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AGENDA

Meeting of the **Niagara Falls Public Water Authority**

June 13, 2023 at 1:00 p.m.
Michael C. O’Laughlin Municipal Water Plant
5815 Buffalo Avenue, Niagara Falls, NY 14304

1. Call to Order

Roll Call: Michael Monaco _____ Jason Murgia _____ Daniel Weiss _____

2. Public Speakers (All speakers must register with Chairman prior to Roll Call and are limited to 3 minutes per person – total time for all speakers may not exceed one hour).

3. Items for Action from Secretary

A. Approval of Minutes – December 20, 2022 Meeting

B. RESOLUTION 2023-01 – Authorizing the Issuance of the Authority’s Sewer System Revenue Bonds and the Approval and Execution of Related Documents

a. Background Documents:

i. Niagara Falls Water Board Resolution 2023-05-004 – Application for Financing for Wastewater Treatment Plant Conversion Work and SEQR Type II

ii. PowerPoint Presentation, “Niagara Falls WWTP Modification & Conversion to Biological Process: Importance and Challenges”

4. Additional Items for Action

5. Unfinished Business

6. New Business & Additional Items

7. Adjournment of Meeting

MINUTES

Meeting of the **Niagara Falls Public Water Authority**

December 20, 2022 at 4:00 p.m.
Michael C. O’Laughlin Municipal Water Plant
5815 Buffalo Avenue, Niagara Falls, NY 14304

Authority Members Present: Jason Murgia
Michael Monaco

Authority Members Absent: Daniel Weiss

Also Present: Sean W. Costello, Authority Secretary and Niagara Falls
Water Board General Counsel
Brian Majchrowicz, Niagara Falls Water Board Director of
Financial Services
Erika Schroeder, Niagara Falls Water Board Administrative
Assistant

1. Call to Order

Chairman Murgia called the meeting to order at 4:00 p.m. It was noted that Mr. Weiss had planned to attend but was absent due to illness.

2. Public Speakers (All speakers must register with Chairman prior to Roll Call and are limited to 3 minutes per person – total time for all speakers may not exceed one hour).

There were no public speakers.

3. Items for Action from Secretary

A. Yearly Reorganization Meeting

a. Nomination of NFPWA Board Officers:

- i. Chair;
- ii. Vice Chair;
- iii. Treasurer (does not need to be Authority member)
- iv. Secretary (does not need to be Authority member)

Motion by Mr. Murgia seconded by Mr. Monaco to nominate the following slate of officers:

*Jason Murgia, Chairman
Daniel Weiss, Vice Chairman
Michael Monaco, Treasurer
Sean Costello, Secretary*

Monaco: Yes. Murgia: Yes. Weiss: Absent.

Motion carried, 2-0.

- b. Annual Board Evaluation Form

Mr. Costello requests the Board complete and return the confidential evaluation form to him.

- c. Authority Financial Disclosure Form

Mr. Costello notes this is required by the Public Authorities Law but the County may not wish to receive the completed disclosures.

- d. Required Training Reminder - WebEx - [NYS Authority Budget Office](#)

Mr. Murgia and Mr. Monaco have completed this required training.

- e. Comprehensive Ethics Training Course (“CETC”)

Mr. Costello notes this training now is required for all Water Board employees, but the Authority does not have a gubernatorial appointee and may not be required to complete the training. The Authority has its statutory code of ethics and is subject to other laws too.

B. Approval of Minutes November 18, 2021

Motion by Mr. Monaco seconded by Mr. Murgia to approve the November 18, 2021 minutes.

Monaco: Yes. Murgia: Yes. Weiss: Absent.

Motion carried, 2-0.

C. RESOLUTION 2022-01 – Report on Operations and Accomplishments and Performance Measurement Report

- a. 2022 Continuing Disclosure Report
- b. 2021 Independent Audit
 - i. Financial Statements
 - ii. Report on Investment Compliance
 - iii. Management Letter
 - iv. Required Communications

The Authority Members discussed the contents of the resolution, the audit findings, and other matters related to the current position of the Authority and of the Water Board and developments over the past year.

Motion by Mr. Monaco seconded by Mr. Murgia to approve Resolution 2022-01.

Monaco: Yes. Murgia: Yes. Weiss: Absent.

Motion carried, 2-0.

D. RESOLUTION 2022-02 – Authorizing the Issuance of the Authority’s Sewer System Revenue Bonds and the Approval and Execution of Related Documents

Motion by Mr. Monaco seconded by Mr. Murgia to approve Resolution 2022-02.

Monaco: Yes. Murgia: Yes. Weiss: Absent.

Motion carried, 2-0.

4. Additional Items for Action

None.

5. Unfinished Business

None.

6. New Business & Additional Items

- A. Update on NFWB 2023 Budget
 - a. Slides from NFWB Public Hearing
 - b. Drescher & Malecki Rate Consultant Slides

The Authority Members discussed with Mr. Costello and Mr. Majchrowicz issues associated with the NFWB budget, including chemical cost increases, and the NFWB’s desire to address these escalating costs by modifying the wastewater treatment plant’s treatment technology to a biological process that would not require such large quantities of chemicals to operate.

7. Adjournment of Meeting

Motion by Mr. Monaco seconded by Mr. Murgia to adjourn the meeting at 4:35 p.m.

Monaco: Yes. Murgia: Yes. Weiss: Absent.

Motion carried, 2-0.

NIAGARA FALLS PUBLIC WATER AUTHORITY RESOLUTION 2023-01

RESOLUTION AUTHORIZING THE ISSUANCE OF THE AUTHORITY'S SEWER SYSTEM REVENUE BONDS AND THE APPROVAL AND EXECUTION OF RELATED DOCUMENTS

WHEREAS, Title 10-B of the Public Authorities Law of the State of New York, as amended (the "Act") created the Niagara Falls Public Water Authority (the "Authority") with the authority and power to issue its revenue bonds for the purpose of among other things, planning, developing, acquiring, constructing and financing the cost of any facility (as defined in the Act), including the acquisition of facilities of the City of Niagara Falls ("the City") (the "System") by the Niagara Falls Water Board (the "Board") or for any other corporate purpose, including the establishment of reserves to secure the bonds, the payment of principal of, premium, if any, and interest on the bonds and the payment of incidental expenses in connection therewith; and

WHEREAS, the City has sold, transferred and otherwise conveyed the City's title and interest in the System to the Board; and

WHEREAS, the Board has approved capital improvements to be undertaken to the System consisting of the conversion of the wastewater treatment plant to a biological treatment process (the "Project") and has requested that the Authority finance same; and

WHEREAS, in connection therewith, it is now desired to authorize the issuance of not exceeding \$20,000,000 of bonds to the New York State Environmental Facilities Corporation ("EFC"), including any notes issued in anticipation thereof (the "Bonds") plus any amounts necessary to fund reserves and to pay costs of issuance (with such amount to be reduced by grants), and to approve and authorize the execution of related documents; NOW, THEREFORE,

BE IT RESOLVED by the Niagara Falls Public Water Authority as follows:

Section 1.

The Authority hereby finds and determines:

- (a) By virtue of the Act, the Authority has been vested with all powers necessary and convenient to carry out and effectuate the purposes and provisions of the Act and to exercise all powers granted to it under the Act.
- (b) It is desirable and in the public interest for the Authority to issue and sell the Bonds pursuant to a certain General Revenue Bond Resolution dated as of May 1, 2003 (the "General Resolution"), adopted by the Authority, and pursuant to a Supplemental Resolution(s) (the "Supplemental Resolution") by and between the Authority and Manufacturers and Traders Trust Company, as trustee (the "Trustee") (the Supplemental Resolution, collectively with the General Resolution, the "Resolution") and to use the proceeds of said Bonds to pay for the Project, any required reserves and costs of issuance.

Section 2.

In consequence of the foregoing, the Authority hereby determines to: (i) issue and sell the Bonds pursuant to the Supplemental Resolution and the General Resolution; (ii) use the proceeds of the Bonds as previously described and as provided in the Supplemental Resolution, (iii) enter into each agreement hereafter identified in this resolution; and (iv) execute such

other documents and take such other action as may be necessary to effectuate the purposes of this resolution.

Section 3.

The Authority is hereby authorized to issue, execute, sell and deliver the Bonds to EFC in the aggregate principal amount, maturing in such years at such amounts, in serial or term form, at the rate of interest and upon such terms as shall be approved by the Chairman or the vice-Chairman, provided that:

- (a) The Bonds are hereby authorized to be issued, executed and delivered and shall be issued, executed and delivered at such time as the Chairman or the Vice-Chairman of the Authority shall determine.
- (b) The Bonds shall be issued solely for the purposes previously described.
- (c) The Bonds and the interest thereon are not and shall never be a debt of the State of New York or any political subdivision thereof other than the Authority, including without limitation the City of Niagara Falls, and neither the State of New York nor any political subdivision thereof other than the Authority, including without limitation the City of Niagara Falls, shall be liable thereon.

Section 4.

The Authority is hereby authorized to enter into a Project Finance Agreement (the "Finance Agreement") with EFC and such other agreements and documents relating to the Bonds as required by EFC.

Section 5.

The Bonds shall not be issued, executed or delivered until the prior approval of the State Comptroller shall have been obtained as required by the Act.

Section 6.

- (a) The Chairman or the vice-Chairman of the Authority are hereby authorized, on behalf of the Authority, to execute and deliver the Supplemental Resolution, the Bonds, and the Finance Agreement, all as described above (collectively, the "Financing Documents"), and the Secretary of the Authority is hereby authorized to affix the seal of the Authority to the Supplemental Resolution and the Bonds and to attest the same. The execution thereof by the Chairman or the Vice-Chairman shall constitute conclusive evidence of such approval.
- (b) The Chairman or the vice-Chairman of the Authority are further hereby authorized, on behalf of the Authority, to designate any additional Authorized Representatives of the Authority (as used or defined in and pursuant to the Resolution) to execute, on behalf of the Authority, any Financing Documents.

Section 7.

The members, officers, employees and agents of the Authority are hereby authorized and directed for and in the name and on behalf of the Authority to do all acts and things required or provided for by the provisions of the Financing Documents, and to execute and deliver all such additional certificates, instruments and documents, pay all such fees, charges and expenses and to do all such further acts and things as may be necessary or, in the opinion of the member, officer, employee or agent acting, desirable and proper to effect the purposes of this resolution and to cause

compliance by the Authority with all of the terms, covenants and provisions of the Financing Documents.

Section 8.

This resolution shall take effect immediately and the Bonds are hereby ordered to be issued in accordance with this resolution.

At a regular meeting of the Niagara Falls Public Water Authority, held at the Authority's office, _____, Niagara Falls, New York 14304, at _____ o'clock P.M., on the ____ day of June, 2023, the following members of the Authority were:

PRESENT:

ABSENT:

ALSO PRESENT:

After the meeting had been duly called to order, the Chairman announced that among the purposes of the meeting was to consider and take action on certain matters pertaining to the issuance and sale of the Authority's proposed Sewer System Revenue Bonds.

The following resolution was duly moved, seconded, discussed and adopted with the *following members voting in open session:*

AYE

NAY

STATE OF NEW YORK)
 ss.:
COUNTY OF NIAGARA)

I, the undersigned Secretary of the Niagara Falls Public Water Authority, DO HEREBY CERTIFY:

That I have compared the annexed extract of the minutes of the meeting of the Niagara Falls Public Water Authority, including the resolution contained therein, held on June __, 2023, with the original thereof on file in my office, and that the same is a true and correct transcript therefrom and of the whole of said original so far as the same relates to the subject matters therein referred to.

I FURTHER CERTIFY that all members of said Authority had due notice of said meeting.

I FURTHER CERTIFY that, pursuant to Section 103 of the Public Officers Law (Open Meetings Law), said meeting was open to the general public.

I FURTHER CERTIFY that, PRIOR to the time of said meeting, I duly caused a public notice of the time and place of said meeting to be given to the following newspapers and/or other news media as follows:

<u>Newspaper and/or other news media</u>	<u>Date given</u>
--	-------------------

I FURTHER CERTIFY that PRIOR to the time of said meeting, I duly caused public notice of the time and place of said meeting to be conspicuously posted in the following designated public location on the following dates:

<u>Designated Location of Posted Notice</u>	<u>Date of posting</u>
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None

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of said Authority on _____, 2023.

(CORPORATE SEAL)

[_____] , Secretary

NIAGARA FALLS WATER BOARD RESOLUTION # 2023-05-004

AUTHORIZING APPLICATION TO ENVIRONMENTAL FACILITIES CORPORATION FOR BIPARTISAN INFRASTRUCTURE LAW FINANCING TO BE USED FOR WASTEWATER TREATMENT PLANT BIOLOGICAL CONVERSION WORK AND SEQR TYPE II DETERMINATION

WHEREAS, the Niagara Falls Water Board (“Water Board”) is seeking approximately \$250 million in funding for the anticipated cost to convert the wastewater treatment plant from a costly, inefficient, maintenance-intensive, and failure-prone physical/chemical treatment process to a biological treatment process, which is the appropriate treatment technology for the wastewater received at the plant and can consistently meet expected effluent permit limits; and

WHEREAS, the Water Board’s funding request follows an engineering report from AECOM dated October 31, 2019 and entitled “Evaluation of the Conversion and Modification of the Niagara Falls Water Board Wastewater Treatment Plant into a Biological Treatment Process” which establishes the feasibility of biological conversion and estimated the cost of conversion to be approximately \$223 million in 2019 dollars; and

WHEREAS, the Water Board has advised the NYS Environmental Facilities Corporation (“EFC”) of its intended project, and EFC has listed costs necessary to the project on its Intended Use Plan in two places, \$234,600,000 under project C9-6603-15-01, which would relate to construction costs of the project if designed and approved by all applicable authorities, and \$20 million under project C9-6603-15-00, which would cover the costs of such further engineering studies, surveys, and subsurface investigations as are necessary to develop the project to a design, as well as the anticipated cost of engineering feasibility study and design work for the project; and

WHEREAS, EFC has advised the Water Board that it has until June 16, 2023 to submit a complete application under project C9-6603-15-00 to secure \$20 million in Bipartisan Infrastructure Law (“BIL”) low or zero-interest hardship financing for the conversion project, and that the Water Board may seek to convert up to \$10 million of that sum into BIL grant funding if in a future year the project becomes eligible based on its score under EFC/BIL criteria; and

WHEREAS, the funding application does not obligate the Water Board to spend the funds and Water Board staff continue to work with consultants to identify comprehensive funding for wastewater treatment plant conversion costs, but to avoid losing the opportunity to secure the \$20 million in hardship financing that currently is available, it necessary to complete an application by June 16, and that application must be supported by a resolution of the Niagara Falls Public Water Authority to authorize the issuance of bonds in the total amount of \$20 million; and

WHEREAS, the exact costs of this work are not yet known, and any funds remaining from the \$20 million are anticipated to be applied to necessary site work or other construction costs, subject to EFC approval and review pursuant to the requirements of the State Environmental Quality Review Act (“SEQR”); and

WHEREAS, for the actions now planned to be undertaken, to wit the engineering studies, surveys, subsurface investigation, and preparation of design documents, the Water Board must consider pursuant to criteria set forth in SEQR the environmental implications of the actions; and

WHEREAS, the Water Board intends to declare itself as the Lead Agency for SEQR review of the projects; and

WHEREAS, certain actions are classified under SEQR as Type II actions; and

WHEREAS, Type II actions are those actions, or classes of actions, which have been found categorically not to have significant adverse impacts on the environment, or actions that have been statutorily exempted from SEQR review, and Type II actions do not require preparation of an Environmental Assessment Form, a negative or positive declaration, or an Environmental Impact Statement; and

WHEREAS, Type II actions do not require any further SEQR review; and

WHEREAS, the Water Board has considered under SEQR the projects now planned to be undertaken as described above, and finds that pursuant to 6 NYCRR Sections 617.5 (c) (24) and 617.5 (c) (27), these constitute “information collection including basic data collection and research, water quality and pollution studies, engineering studies, surveys, subsurface investigations and soils studies that do not commit the agency to undertake, fund or approve any Type I or Unlisted action” or “concurrent environmental, engineering, economic, feasibility and other studies and preliminary planning and budgetary processes necessary to the formulation of a proposal for action [that] do not commit the agency to commence, engage in or approve such action,” and therefore require no further SEQR review by the Water Board;

NOW, THEREFORE, BE IT

RESOLVED, that the Water Board hereby declares its intention to serve as the SEQR Lead Agency for the proposed actions and will accordingly take such actions as may be required pursuant to such declaration; and

IT IS FURTHER RESOLVED, that the projects now planned as described above constitute SEQR Type II Actions and do not require an environmental impact statement or any other determination or procedure; and

IT IS FURTHER RESOLVED, that the Water Board hereby authorizes the preparation and submittal to EFC of such applications and other documents which may be required to secure the \$20 million hardship loan described in the body of this Resolution as well as any documents necessary to apply for or obtain BIL grant funding to offset a portion of that \$20 million; and

IT IS FURTHER RESOLVED, that the Water Board hereby authorizes and designates CPL, engineers, as its Authorized Representative for the purpose of submitting loan applications and documentation, and to submit any documents or applications needed for potential BIL grant funding, and the Executive Director is authorized to execute any documents and agreements necessary or convenient to apply for, to accept, or required for disbursement of grant and loan funds in connection with project C9-6603-15-00; and

IT IS FURTHER RESOLVED, to the extent required to apply for up to \$10 million in BIL grant funding in connection with project C9-6603-15-00, that the Water Board authorizes and obligates matching funds equal to the amount of the grant; and

IT IS FURTHER RESOLVED, that based upon the requirements described in the body of this Resolution, the Water Board hereby requests that the Niagara Falls Public Water Authority authorize the issuance of Bonds to finance \$20 million in improvements to the System to be performed at the wastewater treatment plant plus any reserve required and costs of issuance associated therewith.

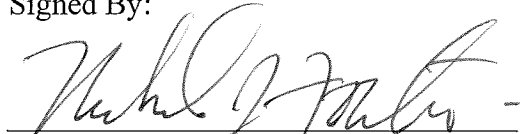
Water Board Personnel Responsible for Implementation of this Resolution:
Executive Director

Water Board Budget Line or Capital Plan Item with Funds for this Resolution:
To be determined.

On May 22, 2023, the question of the adoption of the foregoing Resolution was duly put to a vote on roll call, which resulted as follows:


	Yes	No	Abstain	Absent
Board Member Asklar 1st	[✓]	[]	[]	[]
Board Member Kimble	[✓]	[]	[]	[]
Board Member Larkin 2nd	[✓]	[]	[]	[]
Board Member Leffler	[✓]	[]	[]	[]
Chairman Forster	[✓]	[]	[]	[]

Signed By:



Nicholas J. Forster, Chairman

Vote Witnessed By:



Sean W. Costello, Secretary to Board



*Niagara Falls WWTP Modification &
Conversion to Biological Process:
Importance and Challenges*

*DEC & EFC Meeting – Albany, NY
March 20, 2023*



NIAGARA FALLS

WATER BOARD

Outline

1. Introduction
2. Wastewater Treatment Plant (“WWTP”) Background / 1970’s Design
3. Carbon Filters Issues
4. Effluent Contrast
5. Alternative Treatment Technology Study
6. Plant Conversion Recommended
7. Impacts – Tourism, Sportfishing, Canadian Interests
8. Current WWTP – Unsustainable Costs and Soaring User Rates
9. Biological Conversion – Unaffordable for Niagara Falls
10. Closing Remarks
11. How do we Secure Funding?

Existing WWTP Treatment Process

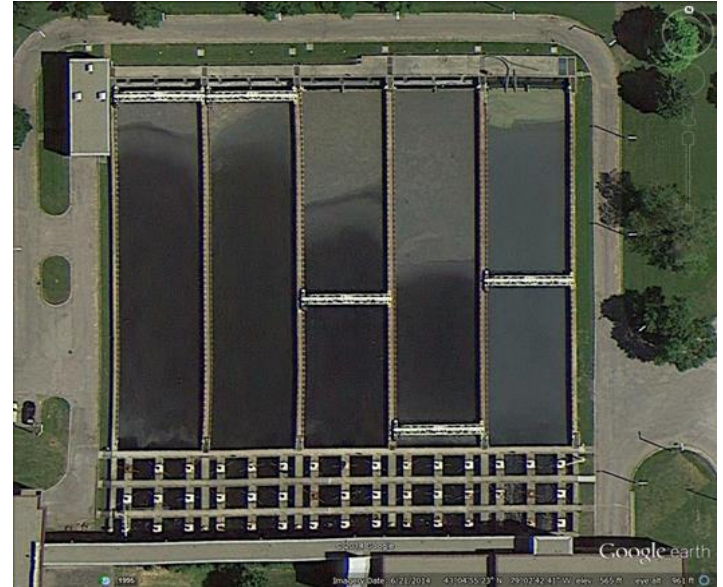
1. Primary Treatment - Physical/Chemical Process

- Flocculation and Chemical Phosphorus Removal Using Ferric Chloride (Also Sequesters Odor) and Anionic Polymer

2. Secondary Treatment - Granular Activated Carbon Filters

- 28 Filter Beds

3. Chlorination for Bacterial Disinfection



1970's Design Basis

Granular Activated Carbon Filters – **Designed for Heavy Industry**

- WWTP Design Completed in 1972; Plant in Service in 1977.
 - Influent wastewater not amenable to conventional biological activated sludge treatment process.
 - Granular Activated Carbon deemed necessary to handle influent organic and inorganic chemicals from industrial wastewater.
- 1972-1977: Clean Water Act/EPA's pretreatment regulations largely eliminated the rationale for this choice of treatment technology!
- Further reduction in influent loading due to departure of industrial users since 1970's.
- **Current Wastewater: Weak Municipal Wastewater**

Granular Activated Carbon Plants – Mostly Abandoned For Municipal Treatment

13 Physical/Chemical WWTPs Constructed in the 1970's

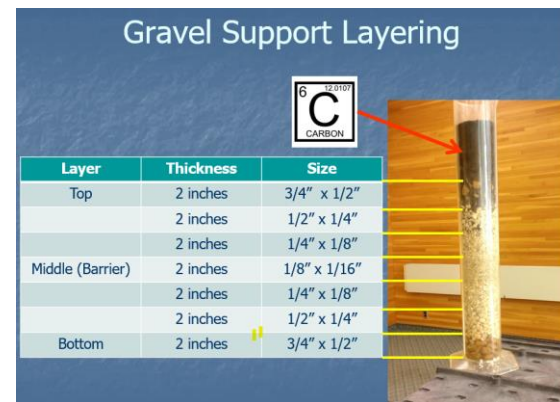
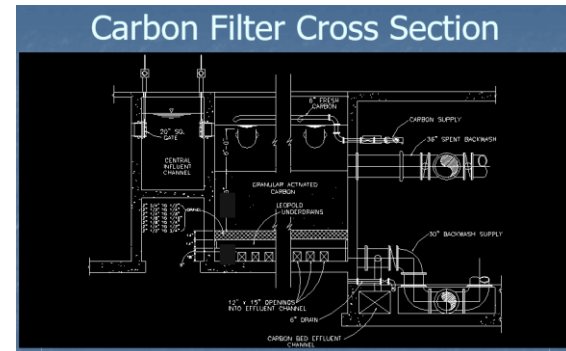
- 9 Have Converted to Biological or Closed – For Good Reason!
- 4 Continue to Operate
 - All but Niagara Falls pre-filter and pre-chlorinate prior to carbon
 - Niagara Falls is largest remaining



Carbon Filters – Difficult to Operate

Carbon Filters

- Underdrains failed almost as soon as plant was put online, resulting in plant's first Consent Order.
- Complex, High Maintenance, and Costly
 - Rapid Head Loss – Requires Frequent Backwash and Air Scour – Operational Complexity and Maintenance Intensive
 - High Volumes of Backwash Water
 - Sulfide Generation
 - **2023 – Cost to Change Carbon in just 1 of 28 Filters ~\$100,200!**



Carbon Filters – Treatment Limitations

Treatment Limitations: Current Technology Lacks Soluble Biochemical Oxygen Demand (“BOD”) removal

- Oxygen depletion in the carbon filters
- Plant not designed to eliminate BOD
 - Proposed revisions to facility’s SPDES permit would require 85% removal

Carbon Filter Issues – Sulfide Formation

- Without Soluble BOD Removal:
 - Sulfide is generated in the carbon filters due to biological activity
 - Sulfide causes: odors, corrosion, chlorine demand, turbid effluent
- Corrosive Hydrogen Sulfide (H₂S) Gas
 - Plant Mechanical and Electronic Equipment Experiences High Rates of Failures and Results in Deteriorated Condition of Plant
 - Requires Constant Maintenance and Replacement
- Huge Chemical Demand
 - Requires enormous quantities of sodium hypochlorite (NaClO) to oxidize the sulfide to prevent dangerous and noxious levels of H₂S, far more than needed for disinfection (*up to 32,000 gallons per day in June 2021*)

Carbon Filter Issues – Effluent Color

Effluent Color

- Elemental sulfur particles will not settle
- White or whitish yellow elemental sulfur causes milky white effluent
- Mixing with black (from Iron Sulfide) carbon filter backwash water can create effluent that is varying shades of gray
- WWTP outfall is just downstream of Maid of the Mist docks
 - Eddy current carries discharge toward Falls
 - Surface outfall – not submerged – and relocating outfall \$110-million-plus project with no benefit to water quality
- **The current WWTP technology cannot produce clear effluent!**

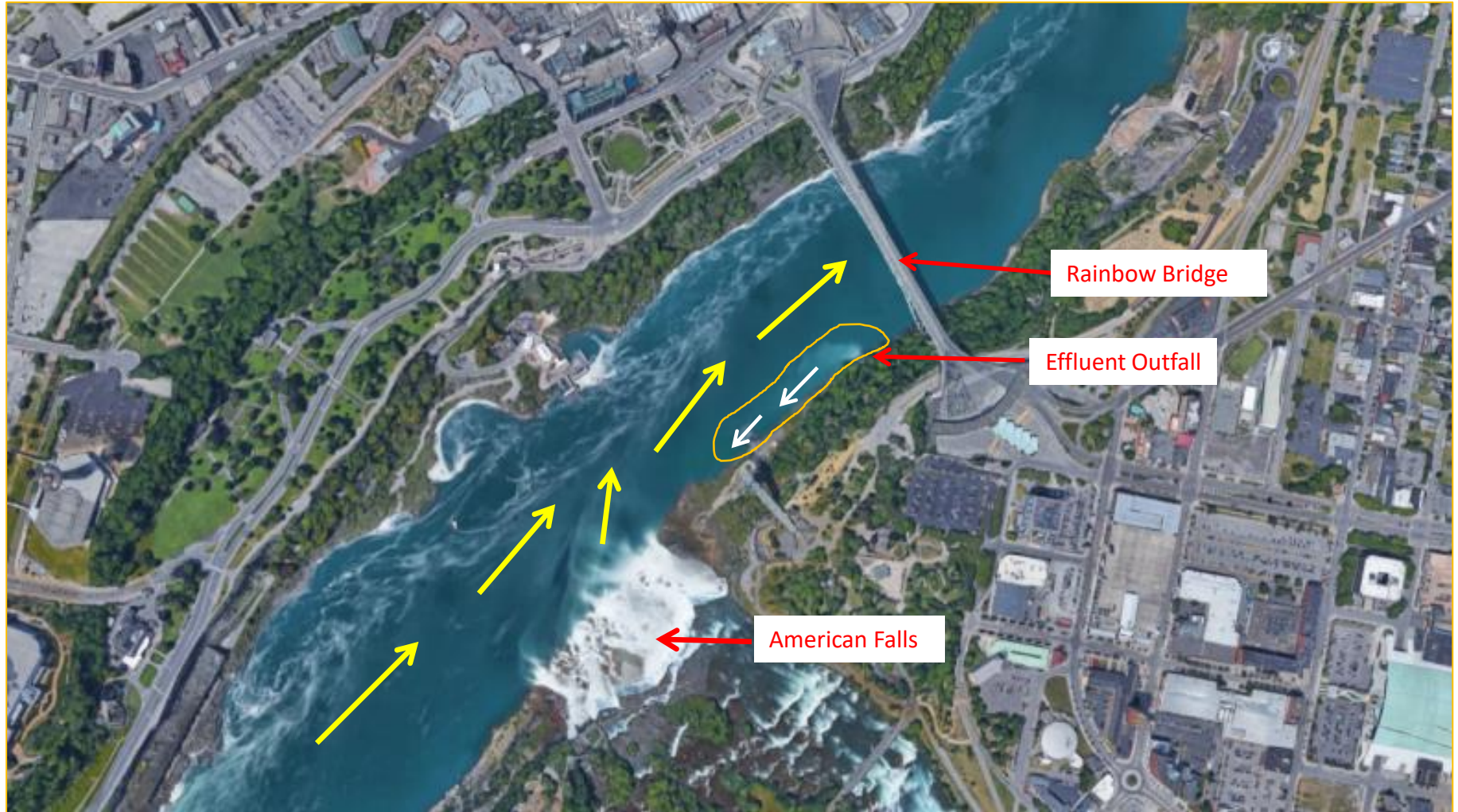
Carbon Filter Issues – Effluent Contrast



Carbon Filter Issues – Effluent Contrast



WWTP Discharge Outfall Location



July 2017 “Black Water” Incident



July 2017 “Black Water” Incident

Discharge turns water at base of

Niagara Falls black

Carolyn Thompson, Associated Press, Jul. 31, 2017

**DEC investigating after water board
discharge into lower Niagara River**

Niagara Gazette, Jul. 31, 2017

**Black sewage plume at Falls raises
flags on both sides of border**

Tom Precious, Jerry Zremski, Buffalo News, Aug. 2, 2017

**Higgins calls for EPA probe
into Niagara River discharge**

Niagara Gazette, Aug. 03, 2017

**Black sewage blob gives
Niagara Falls a PR black
eye**

Thomas J. Prohaska, Buffalo News, Aug. 1, 2017

**Billowing, black sewer discharge at
Niagara Falls alarms businesses, tourists**

Sandra Tan, Buffalo News, Jul. 30, 2017



July 2017 “Black Water” Incident

Black discharge returns below Niagara Falls

Aaron Besecker, Buffalo News, Oct. 9, 2017

Canadian lawmaker targets Niagara River sewage discharges

Philip Gambini, Niagara Gazette, Aug. 28, 2018

Niagara Falls Water Board member apologizes — but says overflows will go on

Thomas J. Prohaska, Buffalo News, Oct. 17, 2017

Editorial: Fix the sewage plant

Buffalo News Editorial Board Mar 24, 2018

Engineer: Can't avoid discolored discharge from Niagara Falls sewage plant

Thomas J. Prohaska, Buffalo News, Mar. 20, 2018

In wake of 'black water' case, Niagara Falls seeks costly sewer plant makeover

Thomas J. Prohaska, Buffalo News, Nov. 29, 2021



December 2017 DEC Order on Consent

➤ **Optimize the Operation of the WWTP**

- Improved solids handling, use of sedimentation basins for flow equalization, sequencing of other processes
- All opportunities for optimization implemented – plant is operating at maximum efficiency

➤ **Rehabilitate or Upgrade – With \$20 Million Matching Funds Grant**

- Sedimentation basins
- Gorge Pump Station
- Instrumentation and SCADA control
- Electrical issues
- HVAC
- Plus other process equipment

December 2017 DEC Order on Consent

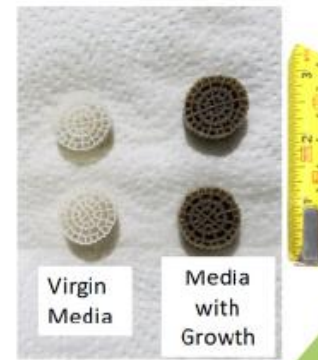
Evaluate:

- Minimization of Turbidity Generation
- Outfall Modifications/Relocation
- **Alternative Treatment Technology**
 - Evaluated the conversion/modification of the existing plant to aerobic biological treatment process
 - Pilot-scale demonstration
 - Used results to develop comprehensive planning-level engineering report
 - ❖ An objective: **Maximize use of existing infrastructure**

Alternative Treatment Technology Study

Biological Treatability Pilot

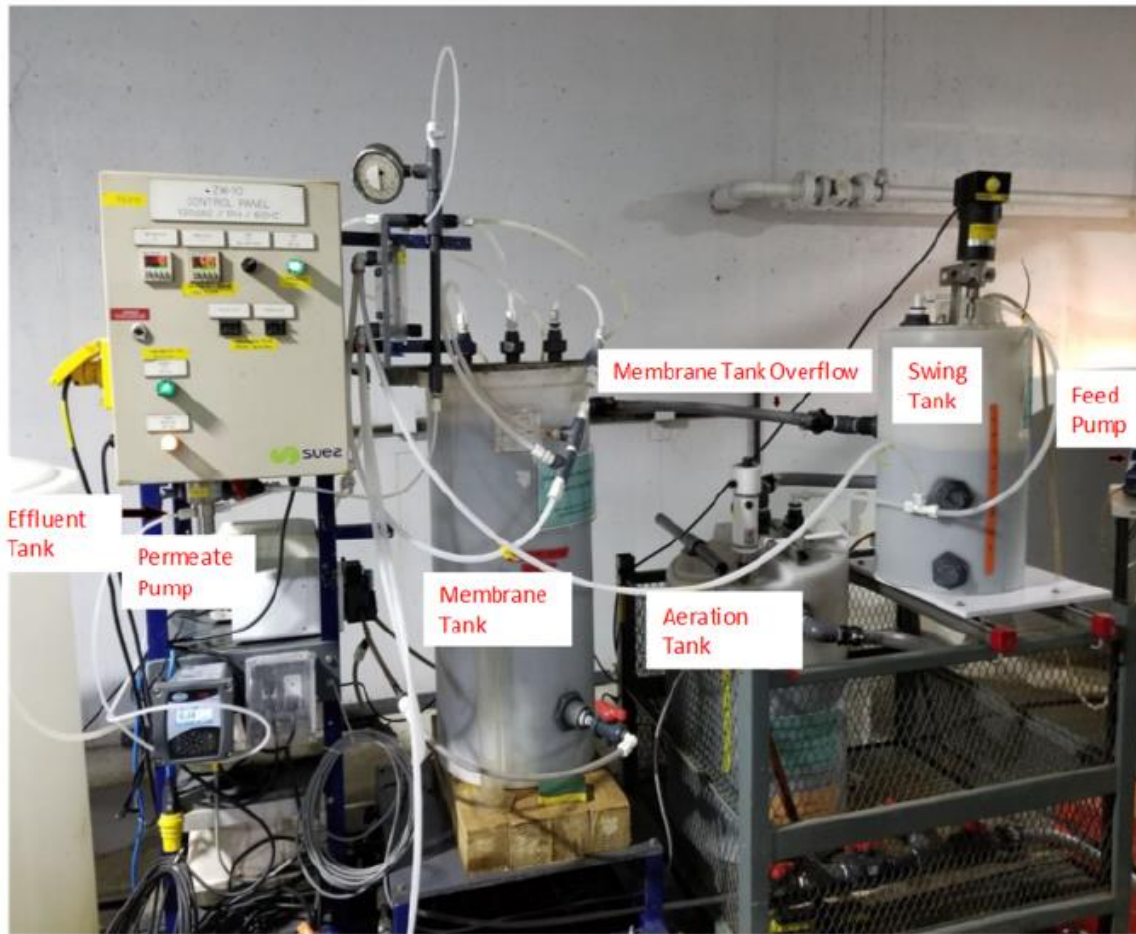
- ▶ Piloted two (2) biological processes
- ▶ Operated pilots - approximately 8-months
 - ▶ 3 operators - AECOM engineers/scientists, 7 days/week
- ▶ Multiple Testing Conditions:
 - ▶ Reducing HRT
 - ▶ Nitrification
 - ▶ MLE configuration - MBR only
- ▶ November 2018 - July 2019
- ▶ Membrane Biological Reactor (MBR) - 10 ft² ZeeWeed hollow-fiber membrane - ended up with 30 ft², total
 - ▶ Activated sludge process with membrane clarification.
 - ▶ Included the capability to operate in a Modified Ludzack-Ettinger (MLE) configuration (anoxic tank followed by aerobic tank).
- ▶ Attached growth process - Moving Bed Biological Reactor (MBBR)
 - ▶ Two (2) reactors in series - each filled with approximately 15-20 percent (by volume) buoyant biocarrier media.
 - ▶ Reactor effluent treated via cationic polymer and gravity clarifier (i.e., cone bottomed tank)



AECOM

Alternative Treatment Technology Study

MBR Pilot



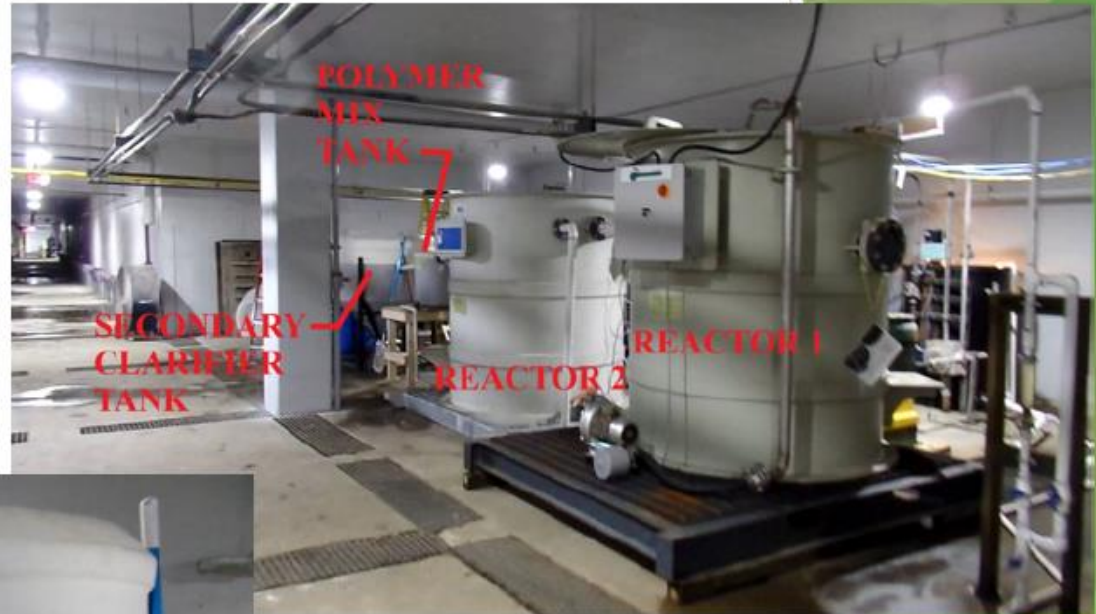
10 Square Foot Membrane Module



AECOM

Alternative Treatment Technology Study

MBBR Pilot



Alternative Treatment Technology Study

Membrane Biological Reactor (“MBR”) Recommended

- Effective Organic and Nutrient Removal
- No Effluent Total Suspended Solids (“TSS”)
- Very Low Average Effluent Turbidity – 0.6 NTU
- Nominal Pore Size of Membranes Smaller than Bacteria
 - Presents Possibility of Reducing/Eliminating Chlorine Disinfection
- Nearly Clear Effluent – Slight Yellow/Straw Tint
- Small Footprint
- Flexibility to Meet Future Regulations (e.g., chlorine residual, nitrogen species, more stringent phosphorus limits)
- **Provides a System That Can Consistently Meet Expected Effluent Permit Limits**

MBR Site Plan Maximizes Use of Existing WWTP Infrastructure



MBR Conversion – 2019 Cost Estimate

CLIENT: Niagara Falls Water Board

LOCATION: Niagara Falls, NY

Class 4 Cost Estimate (+50%/-30%)

DATE: 10/31/2019

Rev.A



FACTORED COST ESTIMATE REPORT

MAIN SUMMARY

ALTERNATIVE 1

MEMBRANE BIOLOGICAL REACTOR - MBR

TOTAL ESTIMATED COST	\$ 188,371,000
TOTAL ESTIMATED ANNUAL O&M COST	\$ 4,539,000
PROJECTED ANNUAL O&M COST SAVINGS	\$ 2,441,000
TOTAL ESTIMATED NET O&M COST	\$ 2,098,000
20-YEAR NET PRESENT WORTH COST (NPW)	\$222,700,000

The Conversion Imperative

Niagara Falls Wastewater Treatment Plant's Reliable and Cost-Effective Operation is Vital to the Economy and Environment

- Approximately 19,000 Total Accounts
- 21 Significant Industrial Users – 1,000s of Jobs
- Hundreds of Small Businesses in City

Tourism

According to Destination Niagara USA, the official Destination Marketing Organization for Niagara County, the economic value of Niagara Falls tourism is astounding:



TOURISM IMPACT: BY THE NUMBERS

\$831,000,000*

TOTAL SPENT BY TRAVELERS
IN NIAGARA COUNTY IN 2021

75% INCREASE OVER 2020

9% increase over 2019



\$52,099,000*

IN LOCAL TAXES WERE
GENERATED IN 2021 BY TOURISM
A 25% INCREASE OVER 2020

10% increase over 2019

Niagara County Employs

13,879*

21% of the Total Workforce

518,882,553

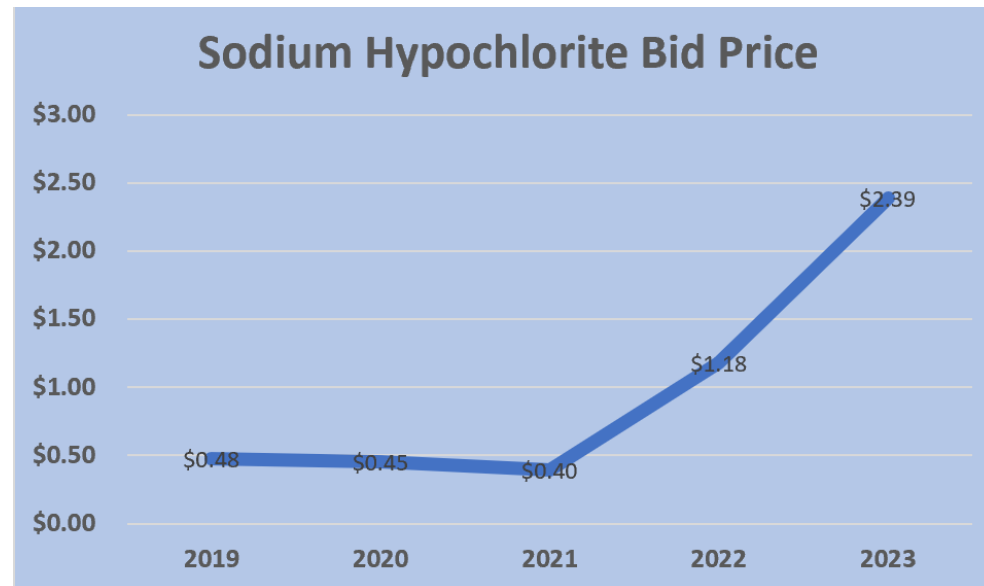
People Read About Niagara Falls USA

Sportfishing and Canadian Interests

- The WWTP outfall in the lower Niagara River must be regarded as benign in order to avoid damage to the valuable Niagara River sportfishing industry, which has an impact in excess of \$30 million per year in Niagara County alone.
- Perception of Lake Ontario and St. Lawrence River also may be impacted by what happens at Niagara Falls.
- Canada also is intensely concerned with discharges in the Niagara River – it has its own environmental and tourism interests to protect, as demonstrated by the interest in the WWTP expressed by Canadian lawmakers and media.
 - Per Niagara Falls, Ontario, Mayor Jim Diodati, Niagara Falls is the No. 1 leisure destination in Canada with 14 million annual visitors and 40,000 jobs supported by the tourism industry.

Current WWTP – Unsustainable Costs

- 2023 chemical costs are forecast to total \$10,775,000 or **26.36% of the Water Board’s budget**, versus \$3,294,000 and 9.63% in 2018.
- The current WWTP must use massive quantities of sodium hypochlorite to oxidize sulfide to prevent dangerous and noxious levels of H₂S.
 - This wasteful expense would be eliminated with biological conversion.
- Bid prices per gallon of sodium hypochlorite have increased from \$0.3954 per gallon in 2021 to \$2.389 per gallon in 2023 – a **504% increase!**



Current WWTP – Unsustainable Costs

- In addition to sodium hypochlorite, all other treatment chemicals have increased substantially – the overall chemical budget increase between 2022 and 2023 is approximately \$1,930,000.
- WWTP sludge hauling and disposal costs also have increased from approximately \$40 per ton in 2016 to \$126 per ton in 2023 – a 215% increase.
- The WWTP also requires a high level of ongoing maintenance expenditure to deal with aged equipment and equipment which deteriorates quickly because of the high levels of hydrogen sulfide gas generated by the current treatment process – 2023 WWTP maintenance budget is over \$1.8 million.
- WWTP capital improvements to maintain 1970's structure and renew equipment add \$ millions in expense per year.

Niagara Falls Water Board Investment Needs – More Than Just a WWTP

The Niagara Falls Water Board also owns and operates:

- Drinking Water Plant – Constructed 1995-1997 and now requiring substantial investment as capital items reach the end of their service life.
- Two elevated water storage tanks – one of which is non-functional and should be replaced.
- Gorge Pumping Station and seven lift stations.
- 500 miles of water and sewer service lines.
 - Under Order on Consent with DEC to abate sanitary sewer overflows
 - Facing possibility of major investments to comply with Lead and Copper Rule Revisions

Skyrocketing Costs = Soaring Rates

- The Water Board has contained personnel costs and other costs within its control, but substantial increases have been driven by chemical costs – the bulk of which are related to the WWTP.
- Rates increased **16.9% in 2022, and 8.9% in 2023.**
- Since 2021, a residential user's *minimum* quarterly bill has increased from \$109.98 to \$155.61.

Niagara Falls Cannot Carry Cost of WWTP Conversion

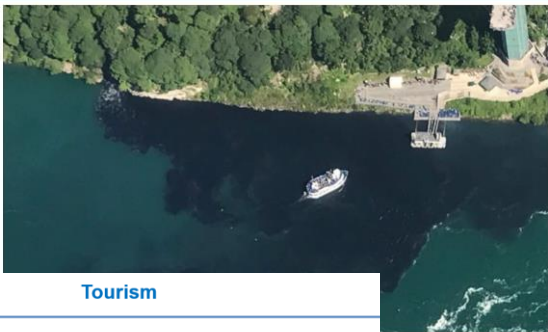
- 2022-2026 Water Board Capital Improvement Plan calls for \$46,244,000 in capital investments in that period.
 - \$ millions in deferred expenditures.
- Water Board was created in 2002
 - In 2003, assumed approx. **\$116 million in debt** from City of Niagara Falls on acquiring the water, wastewater, and stormwater systems.
- Debt service and direct capital investment already equal over 20% of the Water Board's 2023 budget.

Niagara Falls Cannot Afford the Cost of WWTP Conversion

- Niagara Falls has suffered decades of economic hardship.
- According to the US Census Bureau:
 - Poverty Rate: 23.5%, versus 13.9% for all of NY
 - Median Household Income: \$41,137, versus \$74,314 for all of NY
- Population – and industry – are extremely sensitive to rate increases.
 - Funding \$250 million WWTP conversion plus all the other needs facing the Water Board's other infrastructure simply is a nonstarter.

The Correct Path is Obvious – But How Do We Secure Funding to Convert the WWTP?

July 2017 “Black Water” Incident



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PERSON-DAY VISITS TO NIAGARA FALLS

3/20/2023

MBR Site Plan Maximizes Use of Existing WWTP Infrastructure



3/20/2023

NFWB WWTP Modification and Conversion to Biological Process

3/27

July 2017 “Black Water” Incident

Discharge turns water at base of Niagara Falls black
DEC investigating after water board discharge into lower Niagara River
Carolyn Thompson, Associated Press, Jul. 31, 2017
Niagara Gazette, Jul. 31, 2017

Black sewage plume at Falls raises flags on both sides of border

Tom Precious, Jerry Zremski, Buffalo News, Aug. 2, 2017

Higgins calls for EPA probe into Niagara River discharge

Niagara Gazette, Aug. 03, 2017

Black sewage blob gives Niagara Falls a PR black eye

Thomas J. Prohaska, Buffalo News, Aug. 1, 2017

Billowing, black sewer discharge at Niagara Falls alarms businesses, tourists

Sandra Tan, Buffalo News, Jul. 30, 2017



03/20/2023

NFWB WWTP Modification and Conversion to Biological Process

7/27



July 2017 “Black Water” Incident

Black discharge returns below Niagara Falls

Aaron Besecker, Buffalo News, Oct. 9, 2017

Canadian lawmaker targets Niagara River sewage discharges

Philip Gambini, Niagara Gazette, Aug. 28, 2018

Niagara Falls Water Board member apologizes — but says overflows will go on

Thomas J. Prohaska, Buffalo News, Oct. 17, 2017

Editorial: Fix the sewage plant

Buffalo News Editorial Board Mar 24, 2018

Engineer: Can't avoid discolored discharge from Niagara Falls sewage plant

Thomas J. Prohaska, Buffalo News, Mar. 20, 2018

In wake of 'black water' case, Niagara Falls seeks costly sewer plant makeover

Thomas J. Prohaska, Buffalo News, Nov. 29, 2021



03/20/2023

NFWB WWTP Modification and Conversion to Biological Process

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Alternative Treatment Technology Study

MBR Pilot



10 Square Foot Membrane Module



AECOM

3/20/2023

NFWB WWTP Modification and Conversion to Biological Process

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