under the Water Works System Revenue Bond Resolution into the operating and maintenance fund under the Water Works System Revenue Bonds Resolution during such period, and (iii) on and after the Retirement Date of the Prior Lien Bonds, the Revenues during such period less the Operation and Maintenance Expenses during such period.

"Office of the Trustee", "Office of the Paying Agent" and "Office of the Registrar" shall mean, so long as Manufacturers and Traders Trust Company serves in such capacity, their principal office in Buffalo, New York, or their office at 50 Broadway in New York, New York, and the principal office of any successor Trustee, Paying Agent or Registrar, as the case may be.

"Operating Fund" shall mean the Operating Fund created in Section 6.1 hereof and to be held and administered by the Authority.

"Operation and Maintenance Expenses" shall mean the costs and expenses of operating and maintaining the Water Works System, including, without limiting the generality of the foregoing, (i) all expenses includable in the operation and maintenance expense accounts of the Authority relating to the Water Works System according to generally accepted accounting principles, exclusive of depreciation and amortization of property values or losses; (ii) to the extent not included in the preceding clause (i) or paid from Bond proceeds or otherwise, the Authority's share of the costs and expenses of operating and maintaining any plants and properties jointly owned with others; (iii) administrative expenses, insurance premiums, legal and engineering expenses, payments to pension, retirement, group life insurance, health and hospitalization funds or other employee benefit funds, refunds of customers' deposits and interest on customers' deposits; (iv) any other expenses required to be paid by the Authority under the

provisions of the Resolution or by law or permitted by standard practices for public utility systems similar to the property and business of the Authority and applicable in the circumstances; and (v) the expenses, liabilities and compensation of the Trustee, Paying Agent and Registrar required to be paid under the Resolution.

"Outstanding" or "outstanding" when used with reference to Bonds shall mean, as of any date, Bonds theretofore or thereupon issued or authorized pursuant to the Resolution, except: (a) any Bonds cancelled by a Paying Agent or paid at or prior to such date; (b) Bonds in lieu of or in substitution for which other Bonds shall have been delivered pursuant to the Resolution; and (c) Bonds deemed to be no longer outstanding hereunder as provided in Section 13.1 hereof or under any Supplemental Resolution authorizing the issuance of Bonds.

"Parity Reimbursement Obligation" shall mean the obligation of the Authority to reimburse the issuer of an Additional Security for amounts paid by such issuer thereunder, which obligation is secured by a pledge of, and a lien on, Available Revenues on a parity with the lien created by Section 3.2 hereof.

"Paying Agent" shall mean the bank or trust company appointed as Paying Agent pursuant to Section 4.5 hereof, and its successor or successors, and any other bank or trust company which may at any time be substituted in its place pursuant to the Resolution.

"Prior Lien Bonds" shall mean the First Prior Lien Bonds and the Second Prior Lien Bonds, collectively.

"Rate Consultant" shall mean the one or more Consulting Engineers, accounting firms, investment bankers or corporations retained by or on behalf of the Authority pursuant to Section 8.5 hereof to perform the acts and carry out the duties provided for such Rate Consultants in the Resolution.

"Record Date" shall mean, with respect to any Series of Bonds, the fifteenth (15th) day (whether or not a business day) of the calendar month immediately preceding an interest payment date or such other day as may be provided in the Supplemental Resolution authorizing the issuance of such Series.

"Refundable Principal Installment" shall mean any principal installment for any Series of Bonds which the Authority intends to pay with moneys which are not Revenues, provided that such intent shall have been expressed in the Supplemental Resolution authorizing such Series of Bonds and provided further, however, that such principal installment shall

be a Refundable Principal Installment only until such time as the Authority no longer intends to pay such principal installment with moneys which are not Revenues.

"Refunded Municipal Obligations" means obligations of any state, the District of Columbia or possession of the United States of America or any political subdivision thereof which obligations are rated in the highest rating category by Moody's Investors Service and Standard & Poor's Corporation and provision for the payment of the principal of and interest on which shall have been made by deposit with a Trustee or escrow agent of direct obligations of the United States of America, which are held by a bank or trust company organized and existing under the laws of the United States of America or any state, the District of Columbia or possession thereof in the capacity as custodian, the maturing principal of and interest on which direct obligations of the United States of America when due and payable shall be sufficient to pay when due the principal of and interest on such obligations of such state, the District of Columbia, possession, or political subdivision.

"Registrar" shall mean the Registrar appointed pursuant to Section 4.5 hereof, and its successor or successors, and any other corporation which may at any time be substituted in its place pursuant to the Resolution.

"Reserve Account Requirement" shall mean, with respect to a Series of Bonds, the amount, if any, prescribed by the Supplemental Resolution authorizing such Series of Bonds.

"Resolution" shall mean this Resolution as from time to time amended or supplemented by one or more Supplemental Resolutions.

"Retirement Date of First Prior Lien Bonds" means the date on which all of the First Prior Lien Bonds and all other evidences of indebtedness secured under the Water Revenue Bond Resolution and the Improvement and Extension Resolution shall be paid or deemed to be paid in accordance with the Water Revenue Bond Resolution or the Improvement and Extension Resolution, as the case may be.

"Retirement Date of Prior Lien Bonds" means the date on which all of the Prior Lien Bonds and all other evidences of indebtedness secured under the Water Revenue Bond Resolution, the Improvement and Extension Resolution, and the Water Works System Revenue Bond Resolution shall be paid or deemed to be paid in accordance with the Water Revenue Bond Resolution, the Improvement and Extension Resolution or the Water Works System Revenue Bond Resolution, as the case may be.

"Retirement Date of Second Prior Lien Bonds" means the date on which all of the Second Prior Lien Bonds and all other evidences of indebtedness secured under the Water Works System Revenue Bond Resolution shall be paid or deemed to be paid in accordance with the Water Works System Revenue Bond Resolution.

"Revenue Fund" shall mean the Revenue Fund created in Section 6.1 hereof to be held and administered by the Authority.

"Revenues" shall mean and include all income, fees, charges, receipts, profits and other moneys derived by the Authority from its ownership or operation of the Water Works System, including, without limiting the generality of the foregoing, (i) all income, fees, charges, receipts, profits and other moneys derived from the sale of water and from the other moneys derived from the sale of water and from the furnishing or supplying of the services, facilities and commodities through the Water Works System; and (ii) all income from investments of moneys held under the Water Revenue Bond Resolution, the Improvement and Extension Resolution, the Water System Revenue Bond Resolution and the Resolution, ing investment income on any Construction Fund. including investment income "Revenues" shall not include deposits subject to refund until such deposits have become the property of the Authority; and income, fees, charges, receipts, profits or other moneys derived by the Authority from its ownership or operation of any separate utility system or any gifts, grants, donations or other moneys received by the Authority from any state or Federal agency or other person if such gifts, grants, donations or other moneys received by the Authority from any state or Federal agency or other person are the subject of any limitation or reservation (i) imposed by the donor or grantor or (ii) imposed by law or administrative regulation to which the donor or grantor is subject, limiting the application of such funds in such a way so as to preclude their inclusion in Revenues.

"Second Prior Lien Bonds" shall mean the outstanding bonds issued prior to, on, or subsequent to the date hereof pursuant to the Water Works System Revenue Bond Resolution, including, but not limited to, the Water Works System Revenue Refunding Bonds, Series 1990A and the Water Works System Revenue Bonds, Series 1990B.

"Serial Bonds" shall mean Bonds which are not Term Bonds.

"Series of Bonds" or "Bonds of a Series" shall mean all Bonds designated as being of the same series issued and delivered on original issuance in a simultaneous transaction, and any Bonds thereafter delivered in lieu thereof or in substitution therefor pursuant to the Resolution.

"Sinking Fund Installment" shall mean each amount so designated which is established pursuant to any Supplemental Resolution.

"Supplemental Resolution" shall mean any resolution adopted by the Authority pursuant to and in compliance with the provisions of Article III hereof providing for the issuance of Bonds, and shall also mean any other resolution adopted by the Authority pursuant to and in compliance with the provisions of Article X hereof amending or supplementing the provisions of the Resolution.

"Term Bonds" shall mean Bonds the retirement or the redemption of which shall be provided for from moneys credited to the Bond Retirement Account in the Bond Fund pursuant to Article VI hereof.

"Trustee" shall mean the Trustee appointed pursuant to Section 7.1 hereof, and its successor or successors, and any other corporation which may at any time be substituted in its place pursuant to the Resolution.

"Variable Rate Bonds" shall mean any Bonds issued bearing interest at a rate per annum subject to adjustment from time to time based on the terms thereof, based upon an index, or otherwise calculated in a manner which precludes the actual rate for the entire term of such Bonds from being ascertainable in advance.

"<u>Water Revenue Bond Resolution</u>" shall mean the resolution adopted by the Authority on November 28, 1953, entitled "GENERAL BOND RESOLUTION ESTABLISHING ISSUE OF AUTHORITY BONDS", and any resolutions amendatory or supplemental thereto.

"Water Revenue Bonds" shall mean the outstanding bonds heretofore issued pursuant to the Water Revenue Bond Resolution consisting of Water Revenue Bonds, Series A; Water Revenue Bonds, Series B; Water Revenue Bonds, Series C; Water Revenue Bonds, Series D; Water Revenue Bonds, Series E; Water Revenue Bonds, Series F; and Water Revenue Bonds, Series G.

"Water Works System" shall mean the source of water supply and the water supply and distribution system of the Authority, including the plants, works, instrumentalities or parts thereof and appurtenances thereto, lands, easements, rights in land and water rights, rights-of-way, contract rights, franchises, approaches, connections, dams, reservoirs, water mains and pipe lines, utility installations, pumping stations and equipment, and any other property, real, personal or mixed,

incidental to and included in such source of supply and such system or parts thereof, including any proprietary software programs or databases belonging to the Authority which are utilized in the operation and management of such source of supply and such system, and any improvements, extensions and betterments, now or hereafter constructed, acquired or made by the Authority.

"<u>Water</u> <u>Works</u> <u>System</u> <u>Revenue</u> <u>Bond</u> <u>Resolution</u>" shall mean the resolution adopted by the Authority on April 6, 1990, entitled "WATER WORKS SYSTEM REVENUE BOND RESOLUTION", and any resolutions amendatory or supplemental thereto.

SECTION 1.2. <u>Definitions of General Terms</u>. Unless the context shall clearly indicate otherwise or otherwise require, in the Resolution words importing persons include firms, partnerships, associations, corporations (public and private), public bodies and natural persons, and also include executors, administrators, trustees, receivers or other representatives.

Unless the context shall clearly indicate otherwise or otherwise require, in the Resolution the terms "herein", "hereunder", "hereby", "hereto", "hereof" and any similar terms, refer to the Resolution and to the Resolution as a whole and not to any particular section or subdivision hereof.

Unless the context shall clearly indicate otherwise or otherwise require, in this Resolution (i) references to Articles, Sections and other subdivisions, whether by number or letter or otherwise, are to the respective or corresponding Articles, Sections or subdivisions of this Resolution as such Articles, Sections or subdivisions may be amended from time to time; and (ii) the word "heretofore" means before the time of adoption of this Resolution, the word "now" means at the time of adoption of this Resolution, and the word "hereafter" means after the time of adoption of this Resolution.

ARTICLE II

COMPUTATIONS; CERTIFICATES AND OPINIONS; EVIDENCE OF ACTION BY THE AUTHORITY

SECTION 2.1. Computations. Unless the facts shall then be otherwise, all computations required for the purposes of the Resolution shall be made on the assumption that (i) the principal of and interest on all Bonds shall be paid as and when the same become due; (ii) all credits required by the Resolution to be made to the Bond Retirement Account in the Bond Fund shall be made in the amounts and at the times required by the Resolution; and (iii) all Bonds required by the Resolution to be redeemed from moneys credited to the Bond Retirement Account in the Bond Fund shall be redeemed on the respective Sinking Fund Installment dates therefor in the amounts and at the times required by the Resolution.

SECTION 2.2. <u>Certificates and Opinions</u>. otherwise specifically provided in the Resolution Except as Resolution each certificate or opinion with respect to compliance with a condition or covenant provided for in the Resolution shall include: (i) a statement that the person making such certificate or opinion has read such covenant or condition; (ii) a brief statement as to the nature and scope of the examination or investigation upon which the statements or opinions contained in such certificate or opinion are based; (iii) a statement that, in the opinion of such person, an examination and investigation has been made as is necessary to enable the expression of an informed opinion as to whether or not such covenant or condition has been complied with; (iv) a statement as to whether or not, in the opinion of such person, such covenant or condition has been complied with; and (v) an identification of any other certificates or opinions relied on in such certificate or opinion.

Any opinion of counsel may be qualified by reference to the constitutional powers of the United States of America, the sovereign police powers of the State of New York, judicial discretion and bankruptcy, insolvency, reorganization, moratorium and other laws affecting creditors' rights.

SECTION 2.3. Evidence of Action by the Authority. Except as otherwise specifically provided in the Resolution, any request, direction, command, order, notice, certificate or other instrument of, by or from the Authority shall be effective and binding upon the Authority for the purposes of the Resolution if signed by the person or persons authorized to execute the same by statute, charter or by-law or by a resolution or vote of the Authority.

ARTICLE III

AUTHORIZATION AND ISSUANCE OF FOURTH RESOLUTION WATER REVENUE BONDS

SECTION 3.1. Authorization of Bonds. There are hereby authorized to be issued hereunder and secured hereby bonds of the Authority, to be known and entitled (or designated) as "Fourth Resolution Water Revenue Bonds". The Bonds may be issued hereunder from time to time in series, pursuant and subject to the terms, conditions and limitations of the Resolution, in such amounts as may be determined by the Authority, for the payment of all or a portion of the Cost of Acquisition and Construction of the Water Works System or refunding any bond or bonds. The principal amount of Bonds which may be issued hereunder and secured hereby shall not be limited, except as may hereafter be provided by law.

SECTION 3.2. Pledge of Available Revenues, Funds and Other Moneys. The Bonds are payable solely from and secured by the funds pledged therefor. There are hereby pledged as security for the payment of the principal of, premium, if any, and interest on the Bonds in accordance with their terms and the provisions of the Resolution, subject only to the provisions of the Resolution permitting the application thereof for the purposes and on the terms and conditions set forth in the Resolution (i) the proceeds of sale of the Bonds pending application thereof in accordance with the provisions hereof or of a Supplemental Resolution, (ii) all Available Revenues, and (iii) all funds and accounts established by the Resolution including the investments, if any, thereof. Such pledge and the Bonds shall be subordinate to and inferior to the cost of operation and maintenance of the Water Works System and, so long as the Prior Lien Bonds are outstanding, be subordinate to and inferior to the pledges and liens and charges upon the Revenues created by the Water Revenue Bond Resolution, the Improvement and Extension Resolution and the Water Works System Revenue Bond Resolution.

The Bonds of each Series issued hereunder shall be equally and ratably payable and secured hereunder without priority by reason of date of adoption of the Supplemental Resolution providing for their issuance or by reason of their Series, number or date, date of issue, execution, authentication or sale thereof, or otherwise

Neither the faith and credit nor the taxing power of the State of New York or of any political subdivision thereof are pledged for the payment of the principal of, premium, if any, or interest on the Bonds, and no holder of the Bonds shall have the right to compel the exercise of the taxing power of the State of New York or of any political subdivision thereof in connection with any default with respect to the Bonds. The Bonds are not a debt of the State of New York or of Erie County or of any other political subdivision of the State of New York, neither the State of New York nor Erie County nor any other political subdivision of the State of New York is liable for the payment of the Bonds, nor are the Bonds payable out of any funds other than those of the Authority pledged for the payment of the Bonds under the Resolution.

SECTION 3.3. General Provisions for Issuance of Bonds. The Bonds of each Series shall be issued by means of Supplemental Resolution adopted by the Authority in accordance with the provisions of this Article and Article X. Supplemental Resolution shall designate the Bonds by an appropriate Series designation, in addition to the title "Fourth Resolution Water Revenue Bonds" or any other appropriate title specified in the Supplemental Resolution, and by such further particular designation, if any, as the Authority deems appropriate, and shall, unless or except as is otherwise set forth herein, also either (i) specify, or (ii) set forth the manner for determining, each of the following: (a) the authorized principal amount of such Series of Bonds; (b) the purpose or purposes for which the Bonds of such Series are being issued; (c) the date or dates and the maturity date or dates and the first interest payment date, if any, of the Bonds of the Series, which maturity date or dates shall occur on June 1 or semi-annually on June 1 and December 1 or any other dates specified by such Supplemental Resolution, with interest, subject to the provisions of Sections 3.10 and 3.12 hereof, being payable on said Bonds semi-annually each June 1 and December 1 after such first interest payment date or as otherwise specified by such Supplemental Resolution; (d) the interest rate or rates of the Bonds of such Series; (e) the denominations of and manner of numbering and lettering the Bonds of such Series; (f) whether the Bonds of such Series will be issued in fully registered form or in any other form permitted hereunder, the privileges, if any, of convertibility from one form to another, and the place or places of such registration and conversion; (g) the periods, if any, within which the Authority and the Registrar shall not be required to provide for the issuance, exchange or transfer of the Bonds of such Series; (h) the redemption premium or premiums, or the redemption price or prices, if any, to be paid upon the redemption of the Bonds of such Series, the period or periods, if any, during which such premiums or prices shall be payable and the terms and conditions, if any, of such redemption and that in the event of the occurrence of a Change of Control the Bonds of such Series shall be called for redemption as a whole, on any date prior to maturity selected by the Authority, at a redemption price equal to 110% of the principal amount thereof plus interest accrued thereon to such redemption date; (i) if any of the Bonds of the Series are issued as Term Bonds, the amount and due dates of each Sinking Fund Installment for the Term Bonds of such Series, which due dates shall be either on June 1 or on both June 1 and December 1 or such other dates as specified by such Supplemental Resolution, and the date or dates and redemption price or prices upon which the Term Bonds of the Series may be redeemed from such installments, and the manner and procedure of applying such installments to the redemption of the Term Bonds of such Series; (j) the place or places of payment of the Bonds of the Series and premium, if any, and interest thereon, and the Paying Agents therefor; (k) the use, application and investment, if any, of the proceeds of such sale or other disposition, which use, application and investment shall not be inconsistent or in conflict with the provisions hereof; (1) any other provisions which may be required to be inserted therein by other provisions of the Resolution; (m) any other provisions required by the entity issuing any bond insurance policy insuring the payment when due of the principal of and the interest on the Bonds of such Series which do not adversely affect the rights of the holders of the Bonds then outstanding; and (n) any other necessary or desirable provisions which do not adversely affect the rights of the holders of the Bonds then outstanding; provided, however, that such Supplemental Resolution shall set forth the maximum principal amount of such Series of Bonds.

For the purpose of determining compliance with the conditions of Sections 3.4 and 3.6:

A. (1) each Supplemental Resolution authorizing a Series of Bonds a portion, but not all, of the proceeds of which is to be applied to any corporate use or purpose relating to the Water Works System pursuant to Section 3.4 shall specify (i) the portion of the principal amount of Bonds of such Series allocable to such corporate use or purpose, (ii) the portion of the principal amount of each maturity of the Bonds of such Series allocable to such corporate use or purpose, and (iii) if all or any portion of the Bonds of such Series are to be issued as Term Bonds, the portion of each Sinking Fund Installment allocable to such corporate use or purpose, and (2) the portion of the principal amount of Bonds of such Series allocable to such

corporate use or purpose shall be treated as if it constitutes a separate Series of Bonds; and

- B. (1) each Supplemental Resolution authorizing a Series of Bonds a portion, but not all, of the proceeds of which is to be applied to the refunding of any Bond or Bonds pursuant to Section 3.6 shall specify (i) the portion of the principal amount of Bonds of such Series allocable to such refunding, (ii) the portion of the principal amount of each maturity of the Bonds of such Series allocable to such refunding, and (iii) if all or any portion of the Bonds of such Series are to be issued as Term Bonds, the portion of each Sinking Fund Installment allocable to such refunding, and (2) the portion of the principal amount of Bonds of such Series allocable to such refunding shall be treated as if it constitutes a separate Series of Bonds.
- SECTION 3.4. Conditions for the Issuance of Bonds Other Than Refunding Bonds Hereunder. One or more Series of Bonds (exclusive of refunding Bonds issued pursuant to Section 3.6) may be issued by the Authority hereunder at any time and from time to time for the payment of all or a portion of the Cost of Acquisition and Construction, but only upon compliance as to each such Series with the provisions of Section 3.3 and of this Section (except where specifically indicated otherwise in this Section).
 - A. The first installment of principal of such Series of Bonds shall be payable at such time as the Authority shall determine, subject to the provisions of Section 3.3.
 - B. An Authorized Officer of the Authority shall certify to the Trustee at the time of issuance of such Series of Bonds that there does not exist an Event of Default (as defined in Section 9.2 hereof).
 - C. There shall be filed with the Authority and the Trustee at the time of issuance of such Series of Bonds a certificate signed by an Authorized Officer of the Authority based (i) on audited figures or (ii) to the extent audited figures are not available on figures taken by an independent certified public accountant from the Authority's books and records, showing that:
 - (1) the Net Revenues for any consecutive twelve-month period out of the twenty-four months immediately preceding the month in which such Bonds are issued were equal to not less than one hundred ten per cent (110%) of the annual Debt Service on the Bonds (including the Series of Bonds then being issued) and the Second Prior Lien Bonds for the then current Fiscal Year and each future Fiscal Year; or

- (2) there shall be filed with the Authority and the Trustee at the time of issuance of such Series of Bonds a certificate of a Rate Consultant showing that the estimated Net Revenues of the Water Works System together with other moneys lawfully available therefor as estimated by such Rate Consultant (as provided in Section 3.5 hereof) the for commencing with the Fiscal Year in which the Series of Bonds then being issued is delivered and ending with the later of (x) the fifth full Fiscal Year after such delivery or (y) the first full Fiscal Year after such delivery in which less than 10% of the interest coming due on Bonds estimated by the Rate Consultant to be Outstanding is to be paid from amounts on deposit in the Construction Interest Account in the Construction Fund, shall be at least equal to one and twenty-five hundredths (1.25) times the Debt Service for such Fiscal Year on all outstanding Second Prior Lien Bonds and Bonds, including the Bonds then being issued.
- D. The provisions of this Section 3.4 shall not apply to the initial Series of Bonds issued pursuant to this Resolution or to a Series of Bonds issued to refund Prior Lien Bonds, unless or except as is otherwise set forth in the Supplemental Resolution providing for the issuance thereof.
- E. In determining Debt Service on Variable Rate Bonds, the interest rate on Variable Rate Bonds shall be determined as follows: (a) with respect to a Series of Variable Rate Bonds Outstanding at the time of calculation, the interest rate shall be calculated at the greater of (i) the then current interest rate per annum borne by such Series of Variable Rate Bonds, (ii) the maximum interest rate borne by such Series of Variable Rate Bonds for the twelve month period then ended at the time of calculation or (iii) the Revenue Bond Index at the time of calculation and (b) with respect to a Series of Variable Rate Bonds then proposed to be issued, the Revenue Bond Index as of the time of calculation.

The term "Revenue Bond Index" shall mean the thirty (30) year Revenue Bond Index of The Bond Buyer, a financial journal published in New York, New York, or any successor publication maintaining such Index or in the event The Bond Buyer or any successor publication does not maintain such Index, an equivalent index, as determined by the Authority, with the same components as the Revenue Bond Index. In the event there is no Revenue Bond Index or equivalent index an interest rate for a Series of Bonds determined in accordance with the Revenue Bond Index shall be the maximum rate, if

any, permitted by the Supplemental Resolution authorizing the issuance of such Series of Bonds, or if the Supplemental Resolution authorizing the issuance of such Series of Bonds does not specify a maximum rate, the Certified Interest Rate.

- F. 1. If any changes have been made in the schedule of rates and charges imposed by the Authority on sales of water and services furnished by the Water Works System which are in effect at the time of adoption of the Supplemental Resolution providing for the issuance of the Bonds then being issued and were not in effect for all or any part of the period selected pursuant to paragraph C(1) of this Section 3.4, the Authority, may, if such changes result in increases in such rates and charges, and shall, if such changes result in reductions in such rates and charges, adjust the Net Revenues for such period to reflect any change in such Net Revenues which would have occurred if the schedule of rates and charges in effect at the time of the adoption of the Supplemental Resolution providing for the issuance of the Bonds had been in effect during the portion of such period in which such schedule was not in effect.
- 2. If customers are being served by the Authority at the time of adoption of the Supplemental Resolution providing for the issuance of the Bonds then being issued who were not being served for all or any part of the period selected pursuant to paragraph C(1) of this Section 3.4, the Authority may adjust the Net Revenues for such period to reflect any change in such Net Revenues which would have occurred if the additional customers had been served during the portion of the period in which such customers were not served.
- 3. If the Authority is acquiring operating water utility properties having an earnings record, a Rate Consultant shall estimate the effect which the acquisition of such water utility properties and the integration thereof into the Water Works System would have had on the Net Revenues for the period selected pursuant to paragraph C(1) of this Section 3.4 if such properties had been a part of the Water Works System during the entire period and shall adjust the Net Revenues for such period to give effect to such acquisition. Any such estimate shall be based upon the operating experience and records of the Authority with respect to the Water Works System and upon any available financial statements and records relating to the operating revenues and expenses of such water utility properties to be acquired.

SECTION 3.5. Certificate of Rate Consultant. In making the estimate of Net Revenues for various Fiscal Years for the purpose of certifying compliance with the provisions of

paragraph C(2) of Section 3.4 hereof, a Rate Consultant shall use as a basis the Net Revenues for any consecutive twelve (12) months' period selected by the Authority out of the eighteen (18) months' period next preceding the date of issuance of the Series of Bonds then being issued (hereinafter referred to as the "Base Period"). In making such computations such Rate Consultant shall adjust the Net Revenues for such Base Period as follows:

- A. If any changes have been made in the schedule of rates and charges imposed by the Authority on sales of water and services furnished by the Water Works System which are in effect at the time of adoption of the Supplemental Resolution providing for the issuance of the Bonds then being issued and were not in effect for all or any part of the Base Period, such Rate Consultant, may, if such changes result in increases in such rates and charges, and shall, if such changes result in reductions in such rates and charges, adjust the Net Revenues for the Base Period to reflect any change in such Net Revenues which would have occurred if the schedule of rates and charges in effect at the time of the adoption of the Supplemental Resolution providing for the issuance of the Bonds had been in effect during the portion of the Base Period in which such schedule was not in effect.
- B. If the certificate is required in connection with the issuance of a Series of Bonds for the purpose of acquiring operating water utility properties having an earnings record, such Rate Consultant shall estimate the effect which the acquisition of such water utility properties and the integration thereof into the Water Works System would have had on the Net Revenues for the Base Period if such properties had been a part of the Water Works System during the entire Base Period and shall adjust the Net Revenues for the Base Period to give effect to such acquisition. Any such estimate shall be based upon the operating experience and records of the Authority with respect to the Water Works System and upon any available financial statements and records relating to the operating revenues and expenses of such water utility properties to be acquired.
- C. In computing the projected Net Revenues for each of the Fiscal Years covered by the certificate of such Rate Consultant, such Rate Consultant may adjust the amount of Net Revenues for the Base Period, as adjusted pursuant to the preceding paragraphs, by the estimate of such Rate Consultant of the net increase over, or net decrease under, such Net Revenues for the Base Period by reason of any one or more of the following factors:

- (i) changes in income to result from increases or decreases of sales of water to customers of the Water Works System under existing rate schedules for the various classes of such customers or as such rate schedules may be estimated by such Rate Consultant to be revised by the Authority on the basis of estimates of rate changes required in order that the Authority will be able to comply with the requirements of Section 8.2 hereof to the extent that, in the opinion of such Rate Consultant, such revisions would actually increase or decrease Revenues:
- (ii) projected escalation of Revenues pursuant to escalation clauses;
- (iii) projected costs and expenses for capital
 improvements;
- (iv) projected cost increases due to price, wage and salary escalation clauses, or other projected revisions of prices, wages and salary;
- (v) projected revisions of the cost of machinery, equipment and supplies;
 - (vi) projected revisions of energy costs;
- (vii) such projection of additional income and expenses as such Rate Consultant shall deem reasonable and proper, including increases in investment earnings; and
- (viii) such other factors as such Rate Consultant may consider appropriate and set forth in such Rate Consultant's certificate.

In rendering any certificate required pursuant to Section 3.4, such Rate Consultant may rely upon estimates from other sources which such Rate Consultant considers reliable, making such adjustments and provisions for contingencies based on similar projects and other considerations as deemed appropriate by such Rate Consultant.

SECTION 3.6. Refunding Bonds. Without complying with the provisions of Section 3.4 hereof, the Authority by means of a Supplemental Resolution adopted in compliance with the provisions of Section 3.3 hereof may issue hereunder refunding Bonds at any time for the purpose of refunding (including by purchase) at any time all or any portion of bonds outstanding, including amounts to pay principal, redemption premium and

interest to the date of maturity or redemption (or purchase) and the expense of issuing the refunding Bonds and of effecting such refunding.

The proceeds of the refunding Bonds of each Series issued pursuant to this Section 3.6 shall be applied for the purposes of making deposits in such Funds and Accounts under the Resolution as shall be required by the provisions of the Supplemental Resolution authorizing the issuance of such refunding Bonds.

SECTION 3.7. Bond Anticipation Notes. Bond anticipation notes may be issued by the Authority at such times as the Authority shall have by resolution authorized the issuance of Bonds under the Act. The bond anticipation notes may be printed, lithographed or typewritten, shall be of such denominations as may be determined by the Authority, and shall bear such legends as may be deemed necessary by the Authority. The maximum maturity of such bond anticipation notes, including the renewals thereof, shall not exceed five years from the date of the original bond anticipation note. Each bond anticipation note shall be executed in the manner prescribed for the definitive Bonds. Such note or notes may be secured in the manner provided by the Act; provided that such bond anticipation note or notes shall be secured by a lien and pledge on the Available Revenues, junior and inferior and subject to the lien and pledge on the Available Revenues herein created for the payment and security of the Bonds and to the lien and pledge on Available Revenues herein created for the payment of the Trustee's reasonable fees and reimbursement for reasonable expenses, and any resolution authorizing the issuance of such bond anticipation notes shall provide for the payment thereof after the required payments to the Operating Fund and to the Bond Fund. Such bond anticipation note or notes shall be discharged and paid through the issuance of Bonds in anticipation of which they were issued, or, subject to rights of the holders of any Bonds Outstanding hereunder, from the proceeds of Bonds of the Authority. The principal amount of any bond anticipation notes issued under this Section 3.7 shall not exceed the principal amount of the series of Bonds anticipation of which said notes are to be issued.

SECTION 3.8. Subordinate Lien Obligations. Nothing contained in the Resolution shall prohibit or prevent, or be deemed or construed to prohibit or prevent, the Authority from authorizing and issuing bonds, notes, certificates, warrants or other evidences of indebtedness for any corporate use or purpose relating to the Water Works System payable as to principal and interest from the Available Revenues subject and subordinate to the deposits and credits required to be made to the Operating

Fund and to the Bond Fund, or from securing such bonds, notes, certificates, warrants or other evidences of indebtedness and the payment thereof by a lien and pledge on the Available Revenues junior and inferior to the lien and pledge on the Available Revenues herein created for the payment and security of the Bonds and to the lien and pledge on Available Revenues herein created for the payment of the Trustee's reasonable fees and reimbursement for reasonable expenses.

SECTION 3.9. Separate Systems. Nothing contained in the Resolution shall prevent the Authority from authorizing and issuing bonds, notes, warrants, certificates obligations or evidences of indebtedness, other than Bonds, to acquire, construct, develop, compile or otherwise obtain any separate or other system as permitted by the Act, and any incidental properties to be constructed, developed, compiled or otherwise acquired in connection therewith, which system shall be a separate system and which bonds or other obligations or evidences of indebtedness shall be payable solely from the revenues or other income derived from the ownership or operation of such system; provided, however, that the Authority will not issue bonds, notes, warrants, certificates or other obligations or evidences of indebtedness for the purpose of acquiring or constructing such a separate system unless and until a report of a Rate Consultant shall be delivered to the Trustee to the effect that in the opinion of such Rate Consultant, the acquisition, construction or operation of such separate system will not result in a reduction of the Revenues below the amounts covenanted by Section 8.2 hereof to be maintained.

SECTION 3.10. Capital Appreciation Bonds; Compound Interest Bonds, Etc. A Supplemental Resolution providing for the issuance of a Series of Bonds may provide that the payment of interest on any specified Bonds of the Series shall only be made (i) at maturity, (ii) at a specified time or times prior to maturity or upon earlier redemption, by Sinking Fund Installment or otherwise, (iii) at a specified time or times and thereafter on each interest payment date until maturity, or (iv) on each interest payment date until a specified time and thereafter at a specified time or times prior to maturity or upon earlier redemption, by Sinking Fund Installment or otherwise. Any such Supplemental Resolution shall specify the Compounded Amount of such Bonds as of each interest payment date on the Bonds from the date of issue to maturity. The principal amount of any such Bonds shall be deemed to be their Compounded Amount for all purposes of this Resolution, including, without limiting the generality of the foregoing, for purposes of determining the Reserve Account Requirement as defined in Section 1.1 and the provisions relating to redemption, acceleration and actions by Bondholders.

SECTION 3.11. Put Bonds. A Supplemental Resolution providing for the issuance of a Series of Bonds may provide for their repurchase or redemption, at the option of the holders, by the Authority or its designee or by the Trustee on a date or dates and with such notice as specified in the applicable Supplemental Resolution. A repurchase or redemption pursuant to such provision shall not cause any Bond so repurchased or redeemed to lose the benefit of any security hereunder or to be no longer deemed to be outstanding pursuant to Article XIII. The repurchase or redemption price shall be financed by the proceeds of resale of the repurchased Bonds, by the issuance of refunding Bonds in accordance with this Article, by using moneys available therefor in the Bond Retirement Account in accordance with Section 6.5(C), or by any other lawful means, or by a combination of the foregoing. If Bonds of a Series are made subject to repurchase or redemption pursuant to this section, Debt Service shall be calculated hereunder by using the schedule of Debt Service which would apply if the option were not exercised except to the extent the option has been exercised and the option price has been paid (or provision for payment has been made pursuant to Section 13.1). Nothing in this paragraph shall be deemed to preclude any repurchase or redemption of Bonds otherwise required or permitted by the terms of this Resolution.

SECTION 3.12. Variable Rate Bonds. A Supplemental Resolution providing for the issuance of a Series of Bonds may provide for the Bonds to bear interest at a variable, adjustable, convertible or other similar rate or rates of interest. such Supplemental Resolution shall specify: (1) the manner of determining the interest rate or rates and the frequency of change thereof, (2) the maximum rate or rates, if any, at which the Bonds may bear interest and (3) provisions, if any, with respect to the conversion of such Bonds to Bonds bearing a fixed rate of interest and the reconversion of such Bonds to bear The method or methods for interest at a variable rate. determining the interest rate on Bonds bearing interest at a variable or similar rate of interest may include the selection of such rate by a rate determination agent as provided in an agreement between the Authority and such agent, the utilization index or indices as described in the Supplemental Resolution, or such other standard or combination of standards set forth in the Supplemental Resolution.

In connection with the issuance of any Bonds bearing interest at a variable, adjustable, convertible or similar rate, the Authority shall obtain a certificate from the underwriters for such Bonds setting forth the Certified Interest Rate, which for the purposes of this section and Section 3.13 shall mean the rate of interest which would have been borne by such Bonds had

they been issued at a fixed interest rate, assuming the same maturity dates, terms and provisions (other than interest rate or any repurchase or redemption by the Authority at the option of the holder) as the Bonds assuming the same credit rating or ratings of the Authority and making any other assumptions deemed necessary and proper, as determined by the underwriters. Such certificate shall contain or have attached thereto data and factual information supporting such Certified Interest Rate; and such certificate, when accepted by the Authority and certified by the Authority to the Trustee as so accepted, shall be conclusive.

Debt Service for any Variable Rate Bonds shall be calculated for purposes of the definition of Reserve Account Requirement in Section 1.1 by using the Certified Interest Rate. For purposes of calculating the payments into the Interest Account in the Bond Fund pursuant to Section 6.5 the interest accrued or estimated to accrue during the calendar month in which the payment is to be made shall be the amount of the required payment, subject in case of an estimate to an adjustment at the end of the month.

SECTION 3.13. Additional Security. To the extent permitted by law, a Supplemental Resolution providing for the issuance of a Series of Bonds may provide that the Authority obtain or cause to be obtained Additional Security providing for payment of all or a portion of the purchase price or principal, premium, if any, or interest due or to become due on specified Bonds of such Series, or providing for the purchase of such Bonds or a portion thereof by the issuer of the Additional Security, or providing, in whole or in part, for the funding of the Reserve Account pursuant to Section 6.5. In connection therewith, the Authority may enter into agreements with the issuer of the Additional Security to provide the terms and conditions thereof, including the security, if any, to be provided to the issuer. The Authority may secure the Additional Security by an agreement providing for the purchase of the Bonds secured thereby with such adjustments to the rate of interest, of determining interest, maturity, or redemption provisions as specified in the Supplemental Resolution. Debt Service with respect to any Bonds so secured shall be calculated for purposes of the definition of Reserve Account Requirement by using the rate of interest or Certified Interest Rate, if applicable, on the Bonds prior to adjustment under such agreement. The Authority may also agree to reimburse directly the issuer of the Additional Security for any amounts paid thereunder together with interest thereon.

ARTICLE IV

GENERAL TERMS AND PROVISIONS

SECTION 4.1. Term of Bonds. Unless or except as is otherwise set forth in the Supplemental Resolution providing for their issuance, the Bonds of a Series of Bonds shall be issued in fully registered form or, if permitted by law, book entry or uncertificated form, and may contain such variations, amounts and insertions as are incidental to such differences of numbering, denominations and forms, including variations in the provisions for the registration and transfer of said Bonds.

Unless or except as is otherwise set forth in the Supplemental Resolution providing for their issuance, Bonds shall be issued in the denomination of \$5000, or any multiple of \$5000 except Capital Appreciation Bonds, which shall be in such denominations as the Authority shall determine in the Supplemental Resolution providing for their issuance; and shall be numbered from R-1 upwards in chronological order as issued, or in any other manner determined by the Authority.

Unless or except as is otherwise set forth in the Supplemental Resolution providing for their issuance, the principal of, premium, if any, and interest on each Series of Bonds shall be payable in any coin or currency of the United States of America which at the time of payment is legal tender for public and private debts. Unless or except as is otherwise set forth in the Supplemental Resolutions providing for their issuance, the principal of and premium, if any, on each Series of Bonds shall be payable at the principal office of the Trustee or the Paying Agent for the Bonds. Unless or except as is otherwise set forth in the Supplemental Resolution providing for their issuance, payment of the interest on each Bond shall be made on each interest payment date to the registered owner of record upon the books of registry as of the Record Date by check or draft drawn upon the Paying Agent and mailed to such registered owner at such owner's address as it appears on the books of registry kept pursuant to the provisions of Section 4.5 hereof.

SECTION 4.2 Execution of Bonds. Unless or except as otherwise set forth in the Supplemental Resolution provided for their issuance, the Bonds shall be executed with the manual or facsimile signature of the Chairman of the Authority and attested with the manual or facsimile signature of the Secretary or Assistant Secretary thereof, and the Authority's seal shall be affixed thereto by its Secretary or Assistant Secretary, which may be a facsimile of the Authority's seal which is

imprinted on each of the Bonds. In case any of the officers who shall have signed, attested, authenticated or registered any of the Bonds shall cease to be such officer before such Bonds have been actually issued and delivered, such Bonds shall be valid nevertheless and may be issued by the Authority with the same effect as though the persons who had signed, attested, authenticated or registered such Bonds had not ceased to be such officers.

SECTION 4.3. Authentication of Bonds. Unless except as otherwise provided in the Supplemental Resolution provided for their issuance, Bonds shall bear thereon a certificate of authentication, substantially in the form set forth in Section 12.1 hereof duly executed by the Registrar therefor. At any time and from time to time, the Authority may deliver Bonds executed on behalf of the Authority as aforesaid to the Registrar therefor. Such Registrar shall, at the written order and direction of the Authority authenticate and deliver Bonds in the case of each Series of Bonds at the time of their initial delivery, not to exceed the principal amount of such Series authorized by the particular Supplemental Resolution. Upon such authentication of each Bond, the Registrar therefor shall endorse on such Bond the date of registration. Such order and direction shall be executed and delivered for and on behalf of the Authority by any officer of the Authority authorized to execute the Bonds as aforesaid. No order or direction of the Authority or any other document shall be necessary to authorize authentication of Bonds delivered in accordance with the provisions hereof upon transfers, exchanges or redemption. Only Bonds as shall bear thereon such certificate of such authentication, duly executed, shall be entitled to any right or benefit under the Resolution or be secured hereby. No Bond shall be valid or obligatory for any purpose unless such certificate of authentication upon such Bond shall have been duly executed by the Registrar therefor. Such certificate of authentication by the Registrar therefor upon any Bond shall be conclusive and the only evidence that the Bond so authenticated has been duly authenticated and delivered under the Resolution and that the holder thereof is entitled to the benefit of the Resolution.

SECTION 4.4. Bonds Are Negotiable Instruments. All of the Bonds shall be negotiable instruments to the extent provided by the Uniform Commercial Code of the State of New York. The Authority, the Trustee, the Paying Agents and any other person may treat the registered owner of any Bond as the absolute owner of such Bond for the purpose of making payment thereof and for all other purposes, and neither the Authority, the Trustee, nor the Paying Agents shall be bound by any notice or knowledge to the contrary, whether such Bond shall be overdue or not. All

payments of or on account of interest to any registered owner of any Bond (or to his registered assigns), and all payments of or on account of principal to any registered owner of any Bond, shall be valid and effectual and shall be a discharge of the Authority and the Paying Agents, in respect of the liability upon the Bonds or claims for interest, as the case may be, to the extent of the sum or sums paid.

SECTION 4.5. Books of Registry. At all times during which any Bonds remain outstanding and unpaid, the Trustee shall keep or cause to be kept at its principal office books (herein referred to as the "books of registry") for the registration and transfer of Bonds. The Trustee is hereby appointed as Paying Agent, transfer agent and Registrar for all Bonds. Upon presentation at its principal office for such purpose the such reasonable regulations as Registrar, under prescribe, shall register or transfer, or cause to be registered or transferred, on said books of registry, Bonds as hereinbefore set forth. The books of registry shall, during normal business hours, be open for inspection by the Authority or its duly authorized agent or representative. At reasonable times and under reasonable regulations established by the Registrar, the books of registry pertaining to Bonds in registered form and any such lists may be copied by the Authority or inspected and copied by the holders or owners (or a designated representative thereof) of ten per cent (10%) or more in principal amount of Bonds then Outstanding, such ownership and the authority of any such designated representative to be evidenced to satisfaction of the Registrar.

SECTION 4.6. Transfer of Bonds. Any fully registered Bond without coupons, unless or except as may otherwise be provided in the Supplemental Resolution providing for the issuance of such Bond, may, in accordance with its terms, be transferred upon the books required to be kept pursuant to the provisions of Section 4.5 hereof, by the person in whose name it is registered, in person or by such owner's duly authorized attorney-in-fact, upon surrender of such fully registered Bond to the Registrar for cancellation, accompanied by delivery of a written instrument of transfer duly executed by the registered owner in person or such owner's duly authorized agent, in form satisfactory to the Registrar.

Whenever any fully registered Bond shall be surrendered for transfer, the Authority shall execute and deliver to the Registrar, in the name of the transferee or transferees, a new duly executed fully registered Bond or Bonds, of the same Series, interest rate and maturity and for a like aggregate principal sum. To the extent of denominations authorized in respect of any such Bond, one such fully registered Bond may be

transferred for several such fully registered Bonds of the same Series, interest rate, maturity and aggregate principal amount, and several such fully registered Bonds may be transferred for one or several such fully registered Bonds of the same Series, interest rate, maturity and aggregate principal amount. Unless or except as may otherwise be provided in the Supplemental Resolution providing for the issuance of the Bonds of the Series, all transfers pursuant to this section shall be made without expense to the holder of such Bonds, except as otherwise herein provided, and except that the Registrar shall require the payment by the holder of the Bond requesting such transfer of any tax or other governmental charges required to be paid with respect to such transfer. All fully registered Bonds surrendered pursuant to this Section shall be cancelled by the Registrar.

The Supplemental Resolution providing for the issuance of a Series of Bonds may establish the periods within which the Registrar for such Series shall not be required to provide for the transfer of Bonds of such Series.

SECTION 4.7. Exchange of Bonds. Bonds of a Series, upon surrender thereof at the Office of the Registrar, together with an assignment duly executed by the registered owner or such owner's authorized agent in such form as shall be satisfactory to the Registrar, may, at the option of the registered owner thereof, be exchanged for an equal aggregate principal amount of Bonds of the same Series and maturity, of any denomination or denominations authorized by this Resolution, and bearing interest at the same rate, and in the same form as the Bonds surrendered for exchange. All Bonds of a Series so surrendered pursuant to this Section shall be cancelled by the Registrar. Any Bonds of a Series to be delivered to the registered owner by the Registrar upon any such exchange shall be delivered to the registered owner at the Office of the Registrar, or sent by mail to the owner thereof at such owner's request, risk and expense.

The Supplemental Resolution providing for the issuance of a Series of Bonds may establish the periods within which the Registrar for such Series shall not be required to provide for the exchange of Bonds of such Series.

Unless or except as may otherwise be provided in the Supplemental Resolution providing for the issuance of the Bonds of a Series, all exchanges pursuant to this Section shall be made without expense to the holders of such Bonds, except as otherwise herein provided, and except that the Registrar shall require the payment by the holder of the Bond requesting such exchange of any tax or other governmental charges required to be paid with respect to such exchange.

SECTION 4.8. Mutilated, Lost, Stolen or Destroyed Bonds. In case any Bond shall at any time become mutilated in whole or in part, or be lost, stolen or destroyed, or be so defaced as to impair the value thereof to the owner, the Authority shall execute and deliver at the Office of the Registrar, a new Bond of the same series, interest rate and maturity and of like tenor and effect in exchange or substitution therefor, upon the surrender to the Registrar for cancellation by the Registrar of such defaced, mutilated or partly destroyed Bond, or in lieu of or in substitution for such lost, stolen or destroyed Bond. In any such event the applicant for the issuance of a substitute Bond shall furnish the Authority and the Registrar evidence or proof satisfactory to the Authority and the Registrar of the loss, destruction, mutilation, defacement or theft of the original Bond, and of the ownership thereof, and also such security and indemnity as may be required by the Authority and the Registrar. Any duplicate Bond issued under the provisions of this Section in exchange and substitution for any defaced, mutilated or partly destroyed Bond or in substitution for any allegedly lost, stolen or wholly destroyed Bond, shall be entitled to the identical benefits under the Resolution as was the original Bond in lieu of which such duplicate Bond is issued, and shall be entitled to equal and proportionate benefits with all the other Bonds of the same issued hereunder. Neither the Authority nor the Registrar nor any other Paying Agent appointed hereunder shall be required to treat both the original Bond and any duplicate Bond as being outstanding for the purpose of determining the principal amount of Bonds which may be issued hereunder or for the purpose of determining any percentage of Bonds outstanding hereunder, but both the original and duplicate Bond shall be treated as one and the same.

Notwithstanding the foregoing provisions of this Section as to the issuance of duplicate or replacement Bonds, (i) if any such lost, stolen, destroyed, defaced or mutilated Bond has matured or been called for redemption and the date fixed for the redemption thereof has arrived, at the option of the Authority as delivered in writing to the Registrar and Paying Agent, payment of the amount due thereon may be made without the issuance of any duplicate or replacement Bond upon receipt of like evidence, indemnity, security and expenses and the surrender for cancellation of any such defaced or mutilated Bond and upon such other conditions as the Authority may prescribe; (ii) if any such lost, stolen, destroyed, defaced or mutilated Bond shall mature or is of a class or Series which shall mature within one year following the date of application for a duplicate Bond, or has been called or will be called, or is in a class or Series which has been called or will be called,

for redemption within one year following such date, instead of issuing a duplicate or replacement Bond the Authority upon receiving like evidence, indemnity, security and expenses and the surrender for cancellation of any such defaced or mutilated Bond and upon such other conditions as the Authority may prescribe (such conditions to be enumerated in writing to the Registrar and Paying Agent), may issue or cause to be issued a transferable certificate of ownership to the applicant and pay on such certificate the interest and the redemption price or the principal sum thereof, on the interest payment dates and the redemption date or maturity date, upon surrender of certificate, and all such transferable certificates of ownership shall be in such form as may be determined by the Authority or as otherwise provided by law; and (iii) if the provisions of applicable law shall provide for the payment of lost, stolen, destroyed, mutilated or defaced Bonds in lieu of the issuance of duplicates or certificates of ownership therefor, such lost, stolen, destroyed, mutilated or defaced Bonds may be paid in accordance with the provisions of such laws.

All expenses necessary for the providing of any duplicate Bond or certificate of ownership shall be borne by the applicant therefor.

SECTION 4.9. <u>Disposition</u> and <u>Destruction</u> of <u>Bonds</u> and <u>Coupons</u>. All Bonds and coupons surrendered to the Trustee or other Paying Agent or the Registrar for payment shall be cancelled upon such payment by the Trustee or other Paying Agent or the Registrar as the case may be.

Whenever in the Resolution provision is made for the cancellation of any Bonds by any Paying Agent or the Registrar other than the Trustee, such Bonds so cancelled shall be delivered to the Trustee or as it may direct. All cancelled Bonds, including those cancelled by the Trustee, shall be delivered to the Authority or as it may direct. Upon the written request of the Authority, such Paying Agent or the Trustee may, however, in lieu of such cancellation and delivery, destroy such Bonds. If any Bonds are destroyed by the Trustee, the Authority may require that such destruction be done in the presence of its appointee, and if any Bonds are destroyed by a Paying Agent other than the Trustee, the Authority or the Trustee may require that such destruction be done in presence of their respective appointee or officer. If the Trustee shall destroy any Bonds it shall deliver a certificate of such destruction to the Authority, and if such destruction be performed by a Paying Agent other than the Trustee, such Paying Agent shall deliver a certificate of such destruction to both the Authority and the Trustee.

SECTION 4.10. Temporary Bonds. Any Series of Bonds may initially issued in temporary form exchangeable for definitive Bonds when ready for delivery. The temporary Bonds may be printed, lithographed or typewritten, shall be of such denominations as may be determined by the Authority, and may contain such reference to any of the provisions of the Resolution as may be appropriate. Every temporary Bond shall be executed by the Authority upon the same conditions and in substantially the same manner as the definitive Bonds. If the Authority issues temporary Bonds it will execute and furnish definitive Bonds without delay, and thereupon the temporary Bonds shall be surrendered, for cancellation, at the Office of the Registrar and the Registrar shall deliver in exchange for such temporary Bonds an equal aggregate principal amount of definitive Bonds of authorized denominations, of the same Series and maturity or maturities. Until so exchanged, the temporary Bonds shall be entitled to the same benefits under the Resolution as definitive Bonds delivered under the Resolution.

SECTION 4.11. <u>CUSIP</u> <u>Identification Numbers</u>. At the sole option of the Authority, <u>CUSIP</u> identification numbers may be printed on the Bonds of any Series of Bonds, but no such number shall be deemed to be a part of any Bond or a part of the contract evidenced thereby, and no liability shall hereafter attach to the Authority or any officer or agent thereof (including the Paying Agents) because of or on account of said CUSIP identification numbers or any use made thereof.

ARTICLE V

REDEMPTION OF BONDS

SECTION 5.1. Redemption of Bonds. The Bonds of a Series shall be subject to redemption prior to their stated maturities upon such terms and conditions and at such dates and redemption prices or premiums as shall be set forth in the Supplemental Resolution providing for the issuance of such Bonds, and unless otherwise provided in such Supplemental Resolution, upon the further terms and conditions as are hereinafter set forth.

SECTION 5.2. Selection of Bonds for Redemption. event of the redemption at any time of only a part of the Bonds of a Series, the Bonds to be redeemed shall be redeemed in such order as is set forth in the Supplemental Resolution providing for the issuance of such Bonds. Whenever provision is made in any Supplemental Resolution for the selection by lot of Bonds to be redeemed, the Trustee in any manner which it deems acceptable shall select the particular Bonds to be redeemed from among those Bonds which are then subject to redemption and to selection by lot for such redemption. The Trustee shall promptly notify the Authority and each other Paying Agent for the Bonds of the Series of Bonds of which such Bond to be redeemed is one, in writing, of the numbers of the Bonds so selected for redemption.

Notice SECTION 5.3. Notice of Redemption. redemption of Bonds shall be given by the Trustee by publication (except as provided below), not less than thirty (30) days prior to the date fixed for the redemption thereof, of one such notice in one issue of The Bond Buyer, a financial journal published in New York, New York, or in lieu of publication in The Bond Buyer, in some other newspaper specializing in financial matters printed in the English language and customarily published on each business day and of general circulation in the City of New York, New York and of one such notice in a newspaper of general circulation printed in the English language, published in Erie County, New York. Notice of the redemption of any Bond shall be mailed by the Trustee not less than thirty (30) days prior to the redemption date, by registered mail, to the registered owner of such Bond as of the forty-fifth (45th) day (whether or not a business day) next preceding the date fixed for redemption at his address as it appears on the books of registry. Notice of redemption by publication need not be given if notice shall have been so mailed as aforesaid to the registered owner of each such Bond; provided that, if notice is given by publication as aforesaid, neither failure to mail such notice to the registered

owner of any Bond, nor any defect in any notice so mailed, shall affect the sufficiency of the proceedings for the redemption of any of such Bonds.

The Authority shall give written notice to the Trustee of its election to redeem Bonds at least forty-five (45) days prior to the redemption date, or such shorter period as shall be acceptable to the Trustee and if notice of redemption is to be published by the Trustee, such notice shall contain all the information necessary to enable the Trustee to publish the notice of redemption in the manner aforesaid. As to Bonds which are redeemable by the Trustee without action being taken by the Authority under the terms of the Resolution, the Trustee shall proceed to publish notice of redemption of such Bonds at the time specified in the Resolution without further direction from the Authority. Whenever notice of redemption has been duly given as herein provided the Trustee shall, at least three (3) days prior to the date fixed for redemption in such notice, transfer to the Paying Agent or Paying Agents for the Bonds so to be redeemed amounts in cash from the Funds and Accounts under the Resolution which, in addition to other moneys, if any, held by such Paying Agent or Paying Agents for such purpose, will be sufficient to redeem on the redemption date, all the Bonds so to be redeemed.

Each notice of redemption, whether published or mailed, shall state: (i) the title of the Bonds to be redeemed, the Series designation (if any) thereof, the redemption date, the place or places of redemption and the redemption price or any, payable upon such redemption; redemption premium, if (ii) if less than all the Bonds of a particular Series are to be redeemed, the numbers of the Bonds to be redeemed; (iii) that the interest on the Bonds, or on the principal amount thereof to be redeemed, designated for redemption in such notice shall cease to accrue from and after such redemption date; and (iv) that on said date there will become due and payable on each said Bond the principal amount thereof to be redeemed at the then applicable redemption price (or together with the then applicable redemption premium, if any) and the interest accrued on such principal amount to the redemption date. Each notice of redemption mailed to the holder of a fully registered Bond to be redeemed shall, if less than the entire principal sum thereof is to be redeemed, also state the principal amount thereof to be redeemed and that such fully registered Bond must be surrendered to the Trustee in exchange for the payment of the principal amount thereof to be redeemed and the issuance of a new Bond or Bonds equal in principal amount to that portion of the principal sum not to be redeemed of the Bond to be surrendered, as provided in Section 5.4 hereof.

SECTION 5.4. Partial Redemption of Bonds. In the event that part only of the principal sum of a Bond shall be called for redemption or prepaid, payment of the amount to be redeemed or prepaid shall be made only upon surrender of such Bond to the Trustee. Upon surrender of such Bond, the Authority shall execute and deliver to the registered owner thereof, at the principal office of the Registrar, a new fully executed Bond or Bonds, of authorized principal sums equal in aggregate principal amount to, and of the same series, maturity and interest rate as the unredeemed portion of the Bond surrendered.

SECTION 5.5. Effect of Redemption. If a Bond subject by its terms to prior redemption and has been fully called for redemption and notice of the redemption thereof has been duly given as hereinbefore provided and if moneys for the payment of such Bond (or of the principal amount thereof to be redeemed) at the then applicable redemption price or together with the then applicable premium, if any, and the interest to accrue to the redemption date on such Bond (or the principal amount thereof to be redeemed) are held for the purpose of such payment by the Trustee or other Paying Agent for the Series of Bonds of which such Bond is one, then such Bond (or the principal amount thereof to be redeemed) so called redemption shall, on the redemption date designated in such notice, become due and payable, and interest on said Bond (or the principal amount thereof to be redeemed) so called for redemption shall cease to accrue.

SECTION 5.6. <u>Cancellation of Redeemed Bonds</u>. All Bonds surrendered or redeemed pursuant to the provisions of this Article shall be cancelled.

ARTICLE VI

CREATION OF FUNDS AND ACCOUNTS; PAYMENTS THEREFROM; INVESTMENT OF MONEYS

SECTION 6.1. Establishment of Funds. The following funds are hereby established, the existence of which shall continue so long as any Bonds issued pursuant to this Resolution are outstanding:

- (1) Revenue Fund, to be held by the Authority;
- (2) Operating Fund, to be held by the Authority;
- (3) Bond Fund, to be held by the Trustee; and
- (4) General Fund, to be held by the Authority.

SECTION 6.2. Available Revenues Prior to Retirement Date of the Prior Lien Bonds. On and after the issuance of the initial Series of Bonds and prior to the Retirement Date of the Prior Lien Bonds, the Authority shall withdraw at the end of each month from the general fund established under the Water Works System Revenue Bond Resolution (or, if the Retirement Date of the Second Prior Lien Bonds shall have occurred prior to the Retirement Date of the First Prior Lien Bonds, from the general fund established under the Water Revenue Bond Resolution) the Available Revenues which shall be applied as follows and in the following order of priority:

- (1) to the payment of the fees and expenses of the Trustee, Paying Agent and Registrar hereunder in accordance with Section 7.9 hereof;
- (2) the amounts required to be deposited in the Bond Fund shall be transferred as set forth in Section 6.5 below; and
- (3) the balance of the Available Revenues, after making the payments and transfers set forth above, shall be deposited into the General Fund.

SECTION 6.3. Available Revenues on and After Retirement Date of the Prior Lien Bonds. On and after the issuance of the initial Series of Bonds and on and after the Retirement Date of the Prior Lien Bonds, the Authority shall pay or cause to be paid into the Revenue Fund, as promptly as practicable after receipt thereof, all of the Available Revenues and all other moneys required to be paid into the Revenue Fund pursuant to the

Resolution (other than the Revenues and other amounts expressly required or permitted by the Resolution to be credited to, or deposited in, any other fund or account). The Revenue Fund and all moneys on deposit therein shall be used and applied, except as otherwise expressly permitted by the Resolution, only in the manner and for the purposes hereinafter provided in this Article.

- A. Moneys in the Revenue Fund shall be applied in the following order of priority:
 - (1) the amounts required to pay Operation and Maintenance Expenses shall be transferred to the Operating Fund as required by Section 6.4 below;
 - (2) the amounts required to be deposited to the Bond Fund shall be transferred as set forth in Section 6.5 below; and
 - (3) the balance remaining in the Revenue Fund at the end of each month, after making the transfers and allocations set forth above, shall be deposited into the General Fund.

SECTION 6.4. Operating Fund. On and after the Retirement Date of the Prior Lien Bonds, all reasonable and necessary Operation and Maintenance Expenses shall be paid from the Operating Fund as the same become due and payable after transfers from the Revenue Fund and prior to any payment to other funds and accounts set forth herein.

SECTION 6.5. Bond Fund. The Bond Fund and the moneys deposited in such Fund shall, except as otherwise provided in part D of this Section, be used solely for the purpose of paying the principal of, premium, if any, and interest on the Bonds, and of retiring the Bonds prior to maturity in the manner herein provided. Each month the Authority shall transfer, prior to the Retirement Date of the Prior Lien Bonds from the Available Revenues, and on and after the Retirement Date of the Prior Lien Bonds, to the extent not otherwise provided, from the Revenue Fund after making the transfers hereinabove provided for to the Operating Fund, to the Trustee for deposit into the Bond Fund; amounts as follows and in the following order of priority, to wit:

A. The Trustee shall create a separate account in the Bond Fund to be known as the "Interest Account". In order to provide for the payment of the interest on the Bonds, not later than the twenty-fifth day of the sixth month prior to the date upon which an installment of interest falls due on the Bonds of a Series, or if the first installment of interest on the Bonds of such Series shall fall due in less than six months,

then on the twenty-fifth day of the month immediately succeeding the month in which the Bonds of such Series are delivered to the initial purchasers, and in any event prior to the date upon which such installment of interest falls due, and on or before the twenty-fifth day of each succeeding calendar month thereafter, the Authority shall pay to the Trustee, and the Trustee shall credit to the Interest Account an amount such that, if the same amount were so credited to the Interest on the twenty-fifth day of each calendar Account thereafter prior to the next date upon which an installment of interest falls due on the Bonds of such Series, the aggregate of the amounts so credited to the Interest Account would on such date be equal to the installment of interest then falling due on all Bonds of such Series. In order to provide for the payment of the interest on the Bonds of a Series with any frequency other than semi-annually, the Authority shall pay or cause to be paid, prior to the Retirement Date of the Prior Lien Bonds, from Available Revenues, and on and after the Retirement Date of the Prior Lien Bonds, from the Revenue Fund, amounts in accordance with the provisions of the Supplemental Resolution pursuant to which such Series of Bonds is issued. In making the credits required by this paragraph any amounts required to be credited to the Interest 'Account representing accrued interest received on the sale of Bonds, interest capitalized from the proceeds of the Bonds of a Series and any other transfers and credits otherwise made or required to be made to said Account shall be taken into consideration and allowed for.

The Trustee shall create a separate account in the Bond Fund to be known as the "Principal Account". In order to provide for the payment of the principal of Serial Bonds, not . later than the twenty-fifth day of the twelfth month prior to the date upon which an installment of principal of Serial Bonds each Series falls due, or if the first installment of principal of Serial Bonds of such Series shall fall due in less than twelve months, then on the twenty-fifth day of the month immediately succeeding the month in which the Bonds of such Series are delivered to the initial purchasers, and in any event prior to the date upon which such installment of principal falls due, and on or before the twenty-fifth day of each succeeding calendar month thereafter, the Authority shall pay to the Trustee, and the Trustee shall credit to the Principal Account an amount such that, if the same amount were so credited to the Principal Account on the twenty-fifth day of each calendar month thereafter, prior to the next date upon which an installment of principal falls due on the Serial Bonds of such Series, the aggregate of the amounts so credited to the Principal Account would on such date be equal to the installment of principal then falling due on the Serial Bonds of such Series. In making the credits required by this paragraph any earnings on moneys in said Account shall be taken into consideration and allowed for.

The Trustee shall create a separate account in the Bond Fund to be known as the "Bond Retirement Account" in to meet the specified Sinking Fund Installment requirements of Term Bonds and otherwise to retire Bonds prior to maturity. Not later than the twenty-fifth day of the twelfth month prior to the date upon which a Sinking Fund Installment of Term Bonds of each Series falls due, or if the first Sinking Fund Installment of the Term Bonds of such Series shall fall due in less than twelve months, then on the twenty-fifth day of the month immediately succeeding the month in which the Bonds of such Series are delivered to the initial purchasers, and in any event prior to the date upon which such Sinking Fund Installment falls due, and on or before the twenty-fifth day of each succeeding calendar month thereafter, the Authority shall pay to the Trustee, and the Trustee shall credit to the Bond Retirement Account an amount such that, if the same amount were so credited to the Bond Retirement Account on the twenty-fifth day of each calendar month thereafter, prior to the next date upon which a Sinking Fund Installment falls due on the Term Bonds of such Series, the aggregate of the amounts so credited to the Bond Retirement Account for the purpose of retiring the Term Bonds of such Series would on such date be equal to the Sinking Fund Installment then falling due on the Term Bonds of such Series. In making the credits required by this paragraph any earnings on moneys in said Account shall be taken into consideration and allowed for.

The Trustee shall without further authorization or direction apply the moneys on credit to the Bond Retirement Account on each date, if any, upon which a Sinking Fund Installment is due to the retirement of the Term Bonds of such Series in accordance with the Supplemental Resolution providing for the issuance of such Series of Bonds, or, if so directed in writing by the Authority, semi-annually on both such due date and the day six months prior to such due date, in the respective principal amounts on credit to the Bond Retirement Account on such dates for such Term Bonds, so that the aggregate amounts so applied will equal the respective principal amounts required to be credited to the Bond Retirement Account on such Sinking Fund Installment dates by the Supplemental Resolution providing for their issuance; provided, however, that if the last Sinking Fund Installment for such Term Bonds falls due on the stated maturity date thereof, the amount of such installment shall not be applied to the redemptions of such Term Bonds but shall be applied to the payment thereof at such maturity date in the same manner as amounts are applied from the Principal Account for the payment of Serial Bonds at maturity. The Trustee shall give notice of all such redemptions, in the name and on behalf of the Authority, in accordance with the provisions of Article V hereof. The Trustee may also, without further authorization or

direction, apply the moneys credited to the Bond Retirement Account for the retirement of the Term Bonds of a particular Series to the purchase of such Bonds, at a purchase price (including accrued interest and any brokerage or other charge) not to exceed the redemption price then applicable upon the redemption of such Bonds from Sinking Fund Installments, plus accrued interest, in which event the principal amount of such Bonds required to be redeemed on the next respective ensuing Sinking Fund Installment date shall be reduced by the principal amount of the Bonds so purchased; provided, however, that no Bonds of such Series shall be purchased during the interval between the date on which notice of redemption of said Bonds from Sinking Fund Installments is given and the date of redemption set forth in such notice, unless the Bonds so purchased are Bonds called for redemption in such notice or are purchased from moneys other than those credited to the Bond Retirement Account with respect to Sinking Fund Installments.

In the event that moneys in the Bond Retirement Account, other than moneys credited thereto as Sinking Fund Installments pursuant to a Supplemental Resolution, are to be applied to the retirement of a Series of Bonds, the Authority may direct the Trustee within thirty days of the most recent deposit of any such moneys to apply such moneys to the purchase of Bonds of such Series in the name of the Authority. The price payable on any such purchase (including any brokerage or other charge) shall not exceed the highest redemption price applicable at the time or any time thereafter with respect to such Series of Bonds as set forth in the Supplemental Resolution pursuant to which such Series of Bonds was issued, plus accrued interest. Any such moneys not applied to the purchase of Bonds shall be applied to the redemption of Bonds of each Series then subject to redemption from such moneys in the proportion, as nearly as practicable, which the principal amount of Bonds of such Series then outstanding and unpaid and so subject to redemption bears to the total principal amount of Bonds then outstanding and unpaid and so subject to redemption.

Except for the redemption of Term Bonds from moneys credited to the Bond Retirement Account as Sinking Fund Installments, not less than One Hundred Thousand Dollars (\$100,000) aggregate principal amount of Bonds shall be called for redemption at any one time pursuant to this part C unless the Authority directs the purchase or redemption of a lesser amount. The Trustee shall give notice of all such redemptions, in the name and on behalf of the Authority, in accordance with the provisions of Article V hereof.

Any purchase of Bonds pursuant to this part C may be made with or without tenders of Bonds and at either public or

private sale. All Bonds purchased, redeemed or retired pursuant to this part C shall be cancelled and shall not be reissued. The accrued interest to be paid on the purchase or redemption of Bonds shall be paid from the Interest Account.

In the event of the purchase or redemption of Term Bonds of a particular Series pursuant to this part C or otherwise, except from moneys credited to the Bond Retirement Account as Sinking Fund Installments, or if such Term Bonds to be so redeemed are deemed to be no longer outstanding and unpaid pursuant to Section 13.1, the amount required to be credited to the Bond Retirement Account on such Sinking Fund Installment date as the Authority directs the Trustee in writing shall be reduced by the principal amount of the Bonds so purchased or redeemed.

D. The Trustee shall create a separate Account in the Bond Fund for each Series of Bonds, each such account to be known as the "Reserve Account, Series _____ " using the Series designation of the Bonds to which such account relates.

The Reserve Account Requirement for each Series of Bonds shall be that amount, if any, provided in the Supplemental Resolution providing for the issuance of such Series of Bonds. In the event a Reserve Account Requirement is prescribed, the Supplemental Resolution providing for the issuance of a Series of Bonds shall provide either (i) for deposits, prior to the Retirement Date of the Prior Lien Bonds, from the Available Revenues, and on and after the Retirement Date of the Prior Lien Bonds, from the moneys in the Revenue Fund, into the Bond Fund for credit to the appropriate Reserve Account, (ii) for payments into the Bond Fund for credit to the appropriate Reserve Account from the proceeds of Bonds or from any moneys lawfully available therefor, or (iii) for deposit with the Trustee of Additional Security unconditionally payable on demand to or for the benefit of the Trustee for the benefit of the holders of the Series of Bonds for which the Reserve Account was created, all as shall be determined and provided in the Supplemental Resolution. The moneys in the Bond Fund on credit to a Reserve Account shall be used and applied solely for the purpose of paying the principal of, premium, if any, and interest on the respective Series of Bonds for which the account was created when due, whether at their maturity or upon the redemption or purchase thereof from moneys credited to the Bond Retirement Account, and shall be so used and applied whenever there are insufficient moneys on credit to the Interest Account, Principal Account and Bond Retirement Account for such purposes. No Bonds other than the Series of Bonds for which such account has been created shall have any right to be paid from such account.

When a Series of Bonds is refunded in whole or in part or is otherwise paid within the meaning of Article XIII hereof, moneys may be withdrawn from the Reserve Account for such Series to pay or provide for the payment of such Bonds or refunded Bonds, as the case may be, or may be transferred and applied to any reserve fund or account established for the refunding bonds issued to refund such refunded Bonds; provided that immediately after such withdrawal or transfer there shall be on credit to the Reserve Account for those Bonds of the Series of Bonds not refunded an amount equal to the Reserve Account Requirement for such Series.

Moneys on deposit in the Bond Fund shall be transmitted by the Trustee to any Paying Agent at such times as shall be necessary prior to the date upon which any installment of interest or principal is due on the Bonds (either at the maturity date thereof or redemption date prior to maturity) to pay, and in amounts sufficient to meet such installments of, principal of, premium, if any, and interest on the Bonds, then due. In the event that there shall be a deficiency in the Interest Account, Principal Account or Bond Retirement Account one business day before any interest, principal or sinking fund payment is due on a Series of Bonds, the Trustee shall promptly make up such deficiency from the Reserve Account for such Series by the withdrawal of cash therefrom for that purpose or by the sale or redemption of Investment Securities held in the Reserve Account, if necessary, in such amounts as will provide cash in the Reserve Account sufficient to make up any such deficiency or by the transfer of Investment Securities (or undivided interests therein) in which moneys in the Interest Account, Principal Account or Bond Retirement Account, as the case may be, may be invested, or by taking such steps as may be necessary to realize the benefit of any surety bond, insurance policy or letter of credit deposited in the Reserve Account for such Series.

Moneys set aside from time to time with any Paying Agent for the purpose of paying the principal of, premium, if any, and interest on the Bonds shall be held in trust for the holders of the Bonds in respect of which the same shall have been so set aside. Until so set aside, all moneys in the Bond Fund shall be held in trust for the benefit of the holders of all Bonds at the time outstanding, equally and ratably.

Whenever the amounts on deposit in the Bond Fund (regardless of the account therein to which such amounts are credited) shall be sufficient to provide moneys to retire all Bonds then outstanding, including such interest thereon as thereafter may become due and payable and any premiums upon redemption thereof, no further deposits need be made by the

Authority into the Bond Fund, and without further authorization or direction the Trustees shall call, except in the event of the final maturity of all Bonds then Outstanding, all Bonds which may be redeemed by their terms, for redemption on the next succeeding redemption date for which the required notice of redemption can practicably be given, and shall apply such moneys to such retirement or redemption.

SECTION 6.6. General Fund. Moneys in the General Fund may be used for any lawful purpose of the Authority.

SECTION 6.7. Construction Fund. Supplemental The Resolution providing for the issuance of any Series of Bonds (exclusive of refunding Bonds) may create and establish (unless theretofore created and established with respect to such purpose) a separate special trust fund to be known as the ", or such other designation as "Construction Fund, may be appropriate (the blank to be completed with the year in which the Fund is created). The Construction Fund shall be held in trust by the Authority, for the benefit of the holders of the Bonds, as their interests may appear, pending application thereof in accordance with the terms of this Resolution and each appropriate Series Resolution. In the event any interest on such Bonds is to be capitalized from the proceeds of such Bonds or any other Series of Bonds, there shall be created in the Construction Fund a special account to be known as the "Construction Interest Account", or such other designation as may be appropriate.

- A. From the proceeds derived from the sale of such Bonds there shall be deposited:
 - (1) with the Authority for credit to the Construction Interest Account, if any, otherwise with the Trustee for deposit in the Bond Fund for credit to the Interest Account, an amount equal to the accrued interest on the Bonds paid as part of the purchase price;
 - (2) with the Authority for credit of such Construction Interest Account, if any, otherwise with the Trustee for deposit in the Bond Fund for credit to the Interest Account, the amount, if any, equal to the interest on the Bonds being capitalized from the proceeds thereof;
 - (3) with the Trustee for payment into the Bond Fund for credit to the applicable Reserve Account the amount prescribed in the applicable Supplemental Resolution;
 - (4) with the Authority for credit to the applicable Construction Fund the balance of the Bond proceeds which

shall be applied to the payment of the cost as shall be specified in the applicable Supplemental Resolution. Any balance remaining in such Construction Fund upon completion of payment of such costs shall be used for any lawful purpose of the Authority, provided that the Authority shall have obtained a written opinion of nationally recognized bond counsel acceptable to the Trustee that such application will not impair the exemption from federal income taxation of interest on any of the Bonds.

B. Moneys credited to the Construction Interest Account shall be used for the purpose of paying interest on the Bonds. On or before the twenty-fifth day of the month next preceding the maturity of an installment of interest on the Bonds for the payment of which moneys have been credited to the Construction Interest Account, the Authority shall transfer from the Construction Interest Account to the Trustee for deposit in the Bond Fund for credit to the Interest Account an amount which, together with any moneys theretofore received or held by the Trustee for that purpose, shall be sufficient to pay such next maturity installment of interest.

SECTION 6.8. <u>Payments</u> <u>from</u> <u>Construction</u> <u>Fund</u>. Payments from the respective Construction Funds shall be as specified in the Supplemental Resolution authorizing the issuance of a Series of Bonds.

SECTION 6.9. Lien on Moneys in the Construction Fund. Amounts on deposit in any Construction Fund, pending their application as provided in the Resolution and Supplemental Resolution, shall be subject to a prior and paramount lien and charge in favor of the holders of the Bonds, and the holders of the Bonds shall have a valid claim on such moneys for the further security of the Bonds until paid out or transferred as herein provided.

SECTION 6.10. Investment of Funds. Moneys in the Interest Account, Principal Account and Bond Retirement Account in the Bond Fund shall, to the fullest extent practicable and reasonable, be invested and reinvested by the Trustee (at the direction of the Authority) solely in, and obligations credited to such Accounts shall be, Investment Securities which shall mature or be subject to redemption at the option of the holder thereof on or prior to the respective dates when the moneys in such accounts will be required for the purposes intended. Moneys in the Reserve Account in the Bond Fund not required for immediate disbursement for the purpose for which said Account is created shall, to the fullest extent practicable and reasonable, be invested and reinvested by the Trustee at the direction of the Authority solely in, and obligations credited to said

Reserve Account shall be, Investment Securities which shall mature or be subject to redemption at the option of the holder thereof on or prior to the last maturity date of the applicable Series of Bonds. The Trustee shall not be liable for any depreciation in value of any such investments.

Moneys in the Revenue Fund not required for immediate disbursement for the purpose for which said Fund is created shall, to the fullest extent practicable and reasonable, be invested and reinvested by the Authority, to the extent allowed by law, solely in, and obligations deposited in said Fund shall be, Investment Securities which shall mature or be subject to redemption at the option of the holder thereof not later than such times as shall be necessary to provide moneys when needed to provide payments from such Fund.

Moneys in the Construction Fund, including a Construction Interest Account therein not required for immediate disbursement for the purposes for which said Fund and Account is created shall, to the fullest extent practicable and reasonable, be invested and reinvested by the Authority for such Fund and Account, to the extent allowed by law, solely in, and obligations deposited in said Fund and Account shall be, Investment Securities which shall mature or be subject to redemption at the option of the holder thereof not later than such times as shall be necessary to provide moneys when needed to provide payments from such Fund and Account.

To the extent permitted in the Resolution, all income received from the investment or reinvestment of moneys in the Funds established hereunder shall be deposited in the respective Funds from which such investments are made to the extent of any deficiencies therein and otherwise to the Revenue Fund; provided, however, that, at the direction of the Authority, all or a portion of the income received from the investment or reinvestment of moneys in any such Fund may be deposited in the Construction Fund, including the Construction Interest Account therein. All income received from the investment or reinvestment of moneys in a Construction Fund shall be deposited in said Fund.

Nothing in the Resolution shall prevent any Investment Securities acquired as investments of funds held under the Resolution from being issued or held in book-entry form.

SECTION 6:11. Valuation or Sale of Investments. (A) Investment Securities in any Fund or Account created under the provisions of the Resolution shall be deemed at all times to be part of such Fund or Account and any profit realized from the liquidation of such investment shall be credited to such Fund or Account and any loss resulting from liquidation of such

investment shall be charged to such Fund or Account. Any net profits remaining after accumulating the sum of all profits realized and losses suffered from the liquidation of such investments in any Fund or Account during each quarterly period shall be transferred or paid as provided in Section 6.10 hereof.

- (B) In computing the amount in any Fund or Account, Investment Securities therein shall be valued at cost or market, whichever is lower.
- (C) Except as otherwise provided in the Resolution, the Trustee shall use its best efforts to sell at the best price obtainable, or present for redemption, any Investment Securities held by the Trustee in any Fund or Account whenever it shall be necessary, and upon oral request (later confirmed in writing) from an Authorized Officer of the Authority in order to provide moneys to meet any payment or transfer from such Fund or Account. The Trustee shall not be liable or responsible for any loss resulting from any such investment, sale, liquidation or presentation for investment made in the manner provided above.

SECTION 6.12. <u>Valuation</u> of <u>Funds</u> and <u>Accounts</u>. (A) The Trustee shall, as of the close of business on the last day of each June and December, and may, at any other such time it deems necessary (but no more frequently than once per month), compute in the manner set forth in Section 6.11 hereof the value of the moneys and Investment Securities in the Bond Fund and the Accounts therein and shall as promptly as practicable thereafter notify the Authority as to the result of such computation and the amount of deficiency or surplus in such Fund and Accounts as of such date.

(B) The Authority shall, as of the close of business on the last day of each June and December, compute in the manner set forth in Section 6.11 hereof the value of the moneys and Investment Securities in the Revenue Fund, the Operating Fund, the General Fund and the Construction Fund, if any, and the Accounts therein.

ARTICLE VII

CONCERNING THE TRUSTEE AND THE PAYING AGENT

SECTION 7.1. Qualifications and Appointment Trustee; Resignation or Removal Thereof; Successor Thereto. the Supplemental Resolution providing for the issuance of the initial Series of Bonds hereunder, the Authority shall appoint a Trustee hereunder (herein defined and referred to as "Trustee") to hold and administer the fund and accounts created and established in Section 6.1 hereof. The Trustee shall be a bank or trust company with capital stock, surplus and undivided aggregating in excess of fifty million (\$50,000,000). The Trustee shall signify its acceptance of the duties and obligations imposed upon it by the Resolution as such Trustee by executing and delivering to the Authority a written acceptance of the provisions of the Resolution. The Trustee may be removed at the request of or upon the affirmative vote of (i) the holders of a majority of the principal amount of Bonds outstanding, or (ii) the majority of the members of the Authority, provided, however, that the Trustee may not be removed pursuant to the preceding clause (ii) upon the occurrence of an Event of Default (as defined in Section 9.2 hereof) or while such an Event of Default shall be continuing.

In the event of the removal pursuant to clause (i) of the preceding sentence, resignation, disability or refusal to act of the Trustee, a successor may be appointed by the holders of a majority of the principal amount of Bonds outstanding, excluding any Bonds held by or for the account of the Authority, and such successor shall have all the powers and obligations of the Trustee under the Resolution theretofore vested in its predecessor; provided, that unless a successor Trustee shall have been appointed by the holders of Bonds as aforesaid, the Authority by a duly executed written instrument signed by a majority of the members of the Authority shall concurrently appoint a Trustee to fill such vacancy until a successor Trustee shall be appointed by the holders of Bonds as authorized in this paragraph. Any successor Trustee appointed by the Authority pursuant to this paragraph shall, immediately and without further act, be superseded by a Trustee so appointed by the holders of Bonds.

In the event of the removal of the Trustee pursuant to clause (ii) above, the Authority by a duly executed written instrument signed by a majority of the members of the Authority shall concurrently appoint a successor Trustee.

A successor Trustee shall be a bank or trust company with capital stock, surplus and undivided profits aggregating in excess of fifty million dollars (\$50,000,000).

If the Trustee publishes reports of condition at least annually, pursuant to law or to the requirements of a supervising or examining authority of the United States of America, or any state, then for the purposes of determining its qualifications hereunder, the capital stock, surplus and undivided profits of such Trustee at any time shall be deemed to be its capital stock, surplus and undivided profits as set forth in its most recent report of conditions so published.

Any Trustee hereunder may resign at any time by giving not less than sixty (60) days' notice to the Authority in writing and to the Bondholders by publishing a notice of resignation once within ten (10) days after the giving of such notice to the Authority in the same newspapers in which notices of redemption of Bonds are to be published pursuant to Section 5.3 hereof.

The resigning Trustee, if within fifty (50) days after the publication of notice of its resignation no successor Trustee shall have been appointed and shall have accepted such appointment, may petition any court of competent jurisdiction for the appointment of a successor Trustee, or any holder of a Bond who has been a bona fide holder of a Bond for at least six (6) months may, on behalf of such holder and others similarly situated, petition any such court for the appointment of a successor Trustee. Such court may thereupon, after such notice, if any, as it may deem proper and prescribe and as may be required by law, appoint a successor Trustee having the qualifications required hereby.

In case at any time any of the following shall occur: (1) any Trustee hereunder shall cease to be eligible in accordance with the provisions hereof and shall fail to resign after written request therefor has been given to such Trustee by the Authority or by any holder of a Bond who has been a bona fide holder of a Bond for at least six months, or (2) any Trustee hereunder shall become incapable of acting, or shall be adjudged a bankrupt or insolvent, or a receiver of such Trustee or of its property shall be appointed, or any public officer shall take charge or control of such Trustee or of its property or affairs for the purpose of rehabilitation, conservation or liquidation, or (3) any Trustee hereunder shall neglect or fail in the performance of its duties hereunder, then, in any such case, the Authority may remove such Trustee by an instrument in writing or any such holder of a Bond may, on behalf of himself and all others similarly situated, petition any court of competent jurisdiction for the removal of such Trustee. Such

court may thereupon, after such notice, if any, as it may deem proper and prescribe and as may be required by law, remove such Trustee.

Any successor Trustee shall meet the qualifications of this Section. Such successor Trustee shall execute, acknowledge and deliver to its predecessor, and also to the Authority, an instrument in writing accepting such appointment hereunder, and thereupon such successor Trustee, without any further acts, deed or conveyance, shall become fully vested with all the rights, powers, trusts, duties and obligations of its predecessor in trust hereunder, with like effect as if originally named as Trustee; but such predecessor shall, nevertheless, on the written request of the Authority or such successor Trustee, execute and deliver an instrument transferring to such successor Trustee all rights, powers, trusts, duties and obligations of such predecessor in trust hereunder and shall deliver all moneys held by it to such successor Trustee, together with accounting of funds held by it hereunder. The successor Trustee shall have no responsibility for the acts of the predecessor Trustee.

Upon acceptance of appointment by the successor Trustee, as provided in this Section, the Authority shall publish notice of the succession of such Trustee to the trusts hereunder at least once in the same newspapers in which notices of redemption are to be published under Section 5.3 hereof. If the Authority shall fail to publish such notice, within ten (10) days after acceptance of appointment by the successor Trustee, the successor Trustee shall cause such notice to be published at the expense of the Authority.

Any corporation into which a Trustee hereunder may be merged or with which it may be consolidated, or any corporation resulting from any merger or consolidation to which a Trustee shall be a party, or any corporation to which a Trustee may sell or transfer all or substantially all of its corporate trust business, shall be the successor Trustee under the Resolution without the execution or filing of any paper or any further act on the part of the parties hereto, anything herein to the contrary notwithstanding; provided such corporation meets the qualifications of this Section.

SECTION 7.2. <u>Duties of Trustee</u>; <u>Reliance on Certificates</u> and <u>Opinions</u>. Prior to an Event of Default as defined in Section 9.2 hereof of which a Trustee hereunder has actual knowledge, and after the curing or waiving of all such Events of Default, such Trustee (1) shall not be liable except for the performance of such duties as are specifically set out in the Resolution to be performed by such Trustee in the absence of, or without regard to,

an Event of Default and (2) may conclusively rely, as to the truth of the statements and the correctness of the opinions expressed therein, in the absence of bad faith on the part of such Trustee, upon certificates or opinions conforming to the requirements of the Resolution. In case of an Event of Default as defined in Section 9.2 hereof of which a Trustee hereunder has actual knowledge, such Trustee shall exercise such rights and powers vested in it by the Resolution, and use the same degree of care and skill in their exercise, as a prudent man would exercise or use under the circumstances in the conduct of his own affairs. The Authority shall notify the Trustee promptly upon the Authority's breach of any of its covenants hereunder.

No provision of the Resolution shall be construed to relieve a Trustee hereunder from liability for its own negligent action, its own negligent failure to act, or its own willful misconduct, except that such Trustee shall at all times: (1) be protected from liability for any error of judgment made in good faith by a responsible officer or officers unless it shall be proved that such Trustee was negligent in ascertaining the pertinent facts; and (2) be protected with respect to any action taken or omitted to be taken by it in good faith in accordance with (i) the direction of the holders of not less than a majority in principal amount of the Bonds then outstanding or (ii) the direction, or lack of required consent, as the case may be, of any issuer of (including, without limitation, the municipal bond insurance policy with respect to a Series of Bonds) who are entitled to so direct or consent to such action, pursuant to the Supplemental Resolution governing the terms of the Series of Bonds pursuant to which such action is taken or omitted to be taken, as the case may be, relating to the time, method and place of conducting any proceeding for any remedy available to such Trustee or to be taken by it, or exercising any trust or power conferred upon such Trustee, under the Resolution. Such Trustee shall be protected when acting in good faith and upon advice of counsel who may be counsel to the Authority.

Precedent; Examination of Evidence. The Authority will furnish, or will cause to be furnished, to each Trustee hereunder evidence of compliance with the conditions precedent, if any, provided in the Resolution (including any covenant, compliance with which constitutes a condition precedent) which relate to any action to be taken by such Trustee at the request or upon the application of the Authority. Such Trustee shall examine such evidence, and any evidence furnished to it pursuant to any other provisions of the Resolution, to determine whether or not such evidence conforms to the requirements of the Resolution.

SECTION 7.4. Statement by Trustee Hereunder of Funds and Accounts and Other Matters. Not more than 60 days after the close of each Fiscal Year, each Trustee hereunder shall furnish the Authority, and any Bondholder filing with such Trustee a written

request for a copy, a statement setting forth (to the extent applicable) in respect to such Fiscal Year (a) all transactions relating to the receipt, disbursement, and application of moneys received by such Trustee pursuant to the terms of the Resolution, (b) the amount held by such Trustee at the end of such Fiscal Year to the credit of each fund and account provided for in the Resolution and the value of Investment Securities therein, (c) a brief description of all obligations held by such Trustee asan investment of moneys in any fund or account hereunder as of the end of such Fiscal Year, (d) the principal amount of Bonds purchased by such Trustee during such Fiscal Year from moneys available therefor in any fund or account pursuant to the provisions of the Resolution and the respective purchase price of such Bonds, (e) in the case of the Trustee, the principal amount of Bonds redeemed or retired during such Fiscal Year and the redemption prices thereof, if any, and (f) any other information which the Authority may reasonably request.

SECTION 7.5.. <u>Trustees Hereunder May File Proofs of Claims and Other Papers and Documents</u>. Any Trustees hereunder may file such proofs of claims and other papers or documents as may be necessary or advisable in order to have claims of such Trustee and of the holders of the Bonds allowed in any judicial proceedings relative to the Authority, its creditors or its properties.

SECTION 7.6. Trustees Hereunder Not Liable for Acts of the Authority or Other Trustees; No Representations by Trustee. No Trustee hereunder shall be responsible or have any liability for any act of the Authority or of any other Trustee. No Trustee hereunder shall be responsible in any manner whatsoever for the correctness of the recitals, statements and representations in the Resolution or in the Bonds, all of which are made by the Authority solely. No Trustee hereunder makes any representation as to the validity of the Resolution or of the Bonds issued hereunder, and no Trustee hereunder shall incur any liability or responsibility in respect of any such matters. The Trustee shall have no responsibility or duty with respect to the application of proceeds of the sale of Bonds. Subject to the provisions of Section 7.2, the Authority agrees to indemnify and hold the Trustee harmless against any liabilities which it may incur in the exercise and performance of its powers and duties hereunder, and which are not due to its gross negligence or willful misconduct.

SECTION 7.7. Registrar and Paying Agent. Except as otherwise provided in the Supplemental Resolution providing for the issuance of a Series of Bonds, the Trustee shall serve as Registrar and Paying Agent. If it is determined by Supplemental Resolution to use a separate or additional Registrar or Paying Agent, the Supplemental Resolution shall contain or incorporate by reference to an earlier Supplemental Resolution appropriate provisions relating to the appointment, qualifications, duties and compensation of such Registrar and Paying Agent.

SECTION 7.8. Trustees Hereunder and Paying Agents May Buy, Hold, Sell or Deal in Bonds and Other Indebtedness of the Authority. Each Trustee hereunder and its directors, officers, employees or agents, and each Paying Agent and its directors, officers, employees or agents, may in good faith buy, sell, own, hold and deal in any of the Bonds or coupons issued under the provisions of the Resolution and may join any action which any holder of a Bond may be entitled to take, with like effect as if such Trustee or Paying Agent were not a Trustee or a Paying Agent, as the case may be, under the Resolution. Any Trustee hereunder or any Paying Agent may in good faith hold any other form of indebtedness of the Authority; own, accept or negotiate any drafts, bills of exchange, acceptances or obligations of the Authority, and make disbursements for the Authority and enter into any commercial or business arrangement therewith.

SECTION 7.9. Reimbursement o<u>f</u> Trustees and Agents Hereunder for Fees, Expenses and Charges. Each Trustee hereunder shall be entitled to reasonable fees and reimbursement by the Authority for all expenses, charges, counsel fees and other disbursements reasonably incurred by it in the performance of its duties and powers under the Resolution, including those of its attorneys, agents and employees. Each Trustee hereunder shall have a lien for such fees and reimbursement on the moneys pledged to secure the Bonds hereunder at any time held by it hereunder, prior to the lien or claim of the holders of the Bonds on all such moneys. Each Paying Agent and Registrar hereunder shall also be entitled to reasonable fees and to reimbursement by the Authority for all expenses and charges reasonably incurred by it in the performance of its duties hereunder in such capacity.

ARTICLE VIII

COVENANTS TO SECURE BONDS

<u>Particular Covenants</u>. The Authority hereby covenants and agrees with the purchasers and holders of all Bonds issued pursuant to the Resolution as follows:

SECTION 8.1. To Maintain the Properties of the Water Works System; To Keep the System in Good Repair. The Authority shall (i) maintain, preserve and keep, or cause to be maintained, preserved and kept, the properties of the Water Works System and all additions and betterments thereto and extensions thereof, and every part and parcel thereof in good repair, working order and condition, (ii) from time to time make, or cause to be made, all necessary and proper repairs, renewals, replacements, additions, extensions and betterments thereto, so that at all times the business carried on in connection therewith shall be properly and advantageously conducted, and (iii) comply, or cause to be complied with the terms and conditions of any permit or license for the Water Works System or any part thereof issued by any federal or state governmental agency or body and with any federal or state law or regulation applicable to the construction, operation, maintenance and repair of the Water Works System or requiring a license, permit or approval therefor.

SECTION 8.2. Rates and Charges. (A) The Authority shall fix reasonable rates for each class of service rendered by the Water Works System.

- (B) So long as any Bonds are Outstanding, the Authority shall at all times maintain rates, fees, rentals, and other charges sufficient to pay, and any contracts entered into by the Authority for the sale or distribution of water shall contain rates, fees, rentals, or other charges sufficient to pay, the cost of operation and maintenance of the Water Works System, the principal of and interest on the Bonds as the same severally become due and payable, and to maintain any reserve or other funds required by the terms of the Resolution. The Authority shall not reduce any such rates, fees, rentals, and other charges unless on the effective date of such reduction a Rate Consultant shall have recommended such reduction in writing and a copy of such recommendation shall have been filed with the Trustee.
- (C) So long as any Bonds are Outstanding, the Authority shall at all times maintain rates, fees, rentals, and other charges with respect to the Water Works System as shall be

required in order that in each Fiscal Year the Net Revenues less the amount required to be deposited into the extension and improvement fund established under the Water Revenue Bond Resolution shall equal at least 1.10 times the sum of the Debt Service on the Bonds and the Second Prior Lien Bonds for such Fiscal Year computed as of the beginning of such Fiscal Year, and, in any event, as shall be required to pay or discharge all other indebtedness, charges and liens whatsoever payable out of the Available Revenues or Revenues under the Resolution, the Water Works System Revenue Bond Resolution, the Improvement and Extension Resolution and the Water Revenue Bond Resolution.

- (D) The Authority shall at all times keep on file with the Trustee copies of its rates schedules for the Water Works System, as in effect from time to time.
- (E) For purposes of this Section 8.2, Debt Service on any Variable Rate Bonds shall be calculated using the greater of (i) the Certified Interest Rate or (ii) the interest rate which the Authority estimates Variable Rate Bonds will bear during the Fiscal Year for which such calculation is made.
- SECTION 8.3. Sale, Lease or Other Disposition of Properties of the Water Works System. The Authority shall not sell, mortgage, lease or otherwise dispose of the properties of the Water Works System except as provided in this Section.
 - (1) The Authority may sell, lease, or otherwise dispose of the properties comprising the Water Works System if (i) such sale, lease or disposition is in the ordinary course of the Authority's business or (ii) simultaneously with such sale or other disposition thereof provision is made for the payment of (x) all Bonds then outstanding and such Bonds are no longer deemed outstanding within the meaning of Section 13.1 hereof; and (y) all Prior Lien Bonds and such Prior Lien Bonds are no longer deemed outstanding within the meaning of the Water Revenue Bond Resolution, the Improvement and Extension Resolution and the Water Works System Revenue Bond Resolution, as the case may be.
 - dispose of any part of the properties comprising the Water Works System having a value of \$1,000,000 or less on such terms and conditions as may be prescribed by the Authority. The Authority may sell, lease or otherwise dispose of any part of the properties comprising the Water Works System having a value in excess of \$1,000,000 if a Rate Consultant shall certify to the Authority in writing that such terms and

conditions of the proposed sale, lease or other disposition of any such properties are fair and reasonable, and that the estimated Available Revenues to be derived from the remaining properties of the Water Works System, after taking into consideration the use by the Authority of the proceeds of such proposed sale, lease or other disposition of such properties, will be sufficient to enable the Authority to comply with all covenants and conditions of the Resolution. A copy of such certificate shall be filed with the Trustee at least ten (10) days prior to any such transfer and the Trustee, in the absence of bad faith, shall be protected in relying thereon. Proceeds of any sale, lease or other disposition of any portion of the properties of the Water Works System pursuant to this paragraph shall be paid: (i) if such proceeds are not in excess of \$100,000, into the Revenue Fund, or (ii) if such proceeds are in excess of \$100,000, (A) into (I) the bond retirement account in the bond established under the Water Revenue Bond Resolution, (II) the bond retirement account in the bond established under the Water Works System Revenue Bond Resolution or (III) the Bond Retirement Account in the Bond Fund and applied to the purchase of redemption of Bonds or (B) into the General Fund and applied by the Authority for the purpose of constructing extensions, betterments or improvements to the Water Works System, as the Authority shall determine.

- dispose of surplus lands, crops, timber, buildings and any other portion of the works, plant and facilities of the Water Works System and real and personal property comprising a part thereof, which, in the opinion of the Authority, shall have become unserviceable, inadequate, obsolete, worn out, or unfit to be used in the operation of the Water Works System, or no longer necessary, material to, or useful in such operation. Proceeds of any such sale, lease or other disposition of any portion of the properties of the Water Works System pursuant to this paragraph shall be paid into the General Fund.
- (4) In the event that any part of the properties comprising the Water Works System shall be transferred from the Authority through the operation of law (including condemnation), any moneys received by the Authority as a result thereof shall be paid (i) if such proceeds are not in excess of \$100,000, into the Revenue Fund, or (ii) if such proceeds are in excess of

\$100,000, (A) into the bond retirement account in the bond fund established under the Water Works System Revenue Bond Resolution, and used to purchase Second Prior Lien Bonds, or, subsequent to the Retirement date of the Second Prior Lien Bonds into the Bond Retirement Account in the Bond Fund and applied to the purchase or redemption of Bonds or (B) into the General Fund and applied by the Authority for the purpose of constructing extensions, betterments or improvements to the Water Works System, as the Authority shall determine.

Except as provided SECTION 8.4. Insurance. (A) paragraph (B) hereof, the Authority shall keep, or cause to be kept, the works, plants and facilities comprising the properties of the Water Works System and the operations thereof insured to reasonable cost with responsible available at the extent insurers, with policies payable to the Authority, against risks of direct physical loss, damage to or destruction of the Water Works System, or any part thereof, at least to the extent that similar insurance is usually carried by utilities operating like properties against accidents, casualties or negligence, including liability insurance and employer's liability; provided, however, that any time while any contractor engaged in constructing any part of the Water Works System shall be fully responsible for the insurance with respect thereto, the Authority shall not be required to keep such part of the System insured. All policies of insurance shall be for the benefit of the holders of the Bonds and the Authority as their respective interests may appear.

In the event of any loss or damage to the properties of the Water Works System covered by insurance, the Authority will respect to each such loss, promptly repair and reconstruct to the extent necessary to the proper conduct of the operations of the Water Works System the lost or damaged portion thereof and shall apply the proceeds of any insurance policy or policies covering such loss or damage for that purpose to the extent required therefor, unless, in case of loss or damage involving \$100,000 or more, the Authority shall determine that such repair and reconstruction not be undertaken, and (2) if the Authority shall not use the entire proceeds of such insurance to repair or reconstruct such lost or damaged property, the proceeds of such insurance policy or policies or any portion thereof not used for such repair or reconstruction, as the case may be, shall be paid into the revenue fund established under the Water Revenue Bond Resolution, or subsequent to the Retirement Date of the First Prior Lien Bonds into the revenue fund established under the Water Works System Revenue Bond Resolution, or subsequent to the Redemption Date of the Prior Lien Bonds into the Revenue Fund.

(B) If the Authority elects to self-insure or fails to carry insurance against any of the risks normally insured against by operators of facilities similar to the Water Works System, it must secure the concurrence of a Rate Consultant. In making its decision whether to concur in such self-insurance, such Rate Consultant shall (i) make an estimate of the added financial risks, if any, assumed by the Authority as a result of the self-insurance, (ii) consider the availability of commercial insurance, the terms upon which such insurance is available and the costs of such available insurance, and the effect of such terms and costs upon the Authority's costs and charges for its services, (iii) determine whether the added financial risk, if any, being assumed by the Authority is prudent in light of the savings to be realized from such self-insurance or in light of the general availability of insurance.

SECTION 8.5. Rate Consultant; Consulting Engineers. Authority shall retain and appoint, as a Rate Consultant, one or more independent consulting engineers or engineering firms (each a "Consulting Engineer"), accounting firms, investment bankers or corporations having special skill, knowledge and experience in analyzing the operations of water utility systems, preparing rate analyses, forecasting the loads and revenues of water utility systems, preparing feasibility reports respecting the financing of water utility systems and advising on the operation of water facilities, who shall be available to advise the Authority, upon request, and to make such investigations and determinations as may be necessary from time to time under the provisions of the Resolution. In addition to the other purposes for which a Consulting Engineer shall be retained and appointed pursuant to the Resolution, the Authority shall retain and Consulting Engineer, which may also serve as a Rate Consultant, and which shall not later than 180 days following the end of every fifth calendar year from the date of the last such examination and report make an examination of and report on the properties and operations of the Water Works System. Each such report shall be in sufficient detail to show whether Authority has satisfactorily performed and complied with the covenants, agreements and conditions set forth in the Resolution with respect to the management of the business of the Water Works System, the sufficiency of the amount being charged and collected for services under the requirements of the Resolution, the proper maintenance of the Water Works System, and the making of repairs, renewals, replacements, modifications, additions and betterments necessary or desirable to improve operating reliability or reduce costs and recommendations thereof. Such Consulting Engineer may rely upon audit reports rendered pursuant to Section 8.6. If the Authority in any material way shall have failed to perform or comply with such covenants, agreements and conditions, such report shall specify the details of such failure. A copy of each such report shall be filed with the Authority and the Trustee and sent to any Bondholder filing with the Trustee a written request for a copy thereof. On the filing of such report, the Authority shall undertake a review of the management of the business of the Water Works System and shall cause the prompt taking of such action as shall be necessary to fully perform and comply with the covenants, agreements and conditions as to which the report specified such failure of performance or compliance.

SECTION 8.6. Books of Account; Annual Audit. The Authority shall maintain and keep proper books of account relating to the Water Works System and in accordance with generally accepted accounting principles. Within one hundred twenty (120) days after the end of each Fiscal Year, the Authority shall cause such books of account to be audited by an independent certified public accountant. A copy of each audit report and financial statements prepared in conformity with generally accepted accounting principles shall be filed promptly with the Trustee and sent to any Bondholder filing with the Trustee a written request for a copy thereof.

SECTION 8.7. To Pay Bonds Punctually. The Authority shall duly and punctually pay, or cause to be paid, but only from the funds pledged therefor under the Resolution, the principal of, premium, if any, and interest on each and every Bond on the dates and at the places, and in the manner provided in the Bonds according to the true intent and meaning thereof, and the Authority shall faithfully do and perform and at all times fully observe and keep any and all of its covenants, undertakings, stipulations and provisions contained in the Bonds and in the Resolution.

SECTION 8.8. Payment of Taxes and Other Claims. The Authority shall from time to time duly pay and discharge, or cause to be paid and discharged, all taxes, assessments and other governmental charges, or payments in lieu thereof, lawfully imposed upon the properties of the Water Works System (or any part thereof) or upon the Available Revenues or income received therefrom when the same shall become due, as well as all lawful claims for labor, material and supplies, which, if not paid, might become a lien or charge upon said properties or any part thereof, or upon the Available Revenues derived from the ownership or operation thereof, or which might in any way impair the security of the Bonds, except any such assessments, charges or claims which the Authority shall in good faith contest as to validity.

SECTION 8.9. Extension of Payment of Bonds and Coupons. Except as otherwise provided in a Supplemental Resolution, the Authority will not directly or indirectly extend or assent to the extension of the maturity of any of the Bonds or the time of payment of any claims for interest by the purchase of such

Bonds, coupons or claims for interest or by any other arrangement and in case the maturity of any of the Bonds or the time for payment of any such claims for interest shall be extended, such Bonds or claims for interest shall not be entitled in case of any default under the Resolution to the benefit of the Resolution or to any payment out of any assets of the Authority or the funds (except funds held in trust for the payment of particular Bonds or claims for interest pursuant to the Resolution) held by the Paying Agents, except subject to the prior payment of the principal of all Bonds issued and outstanding the maturity of which has not been extended and of such portion of the accrued interest on the Bonds as shall not be represented by such extended claims for interest. Nothing herein shall be deemed to limit the right of the Authority to issue refunding Bonds as provided in the Resolution and such issuance shall not be deemed to constitute an extension of maturity of Bonds.

SECTION 8.10. To Make Economically Sound Improvements and Extensions. The Authority shall not expend any of the income, revenues, receipts, profits and other moneys derived by it from the ownership or operation of the Water Works System for any renewals, replacements, additions, betterments and improvements to, or extensions of, the Water Works System which are not economically sound or which will not properly and advantageously contribute to the conduct of the business of the Water Works System in an efficient and economical manner unless required to do so to permit the continued operation of the Water Works System or to preserve or protect the Water Works System, including the Authority's wells and water supply and the integrity thereof.

SECTION 8.11. Employees' Fidelity Bonds; Agencies to Indemnify the Authority. The Authority shall require employees of the Authority collecting or handling money in connection with the operation of the properties of the Water Works System, including those employees holding and administering the Revenue Fund and Operating Fund, to obtain fidelity bonds with a responsible surety company or companies as surety in reasonable amounts usually obtained by public agencies operating like properties, to protect the Authority from loss.

SECTION 8.12. Not to Furnish Free Service; Enforcement of Accounts Due. So long as any Bonds issued pursuant to the Resolution are outstanding and unpaid, the Authority will not furnish or supply water or any other commodity, asset, service or facility furnished by it, directly or indirectly, in connection with the ownership and operation of the Water Works System, free of charge to any person, firm or corporation, public or private, and the Authority will promptly enforce the

payment of any and all accounts owing to the Authority by reason of the ownership and operation of the Water Works System.

SECTION 8.13. Further Assurances. The Authority shall, at any and all times, insofar as it may be authorized so to do, pass, make, do, execute, acknowledge and deliver all and every such further resolutions, indentures, acts, deeds, conveyances, assignments, transfers and assurances as may be necessary or desirable for the better assuring, conveying, granting, assigning and confirming any and all of the rights, Available Revenues and other funds hereby pledged or charged with or assigned to the payment of the Bonds or intended so to be, or which the Authority may hereafter become bound to pledge or charge or assign.

SECTION 8.14. Protection of Security. The Authority is duly authorized under all applicable law to create and issue the Bonds and to adopt the Resolution and to pledge the Available Revenues and other moneys, securities and funds purported to be pledged by the Resolution in the manner and to the extent provided in the Resolution. The Available Revenues and other moneys, securities and funds so pledged are and will be free and clear of any pledge, lien, charge or encumbrance thereon which is prior to, or of equal rank with, the pledge created by the Resolution, except as otherwise expressly provided herein, and all action on the part of the Authority to that end has been and validly taken; provided, however, that nothing contained in this Resolution shall prohibit or prevent, or be deemed or construed to prohibit or prevent, the Authority from entering into or issuing evidences of indebtedness and any pledge securing the same as shall be, and as shall be expressed to be, subordinate in all respects to the provisions of this Resolution and the pledge created by this Resolution. The Bonds are and will be valid and legally enforceable obligations of the Authority in accordance with their terms and the terms of the The Authority shall at all times, to the extent Resolution. permitted by law, defend, preserve and protect the pledge of the Available Revenues other moneys, securities and funds pledged under the Resolution and each Supplemental Resolution and all the rights of the Bondholders hereto against all claims and demands of all persons whomsoever.

SECTION 8.15. Arbitrage Covenant. The Authority hereby covenants with the holders from time to time of the Bonds that (i) throughout the term of the Bonds and (ii) through the date that the final rebate, if any, must be made to the United States in accordance with Section 148 of the Code it will comply with the provisions of Sections 103 and 141 through 150 of the Code and all regulations proposed and promulgated thereunder that must be satisfied in order that interest on the Bonds shall be and continue to be excluded from gross income for federal income tax purposes under said Section 103.

SECTION 8.16. Not to Issue Additional Bonds under the Water Revenue Bond Resolution or the Improvement and Extension Resolution. So long as any Bonds are outstanding the Authority shall not issue any additional bonds under the Water Revenue Bond Resolution or the Improvement and Extension Resolution.

SECTION 8.17. Amendment of Water Revenue Bond Resolution and the Improvement and Extension Resolution. The Authority will not hereafter consent to or agree to any supplement, change, amendment or modification of the Water Revenue Bond Resolution or the Improvement and Extension Resolution which would adversely affect the rights or interests of the holders of the Bonds except as otherwise expressly provided herein.

SECTION 8.18. Tax Covenants. (A) The Authority shall not permit at any time or times any of the proceeds of the Bonds or any other funds of the Authority to be used directly or indirectly to acquire any securities or obligations the acquisition of which would cause any Bond to be an "arbitrage bond" as defined in Section 148 of the Code, or any successor provision of law (the "Code").

- (B) The Authority shall not permit at any time or times any proceeds of any Series of Bonds or any other funds of the Authority to be used, directly or indirectly, in a manner which would result in the exclusion of any Bond from the treatment afforded by Section 103(a) of the Code.
- (C) Anything contained in subsections (A) and (B) above to the contrary notwithstanding, the Authority reserves the right to issue one or more Series of Bonds the interest on which is includable in the gross income of the recipient thereof for Federal income tax purposes, provided that the issuance of such Series does not adversely affect the Federal tax exemption of the interest on any other Series of Bonds or any subordinate obligations.

ARTICLE IX

RESOLUTION A CONTRACT; ENFORCEMENT OF SAME; DEFAULTS; REMEDIES

SECTION 9.1. Resolution to Constitute a Contract With Bondholders; Enforcement of Same. So long as any of the Bonds are outstanding, each of the obligations, duties, limitations and restraints imposed upon the Authority by the Resolution shall be deemed to be a covenant between the Authority and every holder of said Bonds. The Resolution and every provision and covenant hereof shall constitute a contract with every holder from time to time of the Bonds and, whether or not an Event of Default (as defined in Section 9.2 hereof) shall then exist, shall be enforceable by any owner or holder of a Bond or of any of the coupons of any of the Bonds, by mandamus or other appropriate action or proceeding at law or in equity in any court of competent jurisdiction, including, without limiting the generality of the foregoing, the bringing of a suit or suits to compel compliance with the provisions of the Resolution.

Without limiting the effect of the preceding paragraph, the Trustee, without the happening of an Event of Default (as defined in Section 9.2 hereof), may, and at the request of the holders of not less than a majority in principal amount of the Bonds then outstanding and upon being furnished with reasonable security and indemnity shall, take such steps and institute such suits, actions or proceedings in its own name, or as Trustee, or in the name of the Authority, all as the Trustee may deem appropriate, for the protection and enforcement of the rights of the holders of Bonds.

The Trustee may file such proofs of claims and other papers or documents as may be necessary or advisable in order to have claims of the Trustee and the holders of the Bonds allowed in any judicial proceedings relating to the Water Works System or to the creditors of the Authority with respect to the Water Works System.

SECTION 9.2. Events of Default. Each of the following events is hereby defined as and declared to be and shall constitute an "Event of Default":

(a) if payment of the principal of or premium, if any, on any Bond shall not punctually be made when due and payable, whether at the stated maturity thereof or upon proceedings for the redemption thereof (whether by voluntary redemption or a mandatory sinking fund redemption or otherwise);

- (b) if payment of the interest on any Bond shall not punctually be made when due;
- (c) if the provisions of any Supplemental Resolution with respect to mandatory Sinking Fund Installment payments or the redemption of Term Bonds therefrom, as the case may be, shall not punctually be complied with at the time and in the manner specified in such Supplemental Resolution;
- (d) if the Authority shall fail to duly and punctually perform or observe any other of the covenants, agreements or conditions contained in the Resolution or in the Bonds, on the part of the Authority to be performed, and such failure shall continue for ninety (90) days after written notice thereof from the Trustee or the holders of not less than twenty-five percent (25%) of the Bonds then outstanding; provided that, if such failure shall be such that it cannot be corrected within such ninety (90) day period, it shall not constitute an Event of Default if corrective action is instituted within such period and diligently pursued until the failure is corrected;
- (e) if an order, judgment, or decree shall be entered by any court of competent jurisdiction, with the consent or acquiescence of the Authority, or if such order, judgment or decree, having been entered without the consent or acquiescence of the Authority, shall not be vacated or set aside or discharged or stayed (or in case custody or control is assumed by said order, such custody or control shall not otherwise be terminated) within ninety (90) days after the entry thereof, and if appealed, shall not thereafter be vacated or discharged: (i) appointing a receiver, Trustee or liquidator for the Authority or for the Water Works System or any substantial part of the Water Works System; or (ii) assuming custody or control of the Water Works System or any substantial part thereof under the provisions of any law for the relief or aid of debtors; or (iii) approving a petition filed against the Authority under the provisions of Chapter IX of an act to establish a uniform Law on the Subject of Bankruptcies, 11 USC 901-946, asamended "Bankruptcy Act"); or (iv) granting relief to the Authority under any amendment to said Bankruptcy Act, or under any other applicable Bankruptcy Act, which give relief substantially similar to that afforded by said Chapter IX; and

(f) if the Authority shall (i) admit in writing its inability to pay its debts generally as they become due; or (ii) file a petition in bankruptcy or seeking a (iii) composition of indebtedness; or make assignment for the benefit of its creditors; or (iv) file a petition or any answer seeking relief under the Bankruptcy Act referred to in the preceding clause, or amendment thereto, or under any other any applicable bankruptcy act which shall save relief substantially the same as that afforded by Chapter IX of said act; or (v) consent to the appointment of a receiver of the whole or any substantial part of the Water Works System; or (vi) consent to the assumption by any court of competent jurisdiction under the provisions of any other law for the relief or aid of debtors of custody or control of the Authority or of the whole or any substantial part of the Water Works System.

Upon the occurrence of an Event of Default, and in each and every such case, so long as such Event of Default shall not have been remedied, unless the principal of all the Bonds shall have already become due and payable, the Trustee may, and upon the written request of the holders of not less than 25% of all Series of Bonds then Outstanding shall, proceed to enforce by such proceedings at law or in equity as it deems most effectual the rights of Bondholders, and either the Trustee (by notice in writing to the Authority), or the holders of not less than 25% in principal amount of the Bonds Outstanding (by notice in writing to the Authority and the Trustee), may declare the principal of all the Bonds then Outstanding, and the interest accrued thereon, to be due and payable immediately, and upon any such declaration the same shall become and be immediately due and payable. The Trustee shall not be obligated to notify the Authority of its intent to make such a declaration prior to making such declaration. The right of the Trustee or of the holders of not less than 25% in principal amount of the Bonds to make any such declaration, however, shall be subject to the condition that if, at any time after such declaration, but before the Bonds shall have matured by their terms, all overdue installments of interest upon the Bonds, together with interest on such overdue installments of interest to the extent permitted by law and the reasonable and proper charges, expenses and liabilities of the Trustee, and all other sums then payable by the Authority under the Resolution (except the principal of, and interest accrued since the next preceding interest date on, the Bonds due and payable solely by virtue of such declaration) shall either be paid by or for the account of the Authority or provision satisfactory to the Trustee shall be made for such or under the payment, and all defaults under the Bonds

Resolution (other than the payment of principal and interest due and payable solely by reason of such declaration) shall either be cured or provision shall be made therefor, then and in every such case the holders of a majority in principal amount of the Bonds Outstanding, by written notice to the Authority and to the Trustee, may rescind such declaration and annul such default in its entirety, or, if the Trustee shall have acted itself, and if there shall not have been theretofore delivered to the Trustee written direction to the contrary by the holders of a majority in principal amount of the Bonds then Outstanding, then any such declaration shall ipso facto be deemed to be annulled, but no such recision and annulment shall extend to or affect any subsequent default or impair or exhaust any resulting right or power.

SECTION 9.3. Notice to Bondholders of an Event of Default. The Trustee, within ninety (90) days after the occurrence of an Event of Default (as defined in Section 9.2 hereof), shall give to the Bondholders, in the manner provided in Section 14.4 hereof, notice of all defaults known to the Trustee, unless such defaults shall have been cured before the giving of such notice (the term "default" or "defaults" for the purpose of this Section being defined to be any Event or Events of Default specified in said Section 9.2; provided that, except in the case of an Event of Default defined in any of subparagraphs (a) through (c) of Section 9.2 hereof, the Trustee shall be protected in withholding such notice if and so long as the board of directors, the executive committee, or a trust committee of directors or a trust committee of other responsible officers of the Trustee in good faith determines that the withholding of such notice is in the interests of the Bondholders).

SECTION 9.4. Inspection of Books and Records; the Authority to Account as Trustee for Express Trust. The Authority covenants that if an Event of Default (as defined in Section 9.2 hereof) shall have happened and shall not have been remedied, the books of record and account of the Authority relating to the Water Works System and all other records relating thereto shall at all times be subject to the inspection and use of the Trustee and any persons holding at least twenty-five percent (25%) of the principal amount of Bonds outstanding and of their respective agents and attorneys or of any committee therefor.

The Authority covenants that if an Event of Default (as defined in Section 9.2 hereof) shall have happened and shall not have been remedied, the Authority will continue to account, as a trustee of an express trust, for all Available Revenues and other moneys, securities and funds pledged under the Resolution.

SECTION 9.5. Payment of Funds to the Trustee; Application of Available Revenues in an Event of Default. The Authority covenants that if an Event of Default shall have happened and shall not have been remedied, upon demand of the Trustee, the Authority shall pay over to the Trustee (i) forthwith, all moneys, securities and funds then held by the Authority and pledged under the Resolution, and (ii) as promptly as practicable after receipt thereof, all Available Revenues.

During the continuance of an Event of Default as defined in items (a) through (c) of Section 9.2 hereof or of any other Event of Default as defined in Section 9.2 resulting in an Event of Default as defined in items (a) through (c) of Section 9.2 hereof, the Available Revenues received by the Trustee or by a Receiver pursuant to the provisions of the first paragraph of Section 9.6 hereof as the result of the taking of possession of the business and properties of the Water Works System, shall be applied by the Trustee firstly to the payment of all necessary and proper Operation and Maintenance Expenses of the Water Works System and all other proper disbursements or liabilities made or incurred by the Trustee; secondly, to the then due and overdue payments into the Bond Fund, including the making up of deficiencies therein; and lastly, for any lawful purpose in connection with the Water Works System.

In the event that at any time the funds held by the Trustee pursuant to the preceding paragraph shall be insufficient for the payment of the principal of, premium, if any, and interest then due on the Bonds, such funds (other than funds held for the payment or redemption of particular Bonds or coupons) and all Available Revenues of the Authority and other of its moneys received or collected for the benefit or for the account of holders of the Bonds by the Trustee shall be applied as follows:

(1) Unless the principal of all of the Bonds shall have become due and payable,

<u>First</u>, to the payment of all necessary and proper operating expenses of the Water Works System and all other proper disbursements or liabilities made or incurred by the Trustee;

Second, to the payment to the persons entitled thereto of all installments of interest then due (including any interest on overdue principal) in the order of the maturity of such installments, earliest maturities first, and if the amounts available shall not be sufficient to pay in full any installment or installments of

interest maturing on the same date, then to the payment thereof ratably, according to the amounts due thereon, to the persons entitled thereto, without any discrimination or preference; and

Third, to the payment to the persons entitled thereto of the principal and premium, if any, due and unpaid upon the Bonds at the time of such payment without preference or priority of any Bond over any other Bonds, and if the amounts available therefor shall not be sufficient to pay in full any principal and premium, if any, due and unpaid upon the Bonds at such time, then to the payment thereof, ratably, according to the amounts due respectively for principal and redemption premium, without any discrimination or preference.

(2) If the principal of all of the Bonds shall have become due and payable,

First, to the payment of all necessary and proper operating expenses of the Water Works System and all other proper disbursements or liabilities made or incurred by the Trustee; and

Second, to the payment of the principal and interest then due and unpaid upon the Bonds without preference or priority of principal over interest or of interest over principal, or of any installment of interest over any other installment of interest, or of any Bond over any other Bonds, ratably, according to the amounts due respectively for principal and interest, to the persons entitled thereto without any discrimination or preference.

Whenever moneys are to be applied pursuant to the foregoing paragraphs, such moneys shall be applied by the Trustee, at such times, and from time to time, as it in its sole discretion shall determine, having due regard to the amount of such moneys available for application and the likelihood of additional moneys becoming available for such application in the future.

If and whenever all overdue installments of interest on all Bonds, together with the reasonable and proper charges, expenses, and liabilities of the holders of the Bonds, their respective agents and attorneys, and all other sums payable by the Authority under the Resolution including the principal of and premium, if any, on all Bonds which shall then be payable,

shall either be paid in full by or for the account of the Authority or provision satisfactory to the Trustee shall be made for such payment, and all defaults under the Resolution or the Bonds shall be made good and secured to the satisfaction of the Trustee or provision deemed by the Trustee to be adequate therefor, the Trustee shall pay over to the Authority all of its moneys, securities, funds and Available Revenues then remaining unexpended in the hands of the Trustee (except moneys, securities, funds or Available Revenues deposited or pledged, or required by the terms of the Resolution to be deposited or pledged, with the Trustee), control of the business and possession of the property of the Authority shall be restored to the Authority, and thereupon the Authority and the Trustee shall be restored to their former positions and rights under the Resolution, and all Available Revenues shall thereafter be applied as provided in Article VI. No such payment over to the Authority by the Trustee or resumption of this application of Revenues as provided in Article VI, shall extend to or affect any subsequent default under the Resolution or impair any right consequent thereon.

SECTION 9.6. Appointment of a Receiver. Upon the occurrence of an Event of Default (as defined in Section 9.2 hereof) and at any time while such Event of Default shall be continuing, the Trustee or the holders of twenty-five percent (25%) or more in principal amount of the Bonds then outstanding shall, but only if and to the extent then permitted by law, the Water Revenue Bond Resolution, the Improvement and Extension Resolution and the Water Works System Revenue Bond Resolution, be entitled to the appointment of a receiver to take possession of the Water Works System, to manage the operation and maintenance thereof, and to receive and apply the Revenues in accordance with the terms of the Resolution.

Notwithstanding the appointment of any receiver, the Trustee shall be entitled to retain possession and control of and to collect and receive income from any moneys, securities, funds and Available Revenues deposited or pledged with it under the Resolution or agreed or provided to be delivered to or deposited or pledged with it under the Resolution.

SECTION 9.7. Certain Powers and Rights of Trustee. If an Event of Default shall happen and shall not have been remedied then, and in every such case, the Trustee, either in its own name or as Trustee of an express trust, or as attorney-in-fact for the holders of the Bonds, or in any one or more of such capacities, by its agents and attorneys, shall be entitled and empowered to proceed forthwith to institute such suits, actions and proceedings at law or in equity for the collection of all sums due in connection with the Bonds and to protect and enforce its rights and the rights of the holders of

the Bonds under the Resolution for the specific performance of any covenant herein contained, or in aid of the execution of any power herein granted, or for an accounting against the Authority as Trustee of any express trust, or in the enforcement of any other legal or equitable right as the Trustee, being advised by counsel, shall deem most effectual to enforce any of its rights, or to perform any of its duties under the Resolution. Trustee shall be entitled and empowered either in its own name or as a Trustee of an express trust, or as attorney-in-fact for the holders of the Bonds or in any one or more of such capacities, to file such proof of debt, amendment of proof of debt, claim, petition or other document as may be necessary or advisable in order to have the claims of the Trustee and of the holders of the Bonds allowed in any equity, receivership, insolvency, bankruptcy, liquidation, readjustment, reorganization or other similar proceedings. For this purpose the Trustee is hereby irrevocably appointed the true and lawful attorney-in-fact of the respective holders of the Bonds (and the successive holders of the Bonds by taking and holding the same shall be conclusively deemed to have so appointed the Trustee) with authority to make and file in the respective name of the holders of the Bonds any such proof of debt, amendment of proof claim, petition or other document in any debt, proceedings, and to receive payment of any sums becoming distributable on account thereof, and to execute any such other papers and documents and to do and perform any and all acts and things for and on behalf of the holders of the Bonds and of the coupons appurtenant thereto as may be necessary or advisable in the opinion of the Trustee in order to have the respective claims of the Trustee and the holders of the Bonds allowed in any such proceeding and to receive payment of and on account of such claims; provided, however, that nothing contained herein shall be deemed to give the Trustee any right to accept or consent to any plan of reorganization or compromise or otherwise take any action of any character in any such proceedings to receive or change in any way any right of any holder of Bonds or coupons appurtenant thereto. The Trustee shall be entitled to seek the direction of the Bondholders prior to taking any action not expressly required or authorized hereunder and shall be entitled to act in accordance with such directions.

All rights of action under the Resolution may be enforced by the Trustee without the possession of any of the Bonds or the production thereof on the trial or other proceedings.

SECTION 9.8. <u>Bondholders</u> <u>May</u> <u>Direct</u> <u>Proceedings</u>. Anything contained in the Resolution to the contrary notwithstanding, the holders of not less than a majority in principal amount of the Bonds at the time outstanding shall be

authorized and empowered (1) to direct the time, method, and place of conducting any proceeding for any remedy available to the holders of the Bonds or to the Trustee therefor, or of exercising any trust or power conferred upon the Trustee hereunder; or (2) on behalf of the holders of the Bonds then outstanding, to consent to the waiver of any Event of Default or its consequences, and the Trustee shall waive any Event of Default and its consequences upon the written request of the holders of such majority. No waiver or rescission shall extend to any subsequent or other default, or impair any right consequent thereon.

SECTION 9.9. Suits by Individual Bondholders. Except as otherwise specifically provided in this Section, no holder of any of the Bonds shall have any right to institute any suit, action or proceeding at law or in equity for the enforcement of any provision of the Resolution or the execution of any trust under the Resolution or for any remedy under the Resolution, unless such holder shall have previously given to the Trustee written notice of the happening of an Event of Default (as defined in Section 9.2 hereof) and the holders of at least twenty-five percent (25%) in principal amount of the Bonds then outstanding shall have filed a written request with the Trustee and shall have offered it reasonable opportunity either to exercise the power granted under the Resolution or to institute such action, suit or proceeding in its own name, and unless such Bondholder shall have offered to the Trustee adequate security and indemnity against the costs, expenses and liabilities to be incurred therein or thereby, and the Trustee for a period of sixty (60) days after the receipt by it of such notice, request and offer of indemnity shall have refused to comply with such request; it being understood and intended that, except as above provided, no one or more holders of Bonds shall have any right in any manner whatever by his or their action to affect, disturb or prejudice the pledge created by the Resolution, or to enforce any right under the Resolution, except in compliance with the conditions precedent to the initiation of such litigation as herein provided, and that all proceedings at law or in equity to enforce any provision of the Resolution shall be instituted, had and maintained in the manner provided in the Resolution and for the equal benefit of all holders of the outstanding Bonds.

SECTION 9.10. Remedies Not Exclusive. No remedy by the terms of the Resolution conferred upon or reserved to the holders of the Bonds is intended to be exclusive of any other remedy, but each and every such remedy shall be cumulative and shall be in addition to any other remedy given hereunder to the holders of the Bonds or now or hereafter existing at law or in equity or by statute.

SECTION 9.11. Waivers of Default. No delay or omission of any holder of Bonds to exercise any right or power arising upon the occurrence of a default hereunder, including an Event of Default (as defined in Section 9.2 hereof), shall impair any right or power or shall be construed to be a waiver of any such default or to be an acquiescence therein. Every power and remedy given by this Article to the Trustee or to the holders of Bonds may be exercised from time to time and as often as may be deemed expedient by such Trustee or by such holders.

SECTION 9.12. Waiver of Extension Laws. The Authority will not at any time insist upon or plead, or in any manner whatsoever claim or take the benefit or advantage of, any stay or extension law now or at any time hereafter in force which may affect the covenants and agreements contained in the Resolution, or in the Bonds, but all benefit or advantage of any such law or laws is hereby expressly waived by the Authority.

Section 9.13. Trustee to Exercise Powers of Statutory Trustee. The Trustee shall be and hereby is vested with all of the rights, powers and duties of a Trustee appointed by Bondholders pursuant to section 1066 of the Act and the right of the Bondholders to appoint a Trustee pursuant to section 1066 of the Act is hereby abrogated in accordance with the provisions of section 1056(3)(j) of the Act. To the extent the provisions of such section 1066 are inconsistent or conflict with the provisions of the Resolution, the provisions of the Resolution shall control.

SECTION 9.14. Abandonment of Proceedings; Adverse Determination. In case the Trustee or the holders of the Bonds (or a committee therefor) shall have proceeded to enforce any right under the Resolution and such proceedings shall have been discontinued or abandoned for any reason, or shall have been determined adversely to the Trustee or to holders of the Bonds (or such committee therefor), then and in every such case the Authority, the Trustee and the holders of the Bonds shall be restored to their former positions and rights hereunder, and all rights, remedies and powers of the Trustee and the holders of the Bonds shall continue as if no such proceedings had been taken.

ARTICLE X

AMENDING AND SUPPLEMENTING OF RESOLUTION

SECTION 10.1. Amending and Supplementing of Resolution Without Consent of Holders of Bonds. The Authority, from time to time and at any time and without the consent or concurrence of any holder of any Bond, may adopt a resolution amendatory hereof or supplemental hereto (herein defined and referred to as a "Supplemental Resolution"), (i) for the purpose of providing for the issuance of Bonds pursuant to the provisions of Article III hereof; or (ii) if the provisions of such Supplemental Resolution shall not adversely affect the rights of the holders of the Bonds then outstanding, for any one or more of the following purposes:

- (1) to make any changes or corrections in the Resolution as to which the Authority shall have been advised by counsel that the same are verbal corrections or changes or are required for the purpose of curing or correcting any ambiguity or defective or inconsistent provision or omission or mistake or manifest error contained in the Resolution, or to insert in the Resolution such provisions clarifying matters or questions arising under the Resolution as are necessary or desirable;
- (2) to add additional covenants and agreements of the Authority for the purpose of further securing the payment of the Bonds;
- (3) to surrender any right, power or privilege reserved to or conferred upon the Authority by the terms of the Resolution;
- (4) to confirm as further assurance any lien, pledge or charge, or the subjection to any lien, pledge, or charge, created or to be created by the provisions of the Resolution; and
- (5) to grant or to confer upon the holders of the Bonds any additional rights, remedies, powers, authority or security that lawfully may be granted to or conferred upon them, or to grant to or to confer upon the Trustee for the benefit of the holders of the Bonds any additional rights, duties, remedies, powers, authority or security or to provide for Additional Security; and

(6) to make any other change which the Authority deems necessary or desirable.

Except for Supplemental Resolutions providing for the issuance of Bonds pursuant hereto, the Authority shall not adopt any Supplemental Resolution authorized by the foregoing provisions of this Section unless in the opinion of counsel (upon which opinion the Trustee, subject to the provisions of Section 7.2 hereof, shall be fully protected in relying) (which opinion may be combined with the opinion required by Section 10.4 hereof) the adoption of such Supplemental Resolution is permitted by the foregoing provisions of this Section and the provisions of such Supplemental Resolution do not adversely affect the rights of the holders of the Bonds then Outstanding. Any such Supplemental Resolution shall become effective in accordance with its terms upon the filing with the Trustee of a certified copy thereof and the opinion of counsel referred to in the immediately preceding sentence.

SECTION 10.2. Amending and Supplementing of Resolution With Consent of Holders of Bonds. With the consent of the of not less than a majority of the Bonds outstanding, the Authority from time to time and at any time may adopt a resolution amendatory hereof or supplemental hereto (herein also defined and referred to as a "Supplemental Resolution") for the purpose of adding any provisions to, or changing in any manner or eliminating any of the provisions of, Resolution, or modifying or amending the rights and obligations of the Authority hereunder, or modifying or amending in any manner the rights of the holders of the Bonds then outstanding; provided, however, that, without the consent of the holder of each such Bond which would be affected thereby, no Supplemental Resolution amending or supplementing the provisions hereof shall: (1) change the fixed maturity date for the payment of the principal of any Bond or the dates for the payment of interest thereon or the terms of the redemption thereof, or reduce the principal amount of any Bond or the rate of interest thereon or the redemption price (or the redemption premium) payable upon the redemption or prepayment thereof; or (2) reduce the aforesaid percentage of Bonds, the holders of which are required to consent to any Supplemental Resolution amending or supplementing the provisions of the Resolution; or (3) give to any Bond or Bonds any preference over any other Bond or Bonds secured hereby; or (4) authorize the creation of any pledge of the Available Revenues and other moneys pledged hereunder, prior, superior or equal to the pledge of and lien and charge thereon created herein for the payment of the Bonds except to the extent provided in Article III hereof; or (5) deprive any holder of the Bonds in any material respect of the security afforded by the Resolution; provided further, however,

that without the specific consents of the holders of not less than a majority in principal amount of the Term Bonds then Outstanding and affected thereby, no Supplemental Resolution amending or supplementing the provisions of the Resolution shall (a) change the amount of any Sinking Fund Installments for the retirement of Term Bonds or the due dates of such installments or the terms for the purchase or redemption thereof from such installments, or (b) reduce the aforesaid percentage of Term Bonds, the holders of which are required to consent to any such Supplemental Resolution. (Nothing in this paragraph contained, however, shall be construed as making necessary the approval of the holders of the Bonds of the adoption of any Supplemental Resolution authorized by the provisions of Section 10.1 hereof.)

The proof of the giving of any consent required by this Section and of the holding of Bonds for the purpose of giving consents shall be made in accordance with the provisions of Article XI hereof. It shall not be necessary that the consents of the holders of the Bonds approve the particular form of wording of the proposed amendment or supplement or of the Supplemental Resolution affecting such amendment or supplement, but it shall be sufficient if such consents approve the substance of the proposed amendment or supplement. After the holders of the required percentage of Bonds shall have filed their consents to the amending or supplementing hereof pursuant to this Section, the Authority shall publish at least once a notice of such amending or supplementing hereof, in The Bond Buyer, a financial journal published in New York, New York, or in lieu of publication in The Bond Buyer, in some other newspaper specializing in financial matters printed in the English language and customarily published on each business day and of general circulation in the City of New York, New York, or in a newspaper of general circulation printed in the English language published in Erie County, New York, and shall mail a copy of such notice, postage prepaid to each registered owner of Bonds then outstanding, at his address, if any, appearing upon the registry books, and to the Trustee, but failure to mail copies of said notice to any of said owners or holders shall not affect the validity of the Supplemental Resolution effecting such amendments or supplements or the consent thereto. (Nothing in this paragraph contained, however, shall be construed as requiring the giving of notice of any amending or supplementing of the Resolution authorized by Section 10.1 hereof.) A record, consisting of the papers required by this Section, shall be filed with the Trustee, and shall be proof of the matters therein stated until the contrary is proved. No action or proceedings to set aside or invalidate such Supplemental Resolution or any of the proceedings for its adoption shall be instituted or maintained unless such action or proceeding is commenced within sixty (60) days after the publication of the notice required by this paragraph.

SECTION 10.3. Notation Upon Bonds; New Bonds Issued Upon Amendments. Bonds delivered after the effective date of any action taken as provided in this Article may bear a notation as to such action, by endorsement or otherwise and in form approved by the Authority. In that case, upon demand of the holder of any Bond outstanding at such effective date and the presentation of such holder's Bond for the purpose at the principal office of the Trustee or other Paying Agent, transfer agent or Registrar hereunder for such Bond and at additional offices, if any, as the Authority may select and designate for that purpose, a suitable notation shall be made on such Bond. If the Authority shall so determine, new Bonds, so modified as in the opinion of the Authority to conform to the amendments or supplements made pursuant to this Article, shall be prepared, executed and delivered, and upon demand of the holder of any Bond then outstanding shall be exchanged without cost to such holder, for Bonds then outstanding, upon surrender of such outstanding Bonds.

SECTION 10.4. Effectiveness of Supplemental Resolution. Upon the adoption (pursuant to this Article and applicable law) by the Authority of any Supplemental Resolution amending or supplementing the provisions of the Resolution and the delivery to the Trustee of an opinion of counsel that such Supplemental Resolution is in due form and has been duly adopted in accordance with the provisions hereof and applicable law and that the provisions thereof are valid and binding upon the Authority (upon which opinion the Trustee, subject to the provisions of Section 7.2 hereof, shall be fully protected in relying), or upon such later date as may be specified in such Supplemental Resolution, (i) the Resolution and the Bonds shall be modified and amended in accordance with such Supplemental Resolution, (ii) the respective rights, limitations of rights, obligations, duties and immunities under the Resolution of the Authority, the Trustee or any Paying Agent and the holders of the Bonds shall thereafter be determined, exercised and enforced subject in all respects Resolution under modifications and amendments; and (iii) all of the terms and conditions of any such Supplemental Resolution shall be a part of the terms and conditions of the Bonds and of the Resolution for any and all purposes.

SECTION 10.5. Supplemental Resolution Affecting Trustee Hereunder and Paying Agents. No Supplemental Resolution changing, amending or modifying any of the rights, duties and obligations of the Trustee or any Paying Agent may be adopted by the Authority or be consented to by the holders of the Bonds without written consent of the Trustee or such Paying Agent.

ARTICLE XI

EXECUTION OF INSTRUMENTS BY HOLDERS OF BONDS; OWNERSHIP OF BONDS; MEETINGS OF HOLDERS OF BONDS; EXCLUSION OF BONDS OWNED BY THE AUTHORITY

SECTION 11.1. Execution of Requests, Directions and Consents and Other Instruments and Proof of Same; Ownership of Bonds and Proof of Same. Any request, direction, consent or other instrument required by the Resolution to be signed or executed by holders of Bonds may be signed or executed by such holders in person or by an agent or agents duly appointed in writing, and may be in any number of concurrent writings of substantially similar tenor. Proof of the execution of any such request, direction, consent or other instrument or of a writing appointing any such agent, and of the holding or ownership of Bonds, shall be sufficient for any purpose of the Resolution and shall be conclusive in favor of the Authority, the Trustee and any Paying Agent hereunder with regard to any action taken by them under such request, direction, consent or other instrument or of a writing appointing any such agent, if made in the following manner: the fact and date of the execution by any person of any such request, direction, consent or other instrument in writing may be proved by the certificate of any notary public or other officer in any jurisdiction who, by the laws thereof, has power to take acknowledgments of deeds to be recorded within such jurisdiction, to the effect that the person signing such request, direction, consent or other instrument or writing acknowledged to him the execution thereof, or by an affidavit of a witness to such execution.

Nothing contained in this Section shall be construed as limiting the Authority or the Trustee, in their separate discretion, to the proof above specified, it being intended that the Authority and the Trustee in their separate discretion may accept any other evidence of the matters herein stated which to them may seem sufficient. Any request, direction, consent or vote of the holder of any Bond shall bind and be conclusive upon the holder of such Bond giving such request, direction or consent or casting such vote and upon every future holder of the same Bond in respect of anything done or suffered to be done by the Authority or the Trustee or otherwise, or by the holders of other Bonds, in pursuance of such request, direction, consent or vote, and whether or not such future holder has knowledge of or information as to such request, direction, consent or vote; provided that any request, direction, consent or vote of the holder of a Bond required by any of the provisions hereof may be revoked by the holder giving such request, direction, consent or vote or by a subsequent holder, if such revocation in writing is

filed with the Authority and the Trustee prior to the time when the request, direction, consent or vote of the percentage of the holders of the Bonds required by such provision shall have been given and action taken by the Authority or the Trustee or otherwise, or by the holders of other Bonds, under authority of such request, direction, consent or vote.

Anything in the Resolution to the contrary notwithstanding, the Authority, the Trustee and any Paying Agent hereunder, may deem and treat the person in whose name any Bond shall at the time be registered on the books of registry kept for that purpose pursuant to the Resolution, as the absolute owner of such Bond or coupon for all purposes whatsoever, including payment thereof, and neither the Authority, the Trustee nor any Paying Agent hereunder shall be affected by any notice to the contrary. The payment of or on account of principal to or upon the order of the person in whose name a Bond shall at the time be registered on said books of registry and the payment of interest to or upon the order of any person in whose name any Bond in fully registered form shall at the time be registered on said books of registry, shall be valid and effectual fully to satisfy and discharge all liability hereunder, upon such coupons or upon such Bond to the extent of the sum or sums so paid.

SECTION 11.2. Meetings of Holders of Bonds. Authority, the Trustee or the holders of not less than twenty-five percent (25%) in principal amount of the Bonds then outstanding may at any time call a meeting of the holders of the Bonds for the purpose of the consenting to, the approving, the requesting or the directing, by the holders of the Bonds, of any action required to be consented to or approved by them hereunder or which they may request or direct hereunder to be taken, or for the making by the holders of the Bonds of any appointments they may make hereunder, or for the purpose of taking any other action which the holders of the Bonds may take hereunder, or for any other purpose concerning the payment, security and enforcement of the Bonds. Every such meeting shall be held at such place, in the City of New York, State of New York, or in Erie County, New York, as may be specified in the notice calling such meeting. Written notice of such meeting, stating the place and time of the meeting and in general terms the business to be submitted, shall be mailed to the holders of Bonds whose names and addresses then appear upon the books of registry hereof, by the Authority, the Trustee or the holders of the Bonds calling such meeting, not less than thirty (30) nor more than sixty (60) days before such meeting, and shall be published at least once on any day of the week, in the same newspapers in which notices of redemption are required to be published by Article V hereof, the date of such publication to be not less than thirty (30)

days nor more than sixty (60) days preceding the meeting; provided, however, that the mailing of such notice shall in no case be a condition precedent to the validity of any action taken at any such meeting. Any meeting of the holders of the Bonds shall, however, be valid without notice if the holders of all Bonds then outstanding are present in person or by proxy or if notice is waived before or within thirty (30) days after the meeting by those not so present.

Attendance and voting by holders of Bonds at meetings thereof may be in person or by proxy. Bondholders may, by an instrument in writing under their hands, appoint any person or persons with full power of substitution, as their proxy to attend and vote at any meeting for them.

In order that holders of Bonds payable to bearer and their proxies may attend and vote without producing their Bonds, the Trustee may make and from time to time vary such regulations as it shall think proper for the deposit of Bonds with or the exhibition of Bonds to any bank, banker or trust company, wherever situated, and for the issue by such bank, banker or trust company to the person depositing with or exhibiting such Bonds to them, of certificates in form approved by Such certificates shall constitute Authority. ownership entitling the holders thereof or their proxies to be present and vote at any such meeting in the same way as if the persons so present and voting, either personally or by proxy, were the actual bearers of the Bonds in respect of which such certificates shall have been issued. Any regulations so made by the Trustee shall be binding and effective and copies of such regulations shall be kept on file by the Trustee and Paying. Agents.

Persons named by the Trustee, or elected by the holders of a majority in principal amount of the Bonds represented at the meeting in person or by proxy in the event the Trustee is not represented at such meeting, shall act as temporary Chairman and temporary Secretary of any meeting of holders of Bonds. A permanent Chairman and a permanent Secretary of such meeting shall be elected by the holders of a majority in principal amount of the Bonds represented at such meeting in person or by proxy. The Permanent Chairman of the meeting shall appoint two (2) Inspectors of Votes who shall count all votes cast at such meeting, except votes on the election of Chairman and Secretary as aforesaid, and who shall make and file with the Secretary of the meeting, the Authority and the Trustee their verified report of all such votes cast at the meeting.

The holders of the same principal amount of the Bonds required by other provisions hereof to consent to, approve,

request, or direct any action proposed to be taken at a meeting of holders of the Bonds, or required by other provisions hereof to make appointments proposed to be made at such meeting, or required by other provisions hereof to take any other action proposed to be taken at such meeting, must be present at such meeting in person or by proxy in order to constitute a quorum for the transaction of such business, less than a quorum, however, having power to adjourn the meeting from time to time without other notice of such adjournment than the announcement thereof at the meeting; provided, however, that, if such meeting is adjourned by less than a quorum for more than ten (10) days, notice of such adjournment shall be published by the Authority at least five (5) days prior to the adjournment date of the meeting in the same newspapers in which notices of redemption are required to be published by Article V hereof.

Any registered owner of a Bond and any holders of a certificate provided for in this Section shall be entitled in person or by proxy to attend the vote at such meeting as holder of the Bond or Bonds registered or certified in his name without producing such Bond or Bonds (unless the Bond or Bonds described in any such certificate shall be registered in the name of or be produced by some other person at such meeting). Such persons and their proxies shall, if required, produce such proof of personal identity as shall be satisfactory to the Secretary of the meeting. All other persons seeking to attend or vote in such meeting must produce the Bond or Bonds claimed to be owned or represented at such meeting.

All proxies presented at such meeting shall be delivered to the Inspectors of Votes and filed with the Secretary of the meeting. The right of a proxy for a holder of a Bond to attend the meeting and act and vote thereat may be proved (subject to the Trustee's right to require additional proof) by a written proxy executed by such holder as aforesaid.

Officers or nominees of the Authority and officers or nominees of the Trustee may be present or represented at any meeting of the holders of the Bonds and take part therein, but shall not be entitled to vote thereat, except for such officers or nominees who are holders of Bonds or proxies for holders of Bonds (including the Trustee).

The vote at any such meeting of the holder of any Bond, or such holder's proxy, entitled to vote thereat shall be binding upon such holder and upon every subsequent holder of such Bond (whether or not such subsequent holder has notice thereof).

Any Supplemental Resolution providing for the issuance of Bonds in uncertificated form may contain appropriate provisions supplemental to those in this Section governing the participation of the owners of such Bonds in any meetings held pursuant to this Section.

SECTION 11.3. Exclusion of Bonds Held by or for the Authority and of Bonds No Longer Deemed Outstanding Hereunder. In determining whether the holders of the requisite aggregate principal amount of Bonds have concurred in any demand, request, direction, consent, vote or waiver under the Resolution, any Bonds which are owned by or on behalf of or for the account of the Authority and, except for the purpose of Section 13.1 hereof, any Bonds which are deemed no longer outstanding hereunder as provided in said Section 13.1, shall be disregarded and not included for the purpose of any such determination, and such Bonds shall not be entitled to vote upon, consent to or concur in any action provided in the Resolution, except that for purpose of determining whether the Trustee shall be protected in relying on such demand, request, direction, consent, vote or waiver, only Bonds which the Trustee knows are owned as aforesaid shall be disregarded by reason of such ownership. The Authority or the Trustee may require each holder of a Bond or Bonds before his demand, request, direction, consent, vote or waiver shall be deemed effective, to reveal if the Bonds as to which such demand, request, direction, consent, vote or waiver is made, granted, cast or given are disqualified as provided in this Section.

ARTICLE XII

FORM OF BONDS

SECTION 12.1. Forms of Bond, Instrument of Assignment and Certificate of Authentication. The Bonds and the form of the instrument of assignment, and the form of the certificate of authentication shall be in the forms set forth in the Supplemental Resolution providing for their issuance.

ARTICLE XIII

DEFEASANCE; MONEYS HELD FOR PAYMENT OF DEFEASED BONDS

SECTION 13.1. Discharge of Liens and Pledges; Bonds No Longer Outstanding and Deemed to be Paid Hereunder. Except as otherwise provided in Section 3.12 with regard to Put Bonds, the obligations of the Authority under the Resolution and the liens, pledges, charges, trusts, covenants and agreements of the Authority herein made or provided for, shall be fully discharged and satisfied as to any Bond and such Bond shall no longer be deemed to be outstanding hereunder,

- (i) when such Bond shall have been cancelled, or shall have been surrendered for cancellation or is subject to cancellation, or shall have been purchased by the Trustee from moneys held under the Resolution; or
- (ii) as to any Bond not cancelled or surrendered for cancellation or subject to cancellation or so purchased, when payment of the principal of and premium, if any, on such Bond, plus interest on such principal to the due date thereof (whether such due date be by reason of maturity or upon redemption or prepayment, or otherwise) either (a) shall have been made or caused to be made in accordance with the terms thereof, or (b) shall have been provided for irrevocably depositing with the Trustee or a Paying Agent for such Bond, in trust, and irrevocably appropriating and setting aside exclusively for such payment, either (1) moneys sufficient to make such payment or (2) Refunded Municipal Obligations Investment Securities (which for the purposes of this Article shall include only those obligations described in items (i), (ii), (iii) and (viii) of the definition of Investment Securities in Section 1.1 hereof (in the case of such clause (viii), to the extent the investments enumerated in such clause evidence ownership of the right to payments of principal of or interest on obligations of the United States of America)) maturing as to principal and interest in such amount and at such times as will insure availability of sufficient moneys to make such payment, whichever the Authority deems to be in its best interest, and all necessary and proper compensation and expenses of the Trustee and the Paying Agents pertaining to the Bond with respect to which such deposit is made shall have been paid or the payment thereof provided for to the satisfaction of the Trustee and said Paying Agents.

At such time as a Bond shall be deemed to be no longer outstanding hereunder, as aforesaid, such Bond, except for the purposes of any payment from such moneys, Refunded Municipal Obligations or Investment Securities, shall no longer be secured by or entitled to the benefits of the Resolution.

Notwithstanding the foregoing, in the case of a Bond which is to be redeemed or otherwise prepaid prior to its stated maturity, no deposit under clause (b) of subparagraph (ii) above shall constitute such payment, discharge and satisfaction as aforesaid until such Bond shall have been irrevocably designated for redemption or prepayment and proper notice of such redemption or prepayment shall have been previously published in accordance with Section 5.3 hereof or provision satisfactory to the Trustee shall have been irrevocably made for the giving of such notice.

Any such moneys so deposited with the Trustee or Paying Agents for the Bonds as provided in this Section may at the direction of the Authority also be invested and reinvested in Investment Securities, maturing in the amounts and times as hereinbefore set forth. All income from all Refunded Municipal Obligations and Investment Securities in the hands of the Trustee or Paying Agents pursuant to this Section which is not required for the payment of the Bonds and interest and premium thereon with respect to which such moneys shall have been so deposited, shall be paid to the Authority for deposit in the Revenue Fund free and clear of any trust, lien, security interest, pledge or assignment securing any Bonds or otherwise existing under the Resolution.

Notwithstanding any provision of any other section of the Resolution which may be contrary to the provision of this Section, all moneys, Refunded Municipal Obligations or Investment Securities set aside and held in trust pursuant to the provisions of this Section for the payment of Bonds (including interest and premium thereof, if any) shall be applied to and used solely for the payment of the particular Bond (including interest and premium thereof, if any) with respect to which such moneys and Investment Securities have been so set aside in trust.

Anything in Article X hereof to the contrary notwithstanding, if moneys, Refunded Municipal Obligations or Investment Securities have been deposited or set aside with the Trustee or a Paying Agent pursuant to this Section for the payment of a specific Bond and such Bond shall be deemed to have been paid and to be no longer outstanding hereunder as provided in this Section, but such Bond shall not have in fact been actually paid in full, no amendment to the provisions of this

Article shall be made without the consent of the holder of each Bond affected thereby.

The Authority may at any time surrender to the Trustee for cancellation by it any Bonds previously executed and delivered, which the Authority may have acquired in any manner whatever, and such Bonds upon such surrender for cancellation shall be deemed to be paid and no longer outstanding hereunder.

SECTION 13.2. Bonds Not Presented for Payment When Due; Moneys Held for the Bonds After Due Date of Bonds. Subject to the provisions of the third sentence of this paragraph and to the extent permitted by law, if any Bond shall not be presented for payment when the principal thereof shall become due, whether at maturity or at the date fixed for the redemption thereof, or otherwise, and if moneys or Investment Securities shall at such due date be held by the Trustee, or a Paying Agent therefor, in trust for that purpose sufficient and available to pay the principal of and premium, if any, on such Bond, together with all interest due on such Bond to the due date thereof or to the date fixed for redemption thereof, all liability of the Authority for such payment shall forthwith cease, determine and be completely discharged, and thereupon it shall be the duty of the Trustee, or such Paying Agent, to hold said moneys or Investment Securities without liability to the holder of such Bond for interest thereon, in trust for the benefit of the holder of such Bond who thereafter shall be restricted exclusively to said moneys or Investment Securities for any claim of whatever nature of his part on or with respect to said including any claim for the payment thereof. Authority shall be entitled to receive annually from the Trustee a Paying Agent all earnings on moneys or Investment Securities held by the Trustee or such Paying Agent remaining unclaimed by the holders of Bonds. Any such moneys or Investment Securities held by any Paying Agent remaining unclaimed by the holders of such Bonds for two (2) years after the principal of the respective Bonds with respect to which such moneys or Investment Securities have been so set aside has become due and payable (whether at maturity or upon redemption or prepayment or otherwise) shall upon the written request of the Authority be paid to the Authority, against its written receipt therefor, and the holders of such Bonds shall thereafter be entitled to look only to the Authority for payment thereof. Before being required to make any such payment to the Authority, the Trustee or such other Paying Agents may, at the expense of the Authority, publish in the same newspaper or newspapers in which notices of redemption are to be published pursuant to the provisions of Section 5.3 hereof, a notice, in such form as may be deemed appropriate by such Bond Fund Trustee or Paying Agents, listing the Bonds so payable and not presented and

stating that such moneys remain unclaimed and that after a date set forth therein any balance thereof then remaining will be returned to the Authority.

ARTICLE XIV

MISCELLANEOUS

SECTION 14.1. Benefits of Resolution Limited to the Authority and Bondholders. With the exception of rights or benefits herein expressly conferred, nothing expressed or mentioned in or to be implied from the Resolution or the Bonds is intended or should be construed to confer upon or give to any person other than the Authority, the Trustee and the holders of the Bonds, any legal or equitable right, remedy or claim under or by reason of or in respect to the Resolution or any covenant, condition, stipulation, promise, agreement or provision herein contained. The Resolution and all of the covenants, conditions, stipulations, promises, agreements and provisions hereof are intended to be and shall be for and inure to the sole and exclusive benefit of the Authority, the Trustee and the holders from time to time of the Bonds as herein and therein provided.

SECTION 14.2. Resolution Binding Upon Successors or Assigns of the Authority All the terms, provisions, conditions, covenants, warranties and agreements contained in the Resolution shall be binding upon the successors and assigns of the Authority and shall inure to the benefit of the holders of the Bonds.

SECTION 14.3. No Personal Liability. No member of the Authority and no officer or employee of the Authority shall be individually or personally liable for the payment of the principal of, premium, if any, or interest on any Bond. Nothing herein contained shall, however, relieve any such member, officer or employee from the performance of any duty provided or required by law.

SECTION 14.4. Notice to Bondholders. Except as is otherwise provided in the Resolution any provision in the Resolution for the mailing of a notice or other paper to holders of the Bonds shall be fully complied with if it is mailed postage prepaid, to each registered owner of any of the Bonds then outstanding at his address, if any, appearing upon the books of registry kept pursuant to Article IV hereof.

SECTION 14.5. Waiver of Notice. Whenever in the Resolution the giving of notice by mail, publication, or otherwise is required, the giving of such notice may be waived by the person entitled to receive such notice, and in any such case the giving or receipt of such notice shall not be a condition precedent to the validity of any action taken in reliance upon such waiver.

SECTION 14.6. Official Publications. Any publication, if any, to be made under the provisions of the Resolution in successive weeks may be made in each instance upon any business day of the week and need not be made on the same day of any succeeding week nor in the same newspaper for any or all of the successive publications, but may be made in separate newspapers permitted by such provisions. If and whenever any publications are required under the provisions of the Resolution to be made in different cities, such publication may be made in separate newspapers or journals permitted by such provisions in each such city. In the event that any required publication in any newspaper cannot be accomplished by reason of suspension of publication or otherwise, notice shall be published in any other newspaper or otherwise given by general news release, wire service or other procedure determined by the Trustee, in its discretion, to be in the best interest of the holders of the Bonds.

SECTION 14.7. Effect of Saturdays, Sundays and Legal Holidays. Whenever the Resolution requires any action to be taken on a Saturday, Sunday or legal holiday, such action shall be taken on the first business day occurring thereafter. Whenever in the Resolution the time within which any action is required to be taken or within which any right will lapse or expire shall terminate on a Saturday, Sunday or legal holiday, such time shall continue to run until midnight on the next succeeding business day.

SECTION 14.8. Partial Invalidity. If any one or more of the covenants or agreements or portions thereof provided in the Resolution on the part of the Authority or the Trustee or any Paying Agent to be performed should be determined by a court of competent jurisdiction to be contrary to law, then such covenant or covenants, or such agreement or agreements, or such portions thereof, shall be deemed severable from the remaining covenants and agreements or portions thereof provided in the Resolution and the invalidity thereof shall in no way affect the validity of the other provisions of the Resolution or of the Bonds, but the holders of the Bonds shall retain all the rights and benefits accorded to them hereunder and under any applicable provisions of law.

If any provisions of the Resolution shall be held or deemed to be or shall, in fact, be inoperative or unenforceable or invalid as applied in any particular case in any jurisdiction or jurisdictions or in all jurisdictions, or in all cases because it conflicts with any constitution or statute or rule of public policy, or for any other reason, such circumstances shall not have the effect of rendering the provision in question inoperative or unenforceable or invalid in any other case or

circumstance, or of rendering any other provision or provisions herein contained inoperative or unenforceable or invalid to any extent whatever.

SECTION 14.9. Law and Place of Enforcement of the Resolution. The Resolution shall be construed and interpreted in accordance with the laws of the State of New York and all suits and actions arising out of the Resolution shall be instituted in a court of competent jurisdiction in said State.

SECTION 14.10. Effect of Article and Section Headings and Table of Contents. The heading or titles of the several articles and sections hereof, and any table of contents appended hereto or to copies hereof, shall be solely for convenience of reference and shall not affect the meaning, construction, interpretation or effect of the Resolution.

SECTION 14.11. Repeal of Inconsistent Resolution. Any resolution of the Authority, and any part of any resolution, inconsistent with the Resolution is hereby repealed to the extent of such inconsistency.

SECTION 14.12. <u>Effectiveness</u> of the <u>Resolution</u>. This Resolution shall become effective upon its adoption.



18 MAR 2021

Fitch Affirms Erie County Water Authority, NY's Water Revenue Bonds at 'AA+'; Outlook Stable

Fitch Ratings - New York - 18 Mar 2021: Fitch Ratings has affirmed the 'AA+' rating on the following Erie County Water Authority, NY (the authority) outstanding revenue bonds:

--\$47.7 million water revenue bonds, series 2016 and series 2018

Additionally, Fitch has assigned a 'AA+' issuer default rating (IDR) to the authority.

The Rating Outlook is Stable.

ANALYTICAL CONCLUSION

The 'AA+' IDR and bond rating incorporate the authority's very strong financial profile as well as 'aa' assessments of revenue defensibility and operating risk. The revenue defensibility assessment reflects the authority's role as primary provider of water service in the region supported by very strong rate flexibility. The operating risk assessment reflects the authority's very low operating cost burden and life cycle ratio, which are expected to remain low.

The authority's leverage, currently below 1.0x, will rise as it executes its capital improvement program (CIP) and may exceed 5x over the scenario analysis. The authority's liquidity position has improved and remains neutral to the assessment.

CREDIT PROFILE

The authority provides water treatment and distribution service to a primarily residential customer base through a combination of direct service, lease management agreements and bulk customers. The service area includes most of Erie County (IDR A+/Stable) but excludes the city of Buffalo, which maintains its own system. The service area extends into Chautauqua, Cattaraugus, and western Genesee and Wyoming counties.

The authority's raw water supply is drawn from the Niagara River and Lake Erie. The authority's combined permitted water treatment capacity is 156 million gallons per day (mgd) between two plants, which is about 2x historical demand. The authority maintains connections with the city of Buffalo, the Town of Tonawanda for emergency use.

Coronavirus Considerations

The outbreak of coronavirus has not had a material effect on the authority's operational or financial performance. The authority reports an increase in residential delinquencies and expects these will

continue until the moratorium on shut-offs is lifted. Thus far, Fitch does not view delinquent amounts as placing meaningful pressure on the authority's overall financial position.

Strong Rate Flexibility; Favorable Service Area

The authority's revenue defensibility is characterized by its position as the sole provider of water directly to a stable customer base with the independent ability to adjust rates. The favorable service area and affordability metric support ongoing rate increases designed to keep pace with cost of service and capex.

Very Low Operating Costs; Robust Infrastructure Reinvestment to Continue

The authority's operating cost burden is very low, less than \$2,300 per million gallons produced in fiscal 2019. The current 42% life cycle ratio should remain low given planned capital investment.

Very Low Leverage Provides Strong Grounding for Planned Capital

The authority's leverage was less than 1.0x in fiscal 2019 and is projected to remain so for fiscal 2020. Current leverage positions the authority well to accommodate increases in leverage anticipated as it implements the ambitious five-year CIP.

Asymmetric Additive Risk Considerations

No asymmetric additive risk considerations affected this rating determination.

RATING SENSITIVITIES

Factors that could, individually or collectively, lead to positive rating action/upgrade:

--Suspension of upward trend and stabilization of leverage that approximates 5.0x or below through Fitch's base and stress case through the implementation of the CIP.

Factors that could, individually or collectively, lead to negative rating action/downgrade:

- --Leverage that is sustained above 7.0x through Fitch's base and stress cases, in the context of the current operating and revenue defensibility assessments.
- --An increase in operating costs greater than \$6,500 per million gallons leading to a downward revision of the operating risk assessment.

Best/Worst Case Rating Scenario

International scale credit ratings of Sovereigns, Public Finance and Infrastructure issuers have a best-case rating upgrade scenario (defined as the 99th percentile of rating transitions, measured in a positive direction) of three notches over a three-year rating horizon; and a worst-case rating downgrade scenario (defined as the 99th percentile of rating transitions, measured in a negative direction) of three notches over three years. The complete span of best- and worst-case scenario credit ratings for all rating categories ranges from 'AAA' to 'D'. Best- and worst-case scenario credit ratings are based on historical performance. For more information about the methodology used to determine sector-specific best- and worst-case scenario credit ratings, visit [https://www.fitchratings.com/site/re/10111579].

SECURITY

The water revenue bonds are secured by a first lien on net revenues of the authority.

Revenue Defensibility

Revenue defensibility is very strong, with the authority deriving 100% of its revenue providing essential services to a stable area with favorable demographics. The authority has the independent legal ability to increase rates without external approval. Non-residential revenues are derived from 21 commercial, industrial and bulk sales agreements, primarily to municipalities. The rate structure consists of a fixed minimum use charge, an infrastructure investment charge and a volumetric rate. About 53% of the monthly bill is derived from fixed charges.

The service area demographics are favorable, characterized by median household income that approximates 92% of the nation. The 2019 unemployment rate was 4.3%, about 116% of the 3.7% rate for the nation. Although the unemployment rate has risen, the 7.6% December 2020 rate for Erie County maintained its relationship to the nation, which had a 6.5% unemployment rate in December 2020. The customer base is expected to remain stable. The five-year compound annual growth rate has been less than 1% since 2016.

Current monthly charges are considered affordable for more than 85% of the service area population, based on Fitch's standard usage of 7,500 gallons of water per month. Rates are projected to rise 6.5% annually through 2025. Even after projected increases, rates are anticipated to remain affordable for the majority of the service area population. There is no material concentration of customer revenues, with less than 10% of system revenues derived from the ten largest accounts.

Operating Risks

The authority's operating risk is assessed at 'aa' reflecting the very low operating cost burden and anticipated robust capital investment ensuring maintenance of the currently low life cycle ratio.

Water production has been stable, averaging 71.5mgd for fiscal years 2016 through 2019. The fiscal 2019 operating cost burden was \$2,256 per million gallons produced and is projected to remain below \$2,500 per million gallons produced for fiscal 2020. There is a notable difference between water produced and

sold with average daily sales approximating 44.8mgd in fiscal 2019. The authority is targeting replacement of 15 miles of water mains annually to address this differential. Based on 2019 sales volume and operating costs, the operating cost burden would continue to be considered very low.

The fiscal 2021 through 2025 CIP totals \$321.5 million, of which 47% is related to water main replacement and rehabilitation. Additionally, the CIP includes approximately \$79.1 million related to improvements at the authority's two water treatment plants and \$58.4 million for pump station and storage-related work. The infrastructure investment charge provides an ongoing funding source for the authority's CIP, which is expected to remain robust as the authority implements its 20-year, \$1 billion strategic infrastructure investment plan.

The life cycle ratio is 42%, and has been stable for the past five years. Capital investment relative to depreciation has averaged 167% annually for the five years ending fiscal 2019. This level of historical capital investment and the authority's long-term capital plan, should ensure a continued low life cycle ratio.

Financial Profile

The financial profile is assessed at 'aa' reflecting the authority's very low but rising leverage. Leverage has been below 1.0x since fiscal 2016, including preliminary fiscal 2020 figures. Given the currently low leverage, the authority is well positioned to implement its 2021 through 2025 CIP.

The authority is contemplating the issuance of about \$40 million of debt over the next five years to fund the CIP, with potentially half through the federal Water Infrastructure Finance and Innovation Act program. Aside from a modest amount of grants, the remainder of the CIP is expected to be funded from existing balances or internally generated funds through fiscal 2025. The authority's liquidity profile is neutral to the rating with projected fiscal 2020 coverage of full obligations at 5.6x and a liquidity cushion that is anticipated to exceed 440 days.

Fitch Analytical Stress Test (FAST)

The FAST considers the potential trend of key ratios in a base case and stress case over a five-year period. The stress case is designed to impose capital costs 10% above expected base case levels and evaluate potential variability in projected key ratios.

Fitch's base case through fiscal 2025 is informed by information provided by the authority, including preliminary fiscal 2020 figures as well as projected revenues and expenditures through fiscal 2025. The authority's current five-year CIP was also considered, as was the potential for \$40 million of debt through fiscal 2025.

Based on these assumptions, the authority's leverage trends upward through 2025, reflecting the implementation of the CIP. In fiscal 2025, leverage is 3.3x in the base case and 4.0x in the stress case. Additional scenarios to address the impact of modest amounts of additional debt did not materially impact the view through fiscal 2025. The actual level of capital investment and use of liquidity will drive leverage as these figures are refined over time, but overall leverage is anticipated to remain consistent with the assessment in the near to intermediate term.

Asymmetric Additive Risk Considerations

No asymmetric additive risk considerations affected this rating determination.

Sources of Information

In addition to the sources of information identified in Fitch's applicable criteria specified below, this action was informed by information from Lumesis.

REFERENCES FOR SUBSTANTIALLY MATERIAL SOURCE CITED AS KEY DRIVER OF RATING

The principal sources of information used in the analysis are described in the Applicable Criteria.

ESG Considerations

Unless otherwise disclosed in this section, the highest level of ESG credit relevance is a score of '3'. This means ESG issues are credit-neutral or have only a minimal credit impact on the entity, either due to their nature or the way in which they are being managed by the entity. For more information on Fitch's ESG Relevance Scores, visit www.fitchratings.com/esg

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Rating Actions

ENTITY/DEBT RATING RECOVERY PRIOR

ENTITY/DEBT	RATING			RECOVERY	PRIOR
Erie County Water Authority (NY)	LT IDR	AA+ O	New Rating		
• Erie County Water Authority (NY) /Water Revenues (2nd Lien)/1 LT	LT	AA+ O	Affirmed		AA+ •

RATINGS KEY OUTLOOK WATCH

Applicable Criteria

Public Sector, Revenue-Supported Entities Rating Criteria (pub.23 Feb 2021) (including rating assumption sensitivity)

U.S. Water and Sewer Rating Criteria (pub.03 Apr 2020) (including rating assumption sensitivity)

Additional Disclosures

Solicitation Status

Endorsement Status

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ERIE COUNTY WATER AUTHORITY Rate Projection Model

	_	2021		2022		2023	_	2024		2025
Small Meter Customers	_									
2020 Rate		\$3.36								
Percentage Increase		6.5%		6.5000		6.5000		6.5000		6.5000
Amount Increased per 1,000 Gallons		\$0.210		\$0.232		\$0.247		\$0.263		\$0.280
New Rate per 1,000 Gallons		\$3.57		\$3.80		\$4.05		\$4.31		\$4.59
Large Meter Customers	-	e2.01								
2020 Rate Percentage Increase		\$3.01 6.5%		6.5000		6.5000		6.5000		6.5000
Amount Increased per 1,000 Gallons		\$0.188		\$0.208		\$0.221		\$0.236		\$0.251
New Rate per 1,000 Gallons		\$3.20		\$3.41		\$3.63		\$3.86		\$4.11
Bulk Service Customers	_									
2020 Rate		\$2.63								
Percentage Increase		6.5%		6.5000		6.5000		6.5000		6.5000
Amount Increased per 1,000 Gallons		\$0.164		\$0.182		\$0.193		\$0.206		\$0.219
New Rate per 1,000 Gallons		\$2.79		\$2.98		\$3.17		\$3.38		\$3.59
Projected Operating Revenue										
Metered Revenue	-									
Small Meter Customers (5/8",3/4" & 1" meters)	-	37,766,916		40,221,766		42,836,180		45,620,532		48,585,867
Large Meter Customers (> 1" meter)		17,707,402		18,858,384		20,084,179		21,389,650		22,779,977
Bulk Service Customers	_	4,425,639		4,713,306		5,019,671		5,345,950		5,693,436
Total Metered Revenue		59,899,958		63,793,455		67,940,030		72,356,132		77,059,280
Fire Protection	-									
Private Fire Protection		642,000		642,000		642,000		642,000		642,000
Public Fire Protection (Direct Service)		2,249,278		2,249,278		2,249,278		2,249,278		2,249,278
Public Fire Protection (Lease Managed)	-	1,562,494	_	1,562,494	_	1,562,494	_	1,562,494	_	1,562,494
Total Fire Protection		4,453,772		4,453,772		4,453,772		4,453,772		4,453,772
Other Water Revenue (late charges, origination fees, misc fees)		1,302,878		1,302,878		1,302,878		1,302,878		1,302,878
Other water revenue (late charges, origination lees, finise lees)		1,302,676		1,302,676		1,302,676		1,302,676		1,302,676
Infrastructure Investment Charge										
Small Meter Customers		14,225,245		15,149,754		16,134,357		17,182,958		18,299,719
Large Meter Customers		4,006,059		4,266,452		4,543,772		4,839,117	_	5,153,660
Total Infrastructure Investment Charge		18,231,303		19,416,207		20,678,128		22,022,075		23,453,379
Total Projected Operating Revenue		83,887,911		88,966,312		94,374,808		100,134,857		106,269,309
Interest on Investments and Miscellaneous Income		601,142		618,891		626,160		630,750		635,477
Total Projected Income	S	84,489,053	\$	89,585,203	\$	95,000,968	s	100,765,607	\$	106,904,786
	_	0.,,	_	,	-	,,	Ť	,,	_	,,
Projected Operating & Maintenance Expenses										
Payroll		22,199,115		23,087,080		24,010,563		24,970,985		25,969,825
Power Purchased		4,008,100		4,128,343		4,252,193		4,379,759		4,511,152
Chemicals		1,315,000		1,354,450		1,395,084		1,436,936		1,480,044
Employee Benefits		9,688,977		9,860,008		10,168,674		10,490,828		10,827,079
Insurance(Other than Workers Comp and Automobile) Other Expenses		975,000		1,023,750		1,074,938		1,128,684		1,185,119 22,021,523
	•	20,344,483	\$	20,751,373	\$	21,166,400	•	21,589,728	\$	
Total Projected O&M Expense	\$	58,530,675	Ф	60,205,003	Ф	62,067,851	\$	63,996,921	Ф	65,994,741
Debt Service Payments										
Total Available for Debt Service	_	25,958,378		29,380,200		32,933,117		36,768,686		40,910,045
Less: Current Debt Service Payments (Reflects EFC Subsidy)	_	5,468,735		6,982,112		5,688,112		6,092,273		6,050,440
Available for Capital Budget	\$	20,489,643	\$	22,398,088	\$	27,245,005	\$	30,676,413	\$	34,859,605
Projected Debt Coverage Ratio	-									
Debt Service to Be Paid out in Year		5,468,735		6,982,112		5,688,112		6,092,273		6,050,440
Debt Coverage Ratio		4.75		4.21		5.79		6.04		6.76
Capital Resource Summary										
Projected Revenue Available for Capital	-	20,489,643		22,398,088		27,245,005		30,676,413		34,859,605
Cash Balance Available for Capital		77,000,000		72,060,851		39,950,698		26,057,529		(1,824,787)
EFC Grant		4,377,841		2,519,272		, / 9		,)===		() () ()
Return of Debt Service Reserve/Interest from Village of Williamsville I	L _	190,922	_	190,922	_	1,053,848	_	190,922	_	190,922
Total Available for Capital		102,058,406	\$	97,169,134	\$	68,249,551	\$	56,924,864	\$	33,225,740
				-				-		
Projected Capital Spending	-									
Funds Available for Capital		102,058,406		97,169,134		68,249,551		56,924,864		33,225,740
Capital Projects Requested in CIP		55,267,258		63,484,648		69,055,065		65,199,609		68,492,346 (6,802,751)
Adjustment for Adminstrative Credits	-	(5,269,703)	-	(6,266,212)	-	(6,863,043)	-	(6,449,958)	_	(6,802,751)
Balance of Funds Remaining Projected Bond Proceeds		52,060,851 20,000,000		39,950,698		6,057,529 20,000,000		(1,824,787)		(28,463,854)
Total Balance of All Funds	\$	72,060,851	\$	39,950,698	\$	26,057,529	\$	(1,824,787)	\$	(28,463,854)
Total Datanee of the Lunus	Φ	, 2,000,001	ψ	27,720,030	ψ	20,001,049	ψ	(1,047,707)	ψ	(20, 100,004)

CASHFLOW WORKSHEET

ECWA Strategic Plan Improvements Project - WIFIA

Date: 04/20/2021

		Bud	Budget Year Schedule Estimate						Project Co	t Cashflow	
Location	Project Description	Study/ Design	Bid	Constr. Start	Constr. End	Years of Constr.	Total Project Cost - 2020 Dollars	021	2022	2023	Total
								\$ 240,000	\$ 28,740,000	\$ 17,720,000	\$ 46,700,000
SPt	Powdered Activated Carbon System Rehab - GHD-009	2020/21	2021	2021	2021	1	\$ 1,400,000	\$ 140,000	\$ 1,260,000		
SPt	Filters 1-10 Valve/Piping Replacement (incl FTW, air gap, inlet and drain valves)- MP-085	2020/21	2021/22	2022	2023	2	\$ 26,700,000	\$ -	\$ 16,020,000	\$ 10,680,000	
Subtotal - Sturgeon Point WTP							\$ 28,100,000				
VdW	Powdered Activated Carbon System Rehab - GHD-009	2020/21	2021	2021	2021	1	\$ 1,000,000	\$ 100,000	\$ 900,000		
Subtotal - Van de Water WTP						\$ 1,000,000					
PSta/Sto	Ball Pump Station Improvements - Projects 1 and 2 Pumps/VFDs/HVAC - MP-086	2020/21	2021/22	2022	2023	2	\$ 17,600,000	\$ -	\$ 10,560,000	\$ 7,040,000	
Subtotal - Pump Station and Storage						\$ 17,600,000					

Erie County Water Authority

Rate Study Report in Support of WIFIA Application

Final Report / April 19th, 2021





April 19th, 2021

Subject: ECWA Financial Planning Report in Support of WIFIA Application

Dear WIFIA Program Manager:

Raftelis is pleased to provide this report documenting our process and results of the 2020 Water Rate Study for the Erie County Water Authority (Authority or ECWA). We hope it provides insight into ECWA's thoughtful financial planning efforts. If you have any questions or need any additional information, please do not hesitate to contact me at (774) 243-0619 or dfox@raftelis.com.

Sincerely,

Dave Fox

Senior Manager

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1. Introduction

Raftelis Financial Consultants, Inc. (Raftelis) was engaged by the Erie County Water Authority (Authority or ECWA) in 2020 to perform a Water Rate Study (Study). This report details the Study and its conclusions.

In 2016, Raftelis performed a cost-of-service study for the Authority. The principal objective of that study was to assess the Authority's revenue requirements, then determine whether revenues were being recovered in line with the costs incurred by its customer groups (residential, commercial, etc.).

In 2020, the Authority once again sought Raftelis' services regarding financial planning and rate recommendations. The main goals of the 2020 Study were to assess the current financial state of the Authority and make rate recommendations based on forecasted revenue requirements.

Raftelis held telephone and virtual meetings with Authority staff to identify the Authority's primary objectives and financial goals. During these meetings, it was determined that the Authority's objectives were to create and implement a sustainable financial and rate plan that balanced goals of revenue sufficiency, revenue stability, affordability, and the minimization of customer impacts.

Raftelis used a financial planning and rate model to forecast annual revenue requirements, customer demand, rates, and system revenues. The model allows the Authority to analyze its current financial position and the future impacts of the recommended program of rate adjustments to the system and its customers. The model also allows the Authority to adjust rates for future years to see both the financial and customer impacts of the rate increases.

2. Rate Study Process

Raftelis utilized a systematic approach for rate setting which was tailored to the Authority's goals and objectives. The first step in the rate study process was the identification of financial objectives, which occurred during the project kick-off meeting with the Authority staff.

The next step in the rate setting process was the development of a financial plan, which summarized revenue requirements and projected revenues for a five-year planning period. The financial plan projects any financial deficiencies under the Authority's existing rates and indicates the additional level of revenues necessary to support the projected revenue requirements.

Revenue requirements include all operations and maintenance (O&M) costs, capital costs (including debt service payments and projects funded with cash), and any other financial requirements for purposes of maintaining financial viability. After identifying the revenue requirements, Raftelis projected the number of customer accounts and billable consumption, upon which revenues were forecast using the existing rates.

3. Financial and Rate Plans

The next step in the rate-setting process was the development of a financial plan, which includes establishing forecasts of revenue requirements, determining the necessary revenue increase using forecasted customer accounts and demand, and examining the forecasted operating results and customer impacts over the five-year forecast period, from Fiscal Year (FY) 2021 to FY 2025.

3.1. Revenue Requirements

The first major task in establishing a financial plan is developing an understanding of the revenue requirements of a utility of a forecast period. Revenue requirements refer to the Authority's annual costs that must be recovered through water rates, fees, and charges. Revenue requirements are comprised of cash-based expenses including O&M expenses, cash-funded capital projects, debt service principal and interest payments, and annual contributions to reserves.

3.1.1. Operations and Maintenance Expenses

O&M expenses represent normal, recurring expenses, necessary to sustainably operate and maintain the system during the Authority's annual accounting cycle, which runs from January 1st to December 31st. Actual historical operating expenditures and the FY 2021 operating budget served as the basis for the projection of utility operating costs.

To develop a five-year forecast of system operating costs and account for growing utility costs and inflation, escalation factors were used for each major operating expense category. These escalation factors resulted in an increase of 0 to 10% per year to operating expense items throughout the five-year forecast period, dependent on the category in which the expense fell.

The Authority's O&M expenses from FY 2021 through FY 2025 are summarized in Table 1. The table shows steady growth (3.2% annually) of operating expenses. This is not an uncommon increase in operating expenses and is in-line with industry trends.

Table 1. Projected Operating Expenses from FY 2021 to FY 2025.

	•				
	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Unit	Budget	Projected	Projected	Projected	Projected
Unit: 1010 Sturgeon Point Plant	\$ 6,606,082	\$ 6,816,427	\$ 7,033,418	\$ 7,257,284	
Unit: 1015 Van De Water Plant	4,302,525	4,439,522	4,580,848	4,726,651	4,877,088
Unit: 1020 Control Operations	4,064,856	4,194,286	4,327,804	4,465,554	4,607,680
Unit: 1025 Instrumentation	1,921,141	1,982,312	2,045,416	2,110,520	2,177,692
Unit: 1035 Maintenance Unit	1,337,044	1,379,617	1,423,535	1,468,845	1,515,594
Unit: 1030 Water Quality Assurance	779,064	803,870	829,460	855,861	883,101
Unit: 2010 Line Maintenance	8,133,971	8,392,966	8,660,143	8,935,787	9,220,189
Unit: 2020 UFPO	589,891	608,674	628,050	648,040	668,666
Unit: 2030 Hydrants and Valves	3,022,012	3,118,236	3,217,501	3,319,910	3,425,574
Unit: 2065 Dispatch	573,329	591,584	610,417	629,846	649,892
Unit: 2501 Design	1,220,797	1,259,669	1,299,768	1,341,138	1,383,823
Unit: 2502 Construction	1,623,576	1,675,272	1,728,602	1,783,622	1,840,390
Unit: 2525 New Services	800,255	825,736	852,022	879,141	907,122
Unit: 2535 Restoration	2,935,234	3,028,695	3,125,109	3,224,578	3,327,208
Unit: 3000 Administration	218,417	225,372	232,546	239,948	247,585
Unit: 3015 Budget	, -	, -	-	, -	, -
Unit: 3020 Central Purchasing	473,901	488,991	504,557	520,616	537,186
Unit: 3023 Stores	584,247	602,850	622,041	641,840	662,268
Unit: 3035 Information Services-Serv Cent	714,579	737,332	760,804	785,019	810,005
Unit: 3070 Facilities	732,983	756,322	780,398	805,238	830,866
Unit: 3095 Municipal Liasion	-	-	-	-	-
Unit: 4000 Comptroller	266,417	274,900	283,651	292,679	301,995
Unit: 4010 Accounting	672,433	693,844	715,932	738,719	762,230
Unit: 4015 Cash Management	503,001	519,017	535,539	552,585	570,172
Unit: 4020 Customer Service and Billing	2,174,981	2,244,235	2,315,677	2,389,382	2,465,430
Unit: 4040 Meter Shop	1,645,841	1,698,246	1,752,308	1,808,082	1,865,628
Unit: 5010 Legal	1,623,153	1,674,836	1,728,152	1,783,157	1,839,910
Unit: 6000 Secretary to the Authority	372,533	384,395	396,632	409,256	422,281
Unit: 6015 Information Services-Ell Sq	546,593	563,997	581,951	600,474	619,586
Unit: 6025 Data Processing	-	-	-	-	-
Unit: 6030 Public Information	217,000	223,910	231,037	238,391	245,978
Unit: 7010 Members of the Authority	75,550	77,956	80,437	82,997	85,639
Unit: 7510 General Expenses	4,484,660	4,627,457	4,774,765	4,926,741	5,083,545
Unit: 8010 Human Resources	1,218,161	1,256,949	1,296,962	1,338,243	1,380,835
Unit: 8525 Information Technology	4,096,448	4,226,883	4,361,440	4,500,260	4,643,491
Unit: 9000 Administrative Credits	(5,269,703)	(5,437,496)	(5,610,591)	(5,789,170)	(5,973,424)
Unit: ABCD Other Post-Employment Benefits	-	-	-		-
Total	\$ 53,260,972		\$ 56,706,332	\$ 58,511,235	\$60,373,489
Change (%)		3.2%	3.2%	3.2%	3.2%

3.1.2. Existing Debt Service

Existing debt service refers to prior debt issuances and the corresponding annual debt service payments, both principal and interest, that the Authority is obligated to pay. As of 2020, the Authority held

approximately \$76M in outstanding debt. Table 2 shows the Authority's outstanding debt service per issuance through FY 2025.

Table 2. Existing Debt Service.

	FY 2021	Y 2021 FY 2022		FY 2024	FY 2025
Debt Issuance	Projected	Projected	Projected	Projected	Projected
Series 2003F EFC Debt	\$ 926,989	\$ 920,270	\$ 1,655,206	\$ -	\$ -
2016 Fourth Resolution Bonds	3,129,963	3,127,213	1,764,213	1,763,713	1,760,713
2018 Fourth Resolution Bonds	1,453,469	1,457,469	1,900,469	2,040,469	2,001,469
Total	\$ 5,510,421	\$ 5,504,952	\$ 5,319,888	\$ 3,804,182	\$ 3,762,182

3.1.3. Capital Improvement Plan & Financing

A significant part of the Authority's future costs is its capital improvement plan. The Authority provided to Raftelis its latest plan, which projects infrastructure investments through 2040. The Authority's plan includes approximately \$1.1 billion in infrastructure investments between FY 2021 and FY 2040. Table 3 shows a summary of the planned capital spending from FY 2021 to FY 2025, which totals \$289,872,942 over the five-year forecast. Some of the larger projects that fall within this time frame are Ball Pump Station and Guenther Pump Station Improvements, Large Diameter Main Replacement, Small Diameter Main Replacement, and Engineering and Construction of Distribution Mains.

Table 3. Capital Improvement Plan Spending and Funding Mechanisms from FY 2021 to FY 2025.

	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>
Project Category	Projected	Projected	Projected	Projected	Projected
Sturgeon Point Plant	\$ 2,273,000	\$ 4,618,698	\$ 12,071,567	\$ 8,962,582	\$ 3,130,008
Van De Water Plant	3,910,000	4,995,228	5,180,206	10,837,994	3,278,961
Service Center	-	1,261,663	1,035,468	1,035,468	5,657,420
Pump Station and Storage	6,139,910	14,850,555	14,250,689	4,261,997	17,059,057
Large Diameter Mains	6,466,000	10,579,183	12,426,974	21,161,416	14,856,103
Small Diameter Mains	29,584,000	15,081,280	15,533,718	15,999,729	16,479,721
Other	6,894,348				
Total	\$ 55,267,258	\$ 51,386,606	\$ 60,498,622	\$ 62,259,186	\$ 60,461,270
Funding Mechanism					
Cash	\$ 36,476,390	\$ 33,915,160	\$ 39,929,091	\$ 41,091,063	\$ 39,904,438
Debt	18,790,868	17,471,446	20,569,532	21,168,123	20,556,832
Total	\$ 55,267,258	\$ 51,386,606	\$ 60,498,622	\$ 62,259,186	\$ 60,461,270

The Authority also identified how its capital improvements plans will be financed annually. The Authority's planned sources of financing for each year of anticipated capital improvement costs are approximately two-thirds cash and one-third debt financing. For new debt issuances, the Authority assumed for this Study that they would be revenue-backed debt, issued with a 20-year term, a 4.0% interest

rate, and a 1.0% issuance cost. Table 3 displays the funding source and amount for the capital improvement plan for each fiscal year through 2025.

3.2. Existing Rates and Revenues

The Authority's rates include a quarterly minimum charge that increases with a customer's water meter size, a quarterly infrastructure investment charge that also increases with a customer's meter size, and volumetric charges (per 1,000 gallons used) that decrease slightly with a customer's meter size. The Authority's rates as of FY 2021 are summarized in Table 4. The Authority also provides discounted rates for public corporations and special improvement districts. Additionally, the Authority assesses an annual charge to those customers that have private fire protection service, which also increases with the size of the meter. Lastly, the Authority charges annual fees for fire hydrants.

Table 4. Summary of Existing (FY 2021) Rates for Water Service.

	Quarterly	Quarterly	Quarterly	Commodity
	Minimum	Usage	Infrastructure	Volum etric Rate
Existing Rates	Charge	Allowance (Gallons)	Investment Charge	Per 1,000 Gallons
5/8"	\$ 32.13	9,000	\$ 21.33	\$ 3.57
3/4"	32.13	9,000	21.33	3.57
1"	32.13	9,000	21.33	3.57
1 1/4"	86.67	27,000	83.52	3.21
1 1/2"	125.19	39,000	83.52	3.21
2"	202.23	63,000	133.62	3.21
3"	385.20	120,000	250.56	3.21
4"	635.58	198,000	417.54	3.21
6"	1,251.90	390,000	835.11	3.21
8"	2,022.30	630,000	1,336.14	3.21
10"	2,889.00	900,000	1,920.75	3.21
12"	3,948.30	1,230,000	3,590.91	3.21
20"	9,052.20	2,820,000	15,454.23	3.21
24"	12,326.40	3,840,000	31,209.18	3.21

The Authority's revenues come principally from the aforementioned water user fees and rates, with some supplemental revenue coming from miscellaneous fees and fire charges. Revenue sources are listed in Table 5 for the last year (FY 2019) of audited financial information available at the time the Study was done.

Table 5. FY 2019 Revenue Sources.

	FY 2019
Revenues	Actual
Residential Water Sales	\$ 38,008,741
Commercial Water Sales	8,028,503
Industrial Water Sales	2,322,603
Public Authority Water Sales	2,591,717
Fire Protection Charges	4,436,491
Sales to Other Utilities	4,107,991
Infrastructure Investment Charge	16,842,861
Other Water Sales	1,378,241
Rents from Water Towers	537,274
Miscellaneous Revenues	808,489
Total	\$ 79,062,911

To project future revenues, Raftelis examined trends in the number and type of customers as well as water usage patterns. Based on analysis of historical usage and after consultation with Authority staff, Raftelis took a conservative approach by assuming in the forecast that consumption would decrease by 1.0% each year through FY 2025. The number of customers was assumed to maintain at current levels throughout the financial planning forecast. The revenues generated from this forecast were then used to inform the following financial scenarios.

3.2.1. Status Quo - No Rate Increase or Changes

Should the Authority choose not to increase water rates over the five-year forecast, it would be put in a challenging financial situation, which is displayed in Figure 1 and Figure 2. Figure 1 shows the projected revenues (line) versus revenue requirements (stacked bars) for FY 2021 through FY 2025. As reflected in the graphs, the revenue generated from FY 2020 rates are projected to be insufficient to meet the revenue requirements in any future year. Figure 2 shows the unrestricted cash balance through FY 2025. The dashed line shows the target days cash on hand, which means the number of days the utility can pay for its daily O&M expenses using reserve funds. The figures show that by FY 2023, the 180 days cash on hand target would not be met, and the reserve fund would be depleted by FY 2024.

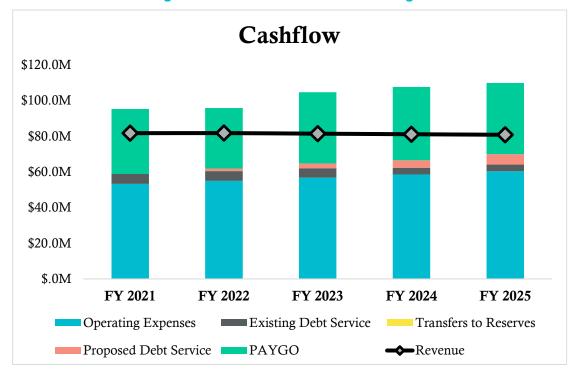
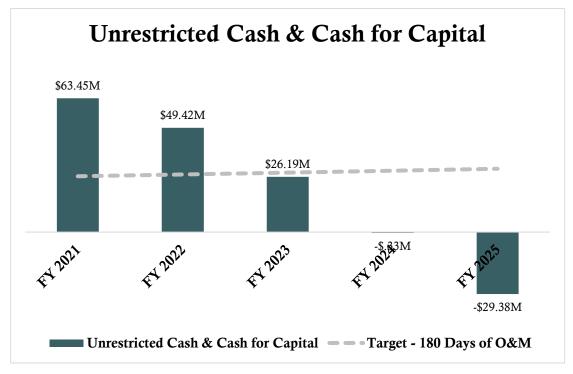


Figure 1. Cashflow With No Rate Changes

Figure 2. Fund Balance with No Rate Changes



2020 Water Rate Study Erie County Water Authority

3.3. Recommended Financial Plan & Revenue Adjustments

Raftelis has carefully examined the Authority's financial situation as described above and has determined that to improve the financial projection, the Authority must recover additional revenues. Raftelis has crafted two scenarios for water revenue adjustments. Both are designed for the Authority to meet its financial obligations while protecting its cash position and mitigating customer impacts. Their principal difference is in the timing and size of rate increases. Scenario One involves yearly rate increases of 6.5% through FY 2025. Scenario Two could be described as the phase-in scenario, and includes rate increases of 4%, 5%, 7%, 7%, and 7% from FY 2021 to FY 2025.

3.3.1. Scenario One - Consistent Revenue Increase

Scenario One assumes rate increases of 6.5% per year of all Authority rates (on all rate types and all customer types, with the exception of fire service customers) through FY 2025. As shown in Figure 3, these increases are sufficient to fund all operating expenses and debt service, but when adding cash needs for PAYGO (Pay-As-You-Go, or cash-funded capital), revenues are slightly below all costs. In those years, the Authority may need to draw on its cash reserves, as is modeled in Figure 4. Although the Authority would be drawing down its cash balance, the balance in each year is still over the target of the cash equivalent of 180 days of O&M expenses.

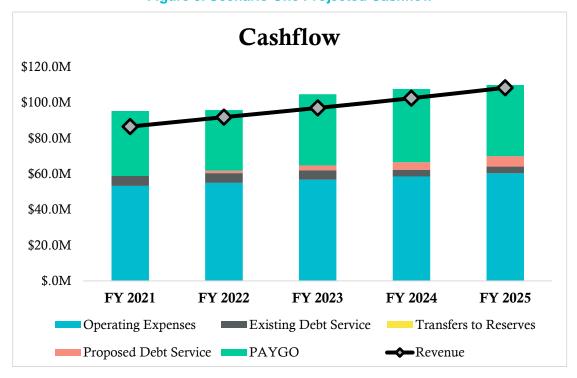


Figure 3. Scenario One Projected Cashflow

2020 Water Rate Study

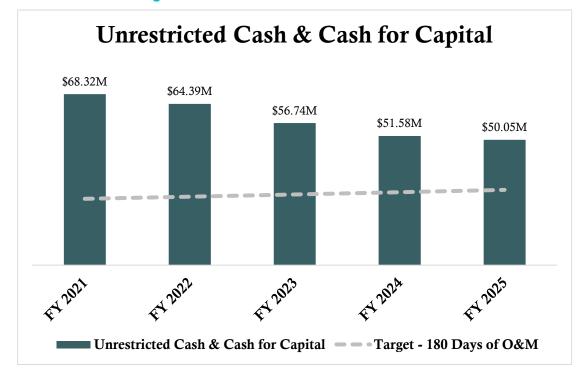


Figure 4. Scenario One Fund Balance Forecast

For a typical residential customer that uses 12,000 gallons per quarter and has a 5/8" meter size, their FY 2020 annual bill totaled \$241.44. Under this scenario, their total annual water bill would increase to \$257.20 in FY 2021 and to \$331.36 by FY 2025.

3.3.2. Scenario Two – Phase-In of Rate Increases

Scenario Two assumes the same financial assumptions as in Scenario One, but alters the schedule of rate increases: it includes annual rate increases of 4%, 5%, 7%, 7%, and 7% from FY 2021 to FY 2025, with the goal of phasing in rate increases to mitigate the impact on customers in the initial years. Because this scenario assumes lower rate increases in the first two years, increases in the latter years of the forecast must be higher to make up for the revenue gap. This scenario achieves the cashflow and cash balance shown in Figure 5 and Figure 6. The financial results in Scenario Two are similar to those in Scenario One in the near term, but the Authority's fund balance is projected to decline to \$37.24 M by FY 2025 as opposed to \$50.05 M in Scenario One.

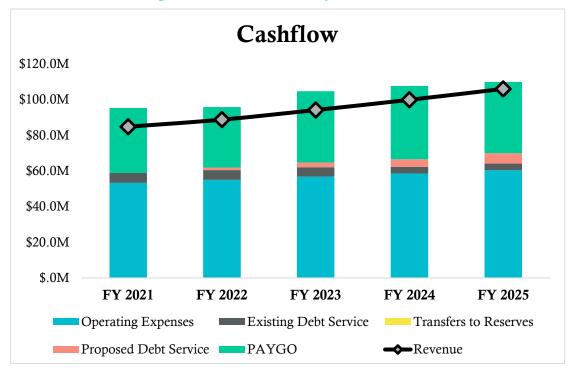
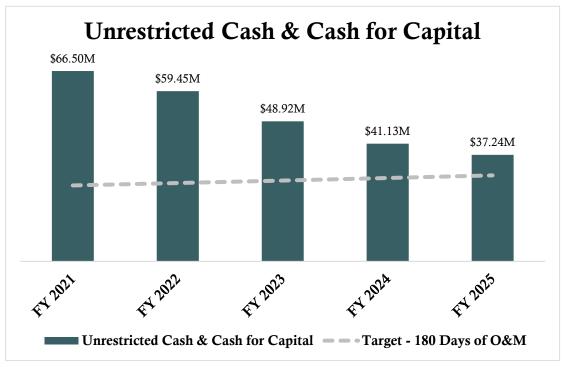


Figure 5. Scenario Two Projected Cashflow

Figure 6. Scenario Two Fund Balance Forecast



2020 Water Rate Study Erie County Water Authority

Under this scenario, a typical residential customer that has a 5/8" meter size and uses 12,000 gallons per quarter would see their annual water bill increase from \$241.44 to \$257.20 in FY 2021 and to \$323.56 by FY 2025.

4. Affordability

Raftelis completed an analysis of the impacts of current and future rate increases on customers as well as an assessment of the affordability of the Authority's service for various residential customer profiles.

The typical residential customer that uses 12,000 gallons per quarter and has a 5/8" meter size had an annual water bill of \$241.44 in FY 2020. The 2020 Median Household Income of the Authority's service area was estimated to be \$74,851. This was estimated by taking 2018 American Community Survey data for every census tract in ECWA's service area, then applying a weight based on the number of residential ECWA accounts in that tract, then escalating incomes to 2020 based on historical trends. A customer of that income level would experience a water bill burden of 0.3% of their annual income in 2020. This burden is lower than the burden threshold established by the U.S. Environmental Protection Agency's 1997 guidelines for affordability for water service, which is 2.0% of Median Household Income.

It is useful to also consider the burden of a typical water bill on a customer with a low income. To do that, Raftelis estimated that the Upper Limit of the Lowest Quintile Income (20th percentile) in the Authority's service area was \$34,809. The typical bill of \$241.44 in 2020 thus represents a burden of 0.7% of that customer's income, still well within the threshold for "affordable" service.

Raftelis also calculated the Authority's water bill burden on customers with income at the median and low-income levels for each Census Tract served by the Authority directly or through a lease management agreement. The results of that analysis are shown in Figure 7. Customers at the Median Household Income level in all Census Tracts have affordable service as defined by the EPA's 1997 guidelines. When analyzing the burden of a typical residential water bill on low income (20th percentile) customers across the various Census Tracts in the Authority's service area, three Census Tracts (shown in yellow) had burdens above 2%, the EPA's 1997 affordability threshold, as shown in Figure 8.

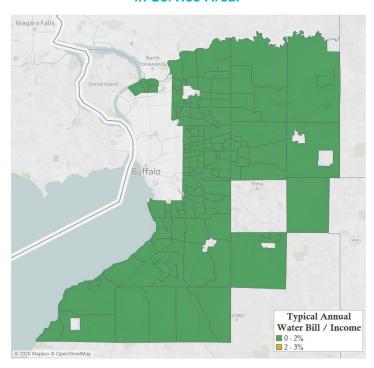
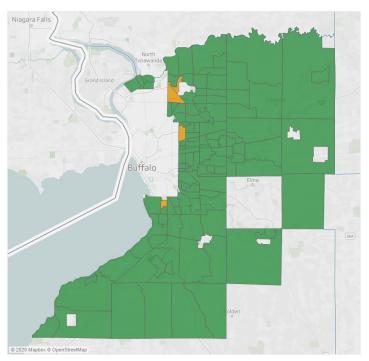


Figure 7. ECWA 2020 Annual Bill Burden on Median Household Income in Each Census Tract in Service Area.

Figure 8. ECWA 2020 Annual Bill Burden on 20th Percentile Income in Each Census Tract in Service Area.



2020 Water Rate Study Erie County Water Authority

Raftelis also estimated affordability under the two rate increase scenarios outlined in this report. Assuming Scenario One rate increases of 6.5% per year, by FY 2025 the typical annual residential bill will rise from \$241.44 to \$331.36, while under Scenario Two the typical residential customer would see their annual bill rise to \$323.56 by FY 2025. Assuming incomes in the service area increase at the rate they did between 2014 and 2018 according to the American Community Survey, the service area MHI will be \$83,441 and the LQI will be \$38,706 in FY 2025. The corresponding burdens that projected water bills put on those customers in FY 2025 are 0.4% for MHI and 0.9% for the 20th percentile household income assuming Scenario One increases. If Scenario Two increases are assumed, the bill burden is 0.4% for MHI and 0.8% for the 20th percentile household income.

Although standard affordability indicators show that the Authority's current and projected rates are affordable for the two customer types described above, American Community Survey data show that the Authority's service area includes pockets of very low-income customers and customers in poverty. Given this, and the likelihood of the Authority's rates rising each year, Raftelis also discussed with the Authority options for programs and policies to improve affordability of water service. One option included waiving the infrastructure investment charge for those customers with income at or below 150% of the Federal Poverty Level. That would reduce a typical residential customer's annual bill by \$80.16 assuming 2020 rates. The benefits and costs of implementing these types of programs were also discussed with the Authority.

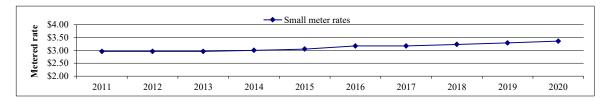
5. Conclusion

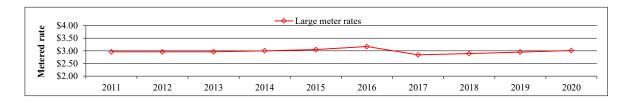
The Erie County Water Authority engaged Raftelis to complete a Water Rate Study in 2020. Raftelis and the Authority worked together to create a financial plan using a multi-year financial model that included all of the Authority's current and projected expenses and revenues. Over the five years from FY 2021 to FY 2025, the Authority's expenses are expected to increase, primarily due to the cost of its large capital improvement program, which outlines needed infrastructure investments in the Authority's water system in the coming years. To meet the Authority's capital, operational and financial goals, the Authority and Raftelis considered ways to recover sufficient revenues while mitigating the impacts of rate increases on customers. Raftelis reviewed the affordability of the Authority's bills now and under future rate projections. The annual water bill for a typical residential customer is considered affordable according to current industry guidelines, but the Authority may consider increasing its customer assistance efforts. This report outlines two rate increase scenarios that were considered by the Authority. Raftelis has been informed that the Authority implemented a 6.5% increase on all rates except for fire service, effective January 1st, 2021 in line with the recommendations in Scenario One in this report. Lastly, because of the dynamic financial situation of water utilities, Raftelis recommends an annual review of rates to make sure they are in accordance with the Authority's goals.

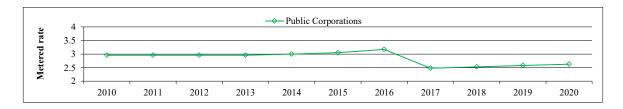
ERIE COUNTY WATER AUTHORITY Metered Water Rate History Last Ten Fiscal Years

(Unaudited)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Small meter rates	(Base Year) \$2.96	\$2.96	\$2.96	\$2.96	\$3.00	\$3.05	\$3.17	\$3.17	\$3.23	\$3.29	\$3.36
Percentage increase (%)		0.00%	0.00%	0.00%	1.35%	1.67%	3.93%	0.00%	1.89%	1.86%	2.13%
Large meter rates	2.96	\$2.96	\$2.96	\$2.96	\$3.00	\$3.05	\$3.17	\$2.84	\$2.89	\$2.95	\$3.01
Percentage increase/(decrease) %		0.00%	0.00%	0.00%	1.35%	1.67%	3.93%	-10.41%	1.76%	2.08%	2.03%
Public Corporations	2.96	\$2.96	\$2.96	\$2.96	\$3.00	\$3.05	\$3.17	\$2.48	\$2.53	\$2.58	\$2.63
Percentage increase/(decrease) %		0.00%	0.00%	0.00%	1.35%	1.67%	3.93%	-21.77%	2.02%	1.98%	1.94%







Source: Erie County Water Authority Tariff



Project Schedule & Phases

Task Description	ECWA Arcadis		202	20	2021				2022				2023	
rask Description	Due Date		Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2
Sedimentation Basin Valve BODR	10/23/20	10/16/20												
2. Filter Backwash Header BODR	2/20/21	03/31/21												
3. Filtered Water Basin Bypass BODR	11/06/20	11/06/20												
4. Washwater Tank Bypass BODR	12/2/20	11/30/20												
5. Filter Valve BODR	4/21/21	4/21/21												
5. Prelim (60% Design)	N/A	5/17/21												
5. Final (90% Design)	N/A	9/18/21												
5. Bid Documents	N/A	12/10/21												
5. Construction (NTP)	N/A	1/23/22												
5. Construction (Final Completion)	N/A	4/7/23												
5. Closeout Docs	N/A	4/27/23												

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Preliminary cost estimate based on the preliminary project scoping. Basis of Design Report (BODR) is being finalized and will provide a more detailed cost estimate. BODR is scheduled to be submitted in April/May 2021.

This document provides a range of project costs based on similar projects performed at other utilities.

Sturgeon Point Water Treatment Plant Piping and Valve Improvements Fee Estimate										
Task Name	Minimal RFI	P Req'd Approac	h	Base Approac	:h		Recommend	ed Approach		Value of Recommended Approach to ECWA
rusk Nume	WBS Activities	Hours	Fee	WBS Activities	Hours	Fee	WBS Activities	Hours	Fee	Value of Recommended Approach to Levy A
Task 1 - Evaluation & BODR: Sedimentation Basin Effluent Valves and Actuators	New BFV at end of Chamber w. actuator at surface (Opt.2). No Elec/I&C eval. ~10-pg BODR. 1 dwg.	150		BODRs for Sedimentation Basin Effluent Valve Eval Opt 1 & 2 (exist & new). Determine approach to provide 480V Elec source & remote I/O from Quonset Hut. "15-20 pg BODR. 4 dwgs.	400	\$48,500	Filtered water basin by-Pass & washwater	400	\$48,500	There are known issues with the existing electrical supply to the floc basin and communications. Determining approach now will expedite design in the future and also ensure that available buckets in existing Quonset Hut MCCs from electrical SuperScrapers are repurposed to save ECWA construction money in future.
	Assume piping & insulation will be replaced in-kind in same	150	\$18,000	Expand eval locations to 20 header & 20 hangers.	336		Expanded testing 20 header, 20 fittings, 20 hangers & 3 buried locations. Add BEM analysis. Certified report from CPI on UT analysis. Pb, Cd,Cr	Expanded Pipe Analysis 446-hrs Dehumidification	\$44,500	Pipe hangers and buried piping are typically most vulnerable to failure after 50+ years and recommended approach prioritizes investigation. BEM provides circumfrential analysis
Task 2 - Evaluation & BODR: Filter	location. 20 UT analyses (single spot) on exposed header only.			Use UT, caliper & visual analysis. Detailed PW analysis on replace vs rehab incl. MOPO. High-level			testing of pipe coatings included. Buried BW header analysis incl. BW redundant supply plan &	338-hrs	\$45,000	of existing piping vs. UT which only provides spot information. The planning of a redundant BW supply header to filters 9 &
Backwash Supply Piping Header and Valves	No detailed report from CPI. Assume lab testing Pb, Cr, Cd	CPI Fee	\$36,800	redundant BW supply header concept to improve reliability & MOPO. Expanded BODR ~20-pgs. 3-5	CPI Fee	\$48,500	MOPO. Dehumidification of filter gallery in lieu of insulation including preliminary sizing, equipment	CPI Fee	\$63,500	10 eliminates an existing critical single-point-of-failure at STP and also will make construction MOPO easier. The dehumidification of the filter piping gallery will improve long-
	paid as Special Service. ~10-pg report (w. appendices). 1 dwg.	Task 2 Total \$54,800		Dwgs.	Task 2 Total		locations, bldg extension & duct routing to improve long-term reliability, O&M and H&S. Expanded BODR ~30-40 pgs & 8-10 dwgs	Task 2 Total	\$153,000	term reliability, resiliency, O&M and H&S.
Task 3 - Evaluation & BODR: WTP Building Filtered Water Basin/Clearwell Bypass	Assume Opt. 1 (i.e. Temporary Bulkheads). Spreadsheet hydraulic model. ~15-20 page report (w. appendices) and 2 dwgs.	267	\$36,000	Eval Opt 1 & 2. Opt. 2 has add'l piping & interconnections but improves long-term reliability, water quality & easier MOPO. Add'l hydraulic analysis including pump curve POR analysis. Recommendations on SCADA setpoints and deadband limits determined and relocation of HZSIF6 feed point as part of MOPO analysis. 20-30 pg BODR and 7 drawings.	589	\$80,000		589	\$80,000	Option 2 makes MOPO much easier and will also improve long-term reliability of WTP operations but it requires more in-depth analysis and it is a larger capital cost project. Keeping transfer pumps in POR is critical to long-term reliability. Advancing I&C evaluations at BODR instead of detailed design will identify critical SCADA modifications to ensure reliability of plant operations. Chem feed relocation will be required and approach is best determined during BODR vs Design phase.
Task 4 - Evaluation & BODR: Wash Water Tank and Transfer Pump Discharge Interconnection	Plan and MOPO for connecting to exist. DI header with actuated valves. Pump curve analysis to confirm exist. pumps can meet flow/press req's. "15- pg BODR and 2 dwgs.	281	\$38,000	Eval of PCCP tapping sleeve connection to minimize shutdowns. Hydraulic surge analysis to avoid potential filter upsets. Workshop on exist. Filter BW procedures to develop detailed recommendations for VFD setpoints and loops. CT analysis to determine seasonal restrictions for temp controls and any modifications to monitoring. Elec 1-line diag. Expanded BODR 30-40 pgs & 6 dwgs.	668	\$92,000		668	\$92,000	A control valve failure could cause filter upsets and lead to negative impacts on finished water quality and plant production. Completing detailed hydraulic surge analyses as part of BODR will allow those potential conditions to be identified and mitigated. Additionally, the potential use of a tapping sleeve could significantly reduce MOPO but requires vetting at BODR. The modified approach also needs to be confirmed from a CT and SCADA perspective to ensure WQ and plant reliability is maintained.
	Subto	otal Tasks 1-4	\$146,800	Subto	Subtotal Tasks 1-4 \$301,000 Subtotal Tasks 1-4 \$373,500				\$373,500	The Recommended Approach best aligns with ECWA'S Comprehensive Strategic Plan addressing Resiliency, Water Quality, Technology, Customer Service, Employees (H&S and 0&M) and Emergency Preparedness (i.e. reliability). The additional investment in BODR evaluation will allow for smoother (& Reduced cost) design & construction.
			1	ask 5 - Evaluation, BODR, Design, and Constru	ction Services:	Filter Nos. 1-10 Pipi	ng and Valve Replacement and Improveme	nts		
				All RFP scope PLUS - Eval of Options including: Venturi vs Mag Meters, Digital vs Analog Signal, IR	1,181	\$123,500	Expanded filter performance evaluations and	2,081	\$238,500	The STP filters have largely remain unchanged since their original construction and while some improvements were completed in the early 2000's there are multiple signs that
				vs 2-wire Comm's, 208V vs 480V power. Review of BW strategies to eval alternative approaches which could improve performance and reduce piping	B&A Fee (Laser Scan)	, ,	preliminary design including: air/water flowrates, sizing & location of air blowers, filter building expansion to improve accessibility and house	B&A Fee (Laser Scan)	\$11,000	
Task S	5 - Evaluation & BODR (Lump	Sum)		requirements including altering Cv time, idling a litter &/or sub-fluidization wash. Alt. effluent piping, valve & hanger layout to create space for future air lines/duct work. Detailed MOPO planning & multiple workshops with ECWA & ECHD. 50+ Pg BODR and 32 dwgs.	Task 5 BODR Total		blowers, underdrain replacement options, media replacement options and expanded MOPO planning. Recommended approach will provide complete rehab of all 10 filters in 1 project and will reduce overall costs and WQ/O&M risks during construction.	Task 5 BODR Total	\$249.500	needs which are affecting water quality, production and system reliability now. The approach proposed would set-up ECWA for another 20 - 30 years of more reliabile, resilient, sustainable and economical operation and performance at STP. These improvements would be realized sooner than doing it via multiple projects and will reduce overall design & construction costs.
			Final design documents	2,223	\$295,000	Final design documents		\$550,000 - \$950,000	Depends on options selected	
	Task 5 - Detailed Final Design			Task 5 - BODR and Detailed Design Totals Number of Sheets & S/Sheet (for BODR and Detailed	3,404	\$429,500	Task 5 - BODR and Detailed Design Totals Number of Sheets & \$/Sheet (for BODR and		\$800,000 - \$1,200,000	Depends on options selected
				Design) Opinion of Probable Construction Cost (in millions)	57 \$5.9	\$7,535 7.3 %	Detailed Design) Opinion of Probable Construction Cost (in	130 - 180 \$16.1 - \$24.2	\$6,150 - \$6,670 5.0% - 4.5%	Depends on options selected
				and % of Construction (BODR & Design)	5.5	7.3/0	millions) and % of Construction (BODR & Design)	910.1 - 924.2	J.U/0 - 4.3/0	Depends on options selected
Notes:	4D 70 (2006) BODD (incl. by	of IMTD): \$240!- \$4	D 72 (2007) Decir 20	EOk Construction Cost/2009): \$20,0MM, Tot-12000 9 D-	oign - E 29/ of C	struction (@\$15MM/ ··· "	(29/) in 2020 dollars PODB 8 Doolar -24 0484 (aumas 29/ inflation)		
				52k, Construction Cost(2008): \$20.9MM. Total BODR & De \$300k, MP-76 (2010) Design: \$700k, Construction Cost (20						

Detailed Scope of Work was provided with Letter of Interest, see Attachment 02 - ECWA MP-085 Prof Svc Agt-executed final.pdf

arcadis.com Paget/



Filters 5-10 Piping, Valve Replacement & Effluent Flow 6		lua Imprava	ent Plant	<u> </u>		Developed By:	TS & JR				
The Waste Statemal Piping & Valve Replacement & Effluent Flow 10					Cub Tabal						
Demolition of filter piping, valves, and rate of flow controllers Filters 1-4 Piping, Valve Replacement & Effluent Flow Rate Controllers (Materials Only) S20,000 S20,00		Qty	Unit	Unit Cost	Sup-Total	Notes	Total				
Filters 3-14 Piping, Valve Replacement & Effluent Flow 4 S \$330,000 \$200,00											
Filters 1-14 Piping, Valve Replacement & Effluent Flow A		10	LS	\$20,000	\$200,000	00,000 Cost per filter incl large & small diameter demo, rigging, and dis					
Interest Controller (Neutrino Christ)		4	LS	\$130,000	\$520,000	Material quotes for replace-in-kind Siewert/Pratt (8" BFV for surface wash s valve, 12" BFV FtW, 20"BFV Effluent Flow CV, 20" venturi w calibration/starf 42" BW Supply Isolation all w actuators) add 40% for fittings, piping, sales ta contingency					
Machanish Ahrone	Rate Controllers (Materials Only)	6	LS	\$150,000	\$900,000	actuators) add 40% for fittings, piping, sales tax and contingency					
Valve & piping insulation per filter assembly 10 LS 515,000 \$15,000 \$100,000		10	LS	\$50,000	\$500,000						
Electrical and I&C		10	IS	\$15,000	\$150,000						
Miss. structural modifications to allow for piping replacement (filter box, wall pipes, floor, etc.) & 1			% of Proc-								
Task 5 Project - Filter Gallery Piping & Valving Sub-Total \$ 2,5	replacement (filter box, wall pipes, floor, etc.) &	1		\$200,000	\$200,000						
Task 5 Project - Filter Gallery Piping & Valving Sub-Total \$ 2,5	Small diameter sensing and sampling lines	1	LS	\$50,000	\$50,000	\$5k/filter					
Interior FTW piping to Rate Controller (Namber 1							\$ 2,934.0				
Interior FTW piping to Rate Controller Chamber 1	to to West States of Phylics 6 Vests				,,		2,554,1				
Rate Controller (Venturi) Chamber (10x10 vault, 10.5" 1		1	LS	\$150,000	\$150,000						
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New Underdrains 10 LS \$230,000 \$2,300,000 Type X4 w. Series 200 Cap was \$232,40fflet including 200K for installation for the complete there was an additional \$100k filter for structural modifications to round piping beneath water block to center guilet. This is not included in the experiment \$10 LS \$100,000 \$1,000,00	Scour, Underdrain & Media Replacement Filter Gallery - Building Extension for improved access and blowers for air scour Redundant filter backwash supply line Air scour system including blowers and header Air scour piping per filter including isolation valve	TAL OPINIC LO HIG	ON OF PRO W RANGE O H RANGE O	DPINION OF POPINION OF POPINIO	iscellaneous Work (2 ISTRUCTION COS PROBABLE CONSTR ROBABLE CONSTR \$650,000	Base Project Sub-Total 20%), Contingency (10%) Tr (Point Estimate) SUCTION COST (-35%) UCTION COST (+50%) Not includedwould push to extension for blowers "51MM Not includedwould push to Assume Blowers are placed one improvements (\$500 blowers) Trobled Collins Park OPEC.	\$ 3,804,1 \$ 2,054; \$5,860,0 \$3,810, \$8,790,1 high range of OPCC. Note Toledo building high range of OPCC Filtered Water Basin. Toledo Collins Park Filt \$450k header for 140-MG0/30 filters)				
Media replacement 10	Scour, Underdrain & Media Replacement Filter Gallery - Building Extension for improved access and blowers for air scour Redundant filter backwash supply line Air scour system including blowers and header Air scour piping per filter including isolation valve Demolition & disposal of filter media, underdrains,	LO HIG	W RANGE CH RANGE C	DPINION OF POPINION OF POPINIO	iscellaneous Work (2 ISTRUCTION COS POBABLE CONSTR ROBABLE CONSTR \$650,000 \$200,000	Base Project Sub-Total 2059, Contingency (10%) To (Point Estimate)	\$ 3,804,1 \$ 2,054; \$5,860,0 \$3,810,0 \$3,810,0 \$1,900,0 \$1				
Electrical and I&C 20% % of GC work \$4,900,000 \$245,000 \$1,029,000 \$245,000 \$1,029,000 \$245,000 \$1,029,000 \$245,000 \$1,029,000 \$245,000 \$1,029,000 \$245,000 \$1,029,000 \$245,000 \$1,029,000 \$26,000 \$1,029,000 \$26,000 \$1,029,000 \$26,000 \$1,029,000 \$26,000 \$1,029,000 \$26,000 \$1,029,000 \$26,000 \$1,029,000 \$26,000 \$	rScour, Underdrain & Media Replacement Filter Gallery - Building Extension for improved access and blowers for air scour Redundant filter backwash supply line Air scour system including blowers and header Air scour piping per filter including isolation valve Demolition & disposal of filter media, underdrains, etr.	LO HIG	US LS	DBABLE CON DPINION OF PI PINION OF PI N/A N/A \$650,000 \$20,000 \$50,000	iscellaneous Work (2 ISTRUCTION COS ROBABLE CONSTR ROBABLE CONSTR \$650,000 \$200,000	Base Project Sub-Total 2005), Contingency (10%) Tr (Point Estimate) UCTION COST (-35%) UCTION COST (-45%) UCTION COST (-45%) Not included	\$ 3,804,1 \$ 2,054; \$ 2,054; \$ 3,810,0 \$ 3,810,				
Miscellaneous HVAC & Plumbing 5% of GC Work \$4,900,000 \$245,000 \$5% of Filter 1-10 process mechanical work, doesn't include complete debumidification of pipe gallery or filters Electrical and I&C 20% % GC & H/P work \$5,145,000 \$1,029,000 \$2% of Filter 1-10 process mechanical work. When the filter drain and filter influent valve replacement for each filter \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$10	r Scour, Underdrain & Media Replacement Filter Gallery - Bullding Extension for improved access and blowers for air scour Redundant filter backwash supply line Air scour system including blowers and header Air scour piping per filter including isolation valve Demolition & disposal of filter media, underdrains, etr. New Underdrains	1 10 10 10	US LS LS LS	DEABLE CON DEPINION OF P DEPINION OF P N/A \$650,000 \$20,000 \$230,000	\$650,000 \$2,300,000	Base Project Sub-Total 2005), Contingency (1009) To (Point Estimate) Succession (1005) UCTION COST (+35%) UCTION COST (+35%) UCTION COST (+50%) Not includedwould push to extension for blowers "\$1.10M. Not includedwould push to saximate blowers are placed ove improvements (\$500b blowers) Todedo Collins Park OPCC. Assume remove dot to increase and the properties of the properti	\$ 3,804,t \$ 2,054,1 \$ 2,054,1 \$ 3,810,0 \$ 33,810,0 \$ 33,810,0 \$ 3,				
Electrical and I&C 20% % of G.C. & \(\frac{\psi}{\psi} \psi	Scour, Underdrain & Media Replacement Filter Gallery - Building Extension for improved access and blowers for air scour Redumdant filter backwash supply line Air scour system including blowers and header Air scour piping per filter including isolation valve Demolition & disposal of filter media, underdrains, etr New Underdrains Media replacement Structural modifications (filter box, wall pipes, floor,	1 10 10 10	LS LS LS	DEABLE CON DEPINION OF PI PINION OF PI N/A N/A \$650,000 \$20,000 \$50,000 \$100,000		Base Project Sub-Total 100%), Contingency (100%) Tot Point Estimate) Succession of Sub-Sub-Sub-Sub-Sub-Sub-Sub-Sub-Sub-Sub-	\$ 3,804,1 \$ 2,054; \$ 2,054; \$ 55,860,0 \$ 53,810,1 \$ 3,810,1 \$ 8,790,1 high range of OPCC. Note Toledo building high range of OPCC of Toledo Collins Park File \$ 450k header for 140-MG0/30 filters) filter bed depth. Toledo Collins Park OPCC w \$ 254k/filter for underdrainer nervoard **Largaz Seffilter. Toledo Collins Park OPCC w \$ 254k/filter including 20% for installation. N filter bed depth. Toledo Collins Park Leopol \$ 232k/filter including 20% for installation. N exit 12° 32° 348 18° arbitractol, Extra polatic at assume economies of Scale. Collins Park 12° k/filter. Pricing includes install				
Filter drain and filter influent valve replacement for each filter 10 LS \$50,000 \$500,000 Not included above (Filters 1-4: Influent 30" hydr. sluice gate & drain 48 sluice gate = filters 5-10: 30" BFV influent & drain), \$500/filter material in the propert Sub-Total (Filter Gallery Sub-Total (Filter Gal	Focur, Underdrain & Media Replacement Filter Gallery - Building Extension for improved access and blowers for air scour Redundant filter backwash supply line Air scour system including blowers and header Air scour piping per filter including isolation valve Demolition & disposal of filter media, underdrains, etc. New Underdrains Media replacement Structural modifications (filter box, wall pipes, floor, etc.)	1 10 10 10 10 11 10 11 10 11 10 11 10 11 10 11 10 11 10 11 10 11 10 11 11	LS L	DEABLE CON DEPINION OF PI N/A N/A \$650,000 \$20,000 \$230,000 \$230,000 \$230,000 \$230,000		Base Project Sub-Total 2054), Contingency (10%) To Quotingency (10%) To Quotingency (10%) TO QUOTING COST (+50%) UCTION COST (+50%) UCTION COST (+50%) Not includedwould push to extension for blowers "\$1 MM. Not includedwould push to extension for blowers "\$1 MM. Not includedwould push to extension for blowers "\$1 MM. Not includedwould push to extension for blowers \$1 MM. Not included	\$ 3,804,1 \$ 2,054,2 \$ 2,054,2 \$ 5,860,0 \$ 33,810,1 \$ 3,8				
Air Scour, Underdrain & Media Replacement Sub-Total \$ 6,6 Air Scour, Underdrain, Media & Filter Gallery Sub-Total \$ 9,6 Air Scour, Underdrain, Media & Filter Gallery Sub-Total \$ 9,6 Recommended Project Sub-Total Filter Rehab + Filter to Waste \$ 10,4 General Requirements (9%), Contractors OH&P (15%), Miscellaneous Work (20%), Contingency (10%) \$ 5,6 RECOMMENDED PROJECT - TOTAL OPINION OF PROBABLE CONSTRUCTION COST (Point Estimate) \$16,14	Fiscour, Underdrain & Media Replacement Filter Gallery - Building Extension for improved access and blowers for air scour Redundant filter backwash supply line Air scour system including blowers and header Air scour piping per filter including isolation valve Demolition & disposal of filter media, underdrains, etc. New Underdrains Media replacement Structural modifications (filter box, wall pipes, floor, etc.) Miscellaneous HVAC & Plumbing	1 10 10 10 10 5%	US LS	DBABLE CON DPINION OF PI N/A N/A \$650,000 \$20,000 \$20,000 \$100,000 \$250,000 \$4,900,000		Base Project Sub-Total 20%), Contingency (10%) Tr (Point Estimate) Sub-Tr (Point Estimate) Not included	\$ 3,804,t \$ 2,054,1 \$ 2,054,1 \$ 3,810,0 \$ 33,810,0 \$ 33,810,0 \$ 33,810,0 \$ 3,8790,0 \$ 3,810,0 \$				
Recommended Project Sub-Total (Total Filter Rehab + Filter to Waste) \$ 10,4 General Requirements (9%), Contractors OH&P (15%), Miscellaneous Work (20%), Contingency (10%) \$ 5,6 RECOMMENDED PROJECT - TOTAL OPINION OF PROBABLE CONSTRUCTION COST (Point Estimate) \$16,14	Focur, Underdrain & Media Replacement Filter Gallery - Building Extension for improved access and blowers for air scour Redundant filter backwash supply line Air scour system including blowers and header Air scour piping per filter including isolation valve Demolition & disposal of filter media, underdrains, etc New Underdrains Media replacement Structural modifications (filter box, wall pipes, floor, etc.) Miscellaneous HVAC & Plumbing Electrical and I&C Filter drain and filter influent valve replacement for	1 10 10 10 10 1 1 5% 20%	US LS	DEABLE CON DEPINION OF PI N/A N/A \$650,000 \$20,000 \$50,000 \$100,000 \$250,000 \$4,900,000 \$5,145,000	\$650,000 \$2,300,000 \$2,300,000 \$2,500,000 \$2	Base Project Sub-Total 2005), Contingency (10%) To (Point Estimate) UCTION COST (-35%) UCTION COST (-450%) We included	\$ 3,804,1 \$ 2,054; \$ 1,054; \$				
General Requirements (9%), Contractors OH&P (15%), Miscellaneous Work (20%), Contingency (10%) \$ 5,6 RECOMMENDED PROJECT - TOTAL OPINION OF PROBABLE CONSTRUCTION COST (Point Estimate) \$16,14	Focur, Underdrain & Media Replacement Filter Gallery - Building Extension for improved access and blowers for air scour Redundant filter backwash supply line Air scour system including blowers and header Air scour piping per filter including isolation valve Demolition & disposal of filter media, underdrains, etc New Underdrains Media replacement Structural modifications (filter box, wall pipes, floor, etc.) Miscellaneous HVAC & Plumbing Electrical and I&C Filter drain and filter influent valve replacement for	1 10 10 10 10 1 1 5% 20%	US LS	DEABLE CON DEPINION OF PI N/A N/A \$650,000 \$20,000 \$230,000 \$230,000 \$230,000 \$4,900,000 \$5,145,000 Air Scour,	\$650,000 \$1,000,000 \$1,002,000 \$1,002,000 \$2500,000	Base Project Sub-Total 100%], Contingency (100%) Tot Point Estimate) Succession of Sub-Total 100% (100%) Sub-Total Estimate) Succession of Sub-Total 100% (100%) Sub-Total 100%	\$ 3,804,t \$ 2,054,1 \$ 5,860,00 \$ 53,810,0 \$ 53,810,0 \$ 53,810,0 \$ 53,810,0 \$ 53,810,0 \$ 53,810,0 \$ 53,810,0 \$ 53,810,0 \$ 53,810,0 \$ 54,700,0 \$				
RECOMMENDED PROJECT - TOTAL OPINION OF PROBABLE CONSTRUCTION COST (Point Estimate) \$16,14	Focur, Underdrain & Media Replacement Filter Gallery - Building Extension for improved access and blowers for air scour Redundant filter backwash supply line Air scour system including blowers and header Air scour piping per filter including isolation valve Demolition & disposal of filter media, underdrains, etc New Underdrains Media replacement Structural modifications (filter box, wall pipes, floor, etc.) Miscellaneous HVAC & Plumbing Electrical and I&C Filter drain and filter influent valve replacement for	1 10 10 10 10 1 1 5% 20%	LS L	DEABLE CON DEPINION OF PI N/A N/A \$650,000 \$20,000 \$20,000 \$20,000 \$50,000 \$250,000 \$4,900,000 \$5,145,000 Air Scour, Air		Base Project Sub-Total 20%), Contingency (10%) To (Point Estimate) UCTION COST (-35%) UCTION COST (-35%) UCTION COST (-55%) Not includedwould push to extension for blowers "\$1.10M. Not includedwould push to sextension for blowers "\$1.10M. Not includedwould push to sextension for blowers "\$1.10M. Not includedvould push to sextension for blowers are placed ove improvements (\$500k blowers 10 tricked Collins Park OPCC. Assume remove did to increase 10 tricked Collins Park OPCC. Assume remove did to increase 10 tricked Collins Park OPCC. Assume replace media in-kind (Assume repla	\$ 3,804,1 \$ 2,054,1 \$ 2,054,1 \$ 3,810,0 \$ 54,810,0 \$ 54				
LOW RANGE OPINION OF PROBABLE CONSTRUCTION COST (-35%) \$10.5	Scour, Underdrain & Media Replacement Filter Gallery - Building Extension for improved access and blowers for air scour Redundant filter backwash supply line Air scour system including blowers and header Air scour piping per filter including isolation valve Demolition & disposal of filter media, underdrains, etr. New Underdrains Media replacement Structural modifications (filter box, wall pipes, floor, etc.) Miscellaneous HVAC & Plumbing Electrical and I&C Filter drain and filter influent valve replacement for each filter	1 10 10 10 10 5% 20% 10	LS L	DEABLE CON DEPINION OF PI N/A N/A \$650,000 \$20,000 \$20,000 \$230,000 \$230,000 \$250,000 \$250,000 \$250,000 \$250,000 \$250,000 \$4,900,000 \$5,145,000 Air Scour, Mar Sc	\$650,000 \$2,300,000 \$2,300,000 \$2,500,000 \$2	Base Project Sub-Total 2005), Contingency (10%) To (Point Estimate) UCTION COST (+35%) UCTION COST (+50%) Not includedwould push to extension for blowers "\$1MM. Not included	\$ 3,804,1 \$ 2,054; \$ 2,054; \$ 3,810,0 \$ 55,860,0 \$ 53,810,0 \$ 53,810,0 \$ 53,810,0 \$ 53,810,0 \$ 53,810,0 \$ 53,810,0 \$ 53,810,0 \$ 53,810,0 \$ 53,810,0 \$ 53,810,0 \$ 53,810,0 \$ 54,8				
HIGH RANGE OPINION OF PROBABLE CONSTRUCTION COST (+50%) \$24,2	Scour, Underdrain & Media Replacement Filter Gallery - Building Extension for improved access and blowers for air scour Redumdant filter backwash supply line Air scour system including blowers and header Air scour piping per filter including isolation valve Demolition & disposal of filter media, underdrains, etr New Underdrains Media replacement Structural modifications (filter box, wall pipes, floor, etc.) Miscellaneous HVAC & Plumbing Electrical and I&C Filter drain and filter influent valve replacement for each filter General Require	1 10 10 10 10 10 10 10 10 10 10 10 10 10	LS LS LS LS LS LS LS LS CS	DBABLE CON DPINION OF PI N/A N/A \$650,000 \$20,000 \$50,000 \$230,000 \$230,000 \$4,900,000 \$5,145,000 Air Scour, Index Forject Su DHAP (15%), M DBABLE CON DBABLE CON		Base Project Sub-Total 20%), Contingency (10%) To (Point Estimate) BUCTION COST (+35%) UCTION COST (+35%) UCTION COST (+50%) Not includedwould push to extension for blowers "51MM Not includedwould push Not includedwould push to Assume Blowers are placed one improvements (5500k blowers Toteled Collins Park OPCC. Assume remove old to increase Type AN w. Series 200 Cap was New underdrain with air scour Type AN w. Series 200 Cap was SuzgRifflet for media removal a New underdrain with air scour Type AN w. Series 200 Cap was SuzgRifflet for media removal a New underdrain with air scour Type AN w. Series 200 Cap was SuzgRifflet for media removal a New underdrain with air scour Type AN w. Series 200 Cap was SuzgRifflet for media removal a Sasume replace media in-kind Oben "5120k for Anthracite b. Sand 37h/fliter + 24" GAC 5186 Sand 57h/fliter + 2	\$ 3,804,1 \$ 2,054,2 \$ 2,054,3 \$ 2,054,4 \$ 3,810,4 \$ 3,810,4 \$ 3,810,4 \$ 3,810,4 \$ 3,810,4 \$ 3,810,4 \$ 3,810,4 \$ 3,810,4 \$ 3,870,0 \$ 1,87				

Basis of Estimate Notes										
Filters 1-4 Valve Summary			2017 Siewert Quote							
Backwash Supply Header Isolation Valve	BFV	42	\$17,300							
Effluent Flow Control Valve incl. venturi meter, BFV,										
DP transmitter, actuator & assembly (\$40k),		20								
calibration @ Utah (\$15k). + Start-Up (\$2k)			\$57,000							
Filter-to-Waste Valve	BFV	12								
			\$6,000							
Surface Wash Supply Valve	BFV	8	\$6,000							
Connecting piping & fittings		30%	\$26,000							
Total	Total									
Escalate t	oundup to nearest \$10k	\$130,000								

Filters 5-10 Valve Summary			2017 Siewert Quote					
Backwash Supply Header Isolation Valve	BFV	30	\$11,000					
Backwash Supply (East) Isolation Valve	BFV	30	\$11,000					
Backwash Supply (West) Isolation Valve	BFV	30	\$11,000					
Effluent Flow Control Valve incl. venturi meter, BFV, DP transmitter, actuator & assembly (\$40k), calibration @ Utah (\$15k). + Start-Up (\$2k)	BFV	20	\$57,000					
Filter-to-Waste Valve	BFV	12	\$6,00					
Surface Wash Supply (East) Isolation Valve	BFV	6	\$5,00					
Surface Wash Supply (West) Isolation Valve	BFV	6	\$5,000					
Connecting piping & fittings		30%	\$22,000					
Total	Total							
Escalate to	\$150,00							

Below the line mark-ups
General Requirements (9%) includes Bonds, Insurance, Mobilization & Demobilization.
Contractors OH&P (15%) includes Overhead, Profit and Management Reserves.
Miscellaneous Work (20%) accounts for elements of the project that are not yet defined (because of early concept
stage of project development) but will be required to complete the project.
A STATE OF THE STA

100-MGD PWSA Asp	nwall Filter & Pipe Gallery Upgrad	es	
140-MGD Toledo Col	ins Park Filter and Pipe Gallery Im	nrovements	

Similar Project Highlight:

PWSA 100-MGD Aspinwall WTP Filter Rehab, completed 2018:

Scope: Full rehab of 18 filters including media replacement and Leopold underdrain system, change out of all control valves, new backwash pump, new blowers for air scour, structural concrete repairs, "store fronts" on all the filter bays (separate gallery from filter boxes), general building improvements (lighting/HVAC/electrical), and dehumidification in the pipe gallery. Did NOT include large diameter piping replacement. 150 drawings.

Construction Cost: Total was \$25.5MM (General \$19.3MM, Elec: \$3.9MM, HVAC: \$2.3MM)

<u>Similar Project Highlight:</u>
City of Toledo (DH) 140-MGD Collins Park WTP Filter & Pipe Gallery Improvements, in construction:
Scope: Full upgrade of 30 filters including replacement of underdrain system, addition of auxiliary air scour, media replacement (12" sand & 24" GAC), filter valve replacement, backwash supply improvements and addition of filter-to-waste provisions. Work required an extension of filter

building for equipment including blowers. Did NOT include large diameter piping replacement. 270 drawings. \$2.4MM Design Fee.

Construction Cost (Bid Phase): Total \$33.6MM

Order of Magnitude \$/Filter: \$1.1 Million/Filter

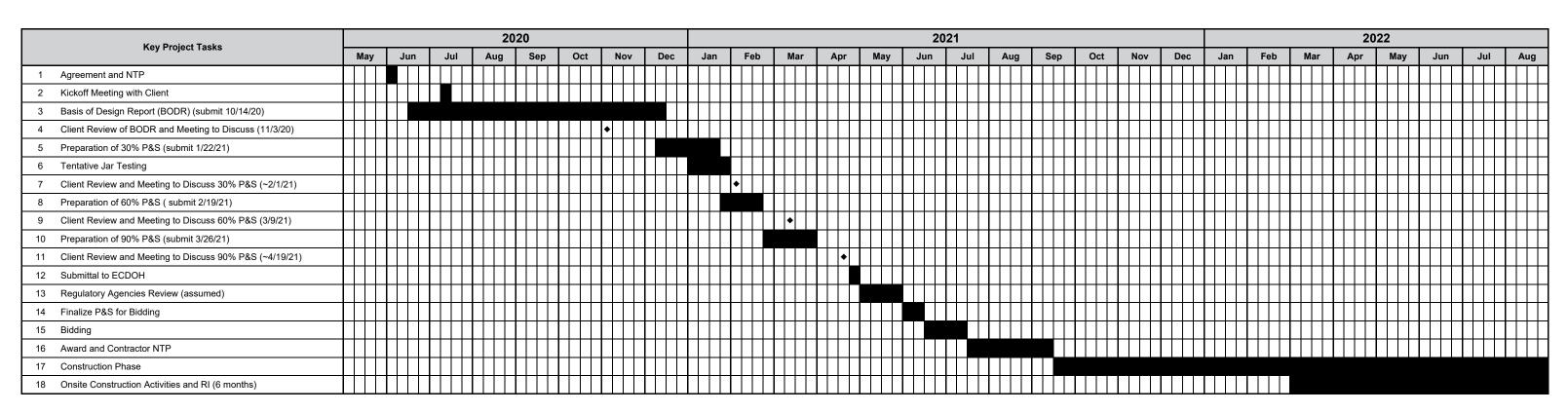
Estimate Classification: AACE Class 5 Estimate:

Scope: This Opinion of Probable Construction Cost (OPCC) is an 'Order of Magnitude' estimate and is based on 0% - 2% Project Definition. The AACE would classify this estimate as a Class 5 estimate. Typical accuracy ranges for Class 5 estimates are - 20% to -50% on the low side, and +30% to +100% on the high side, depending on the technological complexity of the project, appropriate reference

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Erie County Water Authority Van de Water & Sturgeon Point WTP Powdered Activated Carbon System Improvements ECWA Project No. 2020000133 GHD-009 GHD Project 11214768



Detailed scope of work was provided with Letter of Interest, see Attachment 05 - GHD-009 Prof Svc Agt-executed final.pdf

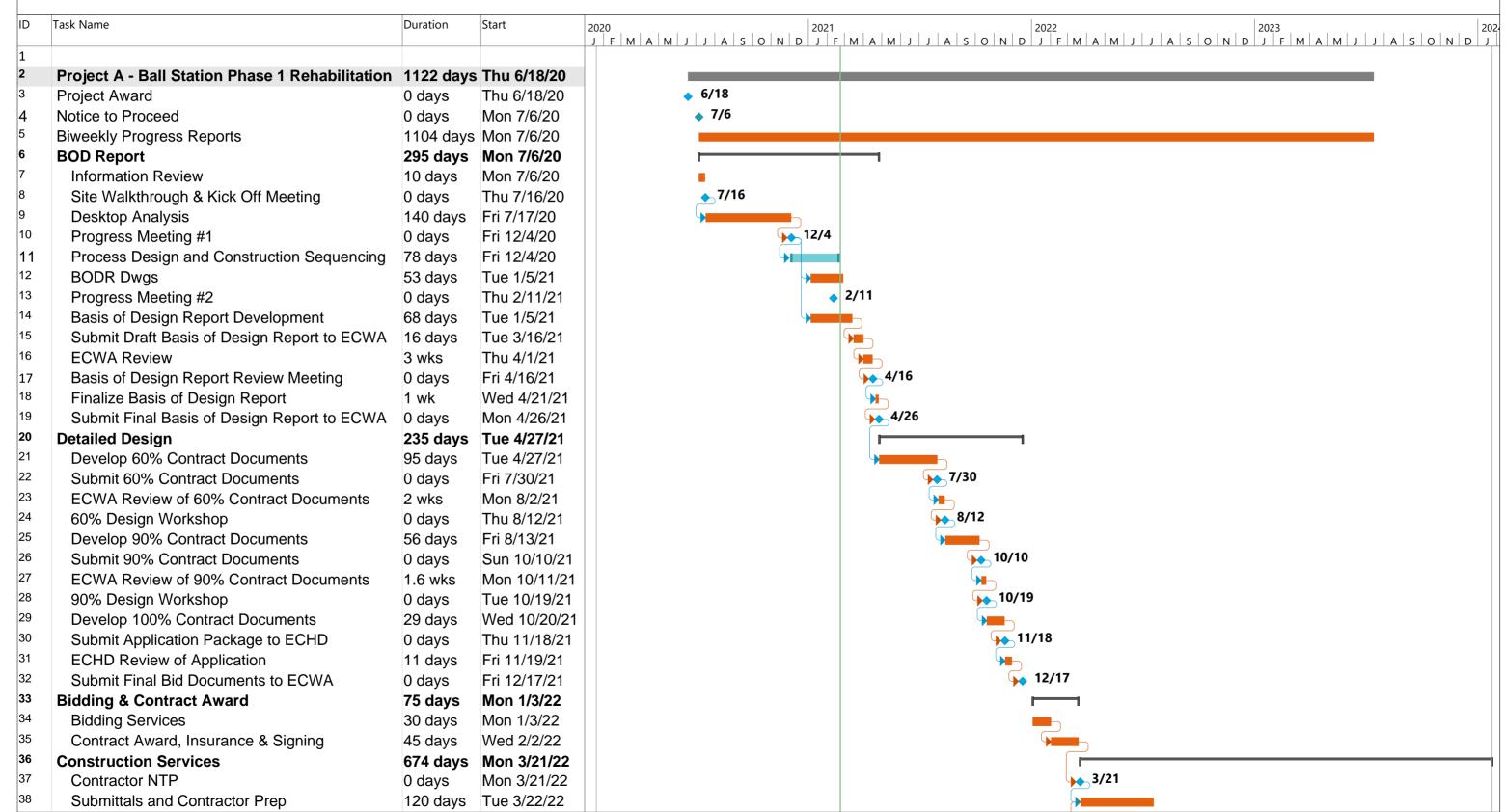
TABLE 7	7.1 ENG	SINEER	'S ESTIM	ATE OF PR	ΟВ	ABLE C	ONSTRUC	TION CO	<u>ST</u>				
Project: Location: Owner: Date:	Van de \	Water Tro	ted Carbon eatment Pla er Authority	System Impro nt	vem	ents		Comput Checked Design S Project	d By:		TM MS 10% 11214768		
	Qua	ntity		Material			Insta	llation		Lal	or		Total
Description	No. Units	Basis	Per Unit	Reference		Total	Per Unit	Total	Man Hours	\$/Man Hour	Total	(Cost (Rounded)
Process Equipment PAC Slurry Tank Mixer PAC Feed Pumps Dust Collection Equipment Level Sensor Magnetic meter Control Panel	1 2 1 1 1 1	EA EA EA EA EA	\$ 96,000 \$ 19,000 \$ 17,000 \$ 3,000 \$ 2,500 \$ 9,100	2 3 4 5	\$ \$ \$ \$ \$ \$	96,000 38,000 17,000 3,000 2,500 9,100	\$ 48,000 \$ 9,500 \$ 8,500 \$ 1,500 \$ 1,250 \$ 4,550	\$ 48,00 \$ 19,00 \$ 8,50 \$ 1,50 \$ 1,25 \$ 4,55	Included Included Included Included	\$ - \$ - \$ -	\$ \$ - \$ \$ 5 \$ \$ 5	\$ \$ \$ \$ \$ \$	150,000 57,000 26,000 5,000 4,000 14,000
Piping and Valves 1.5" PAC Delivery Pipe (exposed-service/spare pipe) 1.5" PAC Delivery Pipe (buried-service/spare pipe)	100 200	LF LF	\$ 50 \$ 200		\$ \$ \$	5,000 40,000	Included Included	\$	- Included - Included		\$ - \$ -	\$	5,000 40,000
Miscellaneous Demolition of Existing PAC System Slurry Tank Re-coating Exhaust Fan and MUA Heater Replacement	1 2,600 1	LS SF LS	\$ 25,000 \$ 32 \$ 30,000		\$ \$ \$ \$ \$	25,000 83,200 30,000	Included Included Included	\$ \$ \$	- Included - Included - Included	\$ -	\$ - \$ - \$	\$ \$	25,000 84,000 30,000
											Subtotal	\$	500,000
							Mo Electrical &	bilization, Instrument	ation Cons	struction Subtotal Taxes	15%	\$\$\$	50,000 90,000 600,000 Exempt
										verhead Profit Subtotal tingency	5%	\$ \$ \$	60,000 30,000 700,000 200,000
							Tota	l Probable	Construct	ion Cost		\$	900,000

<u>TABLE</u>	7.2 EN	GINEER	'S E	STIMA	TE OF PRO	ОВ	ABLE C	ONSTRUC	TIC	N COS	<u>[</u>				
Project: Location: Owner: Date:	Sturgeo	n Point V unty Wate	√ater	Treatme	ystem Improv ent Plant	vem	ents				Compute Checked Design S Project N	l By: Status o	f Estimate		TM MS 10% 11214768
	Qua	antity			Material			Insta	llati	on	•	La	oor		Total
Description	No. Units	Basis		Per Unit	Reference		Total	Per Unit		Total	Man Hours	\$/Man Hour	Total		Cost (Rounded)
Process Equipment															
PAC Slurry Tank Mixer PAC Feed Pumps Dust Collection Equipment Level Sensor Magnetic meter Control Panel	1 2 1 1 1	EA EA EA EA EA	\$	96,000 25,000 17,000 3,000 2,000 9,300	1 2 3 4 5 6	\$ \$ \$ \$ \$ \$	96,000 50,000 17,000 3,000 2,000 9,300	\$ 48,000 \$ 12,500 \$ 8,500 \$ 1,500 \$ 1,000 \$ 4,650	\$ \$ \$ \$ \$ \$		Included Included Included Included Included Included	\$ - \$ - \$ -	\$ - \$ - \$ 5 \$ - \$ -	\$ \$ \$ \$ \$ \$ \$	150,000 75,000 26,000 5,000 3,000 14,000
Piping and Valves 2" PAC Delivery Pipe (exposed-service/spare pipe) 2" PAC Delivery Pipe (buried-service/spare pipe)	1,000 2,000	LF LF	\$ \$	60 100		\$\$	60,000 200,000	Included Included	\$ \$		Included Included		\$ - \$ -	\$	60,000 200,000
Miscellaneous Demolition of Existing PAC System Slurry Tank Re-coating Exhaust Fan and Unit Heater Replacement	1 2,400 1	LS SF LS	\$	25,000 32 15,000		\$ \$ \$ \$	25,000 76,800 15,000	Included Included Included	\$ \$ \$	-	Included Included Included	\$ -	\$ - \$ - \$ -	\$ \$ \$	25,000 77,000 15,000
													Subtotal	\$	650,000
								Mo Electrical &			0		LS 15% 10% 5%	\$\$\$\$ \$\$\$\$	50,000 110,000 810,000 Exempt 90,000 50,000 1,000,000 300,000
								Tota	l Pr	obable C	onstructi	on Cos	: 	\$	1,300,000



Erie County Water Authority Project No. 2020000 ARCADIS Ball Pump Station Phase 1 Rehabilitation









ID	Task Name	Duration	Start	2020 2021 2021 2021	2022 M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J
39	Equipment Fabrication & Delivery	268 days	Thu 4/21/22		A STOCK OF S
40	Contractor Mobilization	38 days	Mon 7/25/22		
41	Phase 1 - Discharge Piping	190 days	Thu 9/1/22		
42	Phase 2 - South Tank 48" Piping and Valves	96 days	Thu 9/1/22		
43	Phase 3 - North Tank 48" Piping and Valves	100 days	Tue 12/6/22		
44	Phase 4 - 48" & 54" Yard Piping to Pump Station	or 100 days	Tue 12/6/22		
45	Phase 5 - New VFDs, Room, HVAC	93 days	Thu 9/1/22		
46	Phase 6 - Bus-5-B-2 Retrofit	5 days	Mon 10/24/22		
47	Phase 7 - Install New Pumps 6 and 7	95 days	Tue 12/6/22		
48	Performance test	12 days	Mon 3/13/23		
49	Phase 8 - Bus-5-A-1 Retrofit	5 days	Mon 3/27/23		
50	Phase 9 - Install New Pumps 1, 2 and 3	96 days	Mon 3/27/23		
51	Performance test	12 days	Mon 7/3/23		
52	Phase 10 - Install New Pumps 4 and 5	96 days	Mon 7/17/23		
53	Performance test	12 days	Mon 10/23/23		
54	Phase 11 - Misc. Improvements	120 days	Mon 7/31/23		
55	Punchlist	15 days	Tue 11/28/23		
56	Final Walkthrough and Project Closeout	0 days	Tue 12/26/23		12
57	Submit ECWA Program / Procedure Updates	29 days	Wed 12/27/23		

MP-086 Preliminary Cost Estimate

The preliminary cost estimate was based on a document supplied under the Letter of Interest, see Attachment 08 - Final Capital Improvement Plan - 02-14-2020 - ECWA Ball PS.pdf.

The projects that were selected from the Capital Improvement Plan include Pumping System Improvements and Exterior Piping Improvements.

The preliminary cost estimate is \$17,600,000, including the contingency.

The Basis of Design Report (BODR) is expected to be submitted April/May 2021. Once the BODR is submitted, a more detailed cost estimate can be provided.