

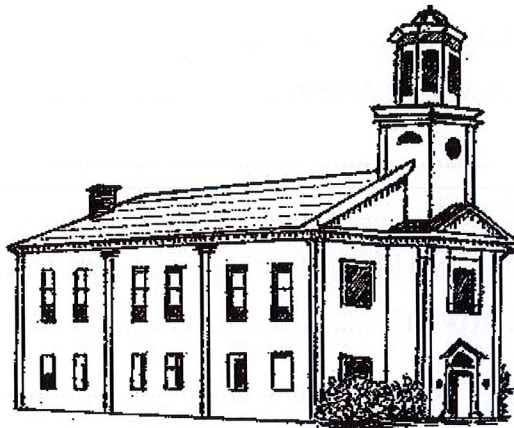
Town of Bristol

6740 County Road #32
Canandaigua, NY 14424

PRELIMINARY ENGINEERING REPORT

for the

BRISTOL WATER DISTRICT #1 WATER SYSTEM DISINFECTION BY-PRODUCT REMOVAL



September 2021

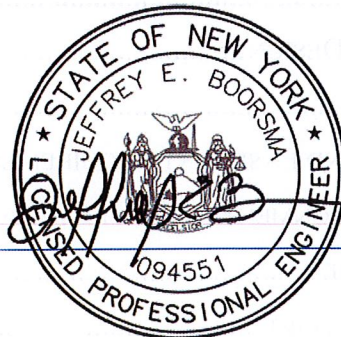
Revised July 2022

MRB Group Project No. 0300.21003.000

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TABLE OF CONTENTS

I. GENERAL1

II. PROJECT PLANNING AREA.....2

A. PROJECT LOCATION2

B. ENVIRONMENTAL RESOURCES PRESENT2

C. POPULATION TRENDS AND PARCEL INFORMATION2

D. COMMUNITY ENGAGEMENT3

III. EXISTING FACILITIES4

A. LOCATION MAP4

B. HISTORY4

C. CONDITION OF EXISTING FACILITIES5

D. FINANCIAL STATUS.....5

E. WATER/ENERGY/WASTE AUDITS5

IV. NEED FOR PROJECT6

A. HEALTH AND SAFETY6

B. TANK OPERATION AND MAINTENANCE7

C. REASONABLE GROWTH.....8

V. ALTERNATIVES CONSIDERED9

A. THM REMOVAL ALTERNATIVES.....9

B. WATER TANK ALTERNATIVES10

C. POTENTIAL CONSTRUCTION CONCERNS.....11

D. SUSTAINABILITY CONSIDERATION ALTERNATIVES.....11

VI. PROPOSED PROJECT12

A. PRELIMINARY PROJECT DESIGN.....12

B. PROPOSED SCHEDULE12

C. PERMITS, APPROVALS AND EASEMENT REQUIREMENTS12

D. SUSTAINABILITY / ENVIRONMENTAL CONSIDERATIONS.....13

E. CAPITAL COST ESTIMATE13

F. ANNUAL OPERATING BUDGET13

VII. CONCLUSIONS AND RECOMMENDATIONS.....16

LIST OF FIGURES

FIGURE 1: GENERAL LOCATION/WATER DISTRICT MAP

FIGURE 2: PROJECT LOCATION MAP

FIGURE 3: BRISTOL WD #1 WATER SYSTEM MAP

LIST OF APPENDICES

- A. ENVIRONMENTAL RESOURCES MAP**
- B. AGRICULTURAL DISTRICTS MAP**
- C. ONTARIO COUNTY POPULATION DATA**
- D. ANNUAL DRINKING WATER QUALITY REPORT**
- E. DAY ROAD TANK DRAWINGS**
- F. WATER RATES**
- G. DOH VIOLATION LETTERS**
- H. SAMPLING RESULTS**
- I. USER ACCOUNT INFORMATION**
- J. VENDOR INFORMATION**
- K. NRCS SOIL MAPS AND DETAILS**
- L. COST ESTIMATES**
- M. TOWN WATER BUDGET**
- N. EDU CALCULATIONS**
- O. FINANCING OPTIONS**

I. GENERAL

The Town of Bristol (Town) Water District #1 has a history of elevated Disinfection By-Products (DBPs). Even with frequent and extensive flushing of the water mains, the water district has been in violation for eight of the last nine reporting quarters for Trihalomethanes (THMs). A notice of violation has been issued by the New York State Department of Health (DOH) that needs to be addressed as soon as possible.

The notice of violation requires the preparation of a Preliminary Engineering Report (PER) to identify, evaluate alternatives, and subsequently select a method to reduce THMs and other harmful DPBs. The PER will also identify project costs and financing options based on estimated Equivalent Dwelling Units (EDU) costs.

The Town intends to apply for United States Department of Agriculture (USDA) Rural Development (RD) funding in 2022 to address infrastructure, water quality, and other water system concerns. This PER has therefore been prepared in accordance with both the USDA RD and DOH standards.

The following items were included in the project evaluation:

- THM tracking and investigation
- Water use and EDU calculations
- Comprehensive cost estimate and financing options

Based on the analysis, it is recommended to install a spray aeration THM removal system in the Day Road Tank, to both prevent accumulation of harmful THMs inside the tank and prevent conveyance of THMs into the distribution system. The estimated capital cost for the recommended improvements is \$198,000.

II. PROJECT PLANNING AREA

The following sections describe the proposed project area, along with environmental and agricultural considerations based on existing population and parcel information.

A. PROJECT LOCATION

The Town of Bristol owns the Day Road water storage tank, located at 6615 Day Road, off of County Road 32. The Town's water system, including the Day Road Tank, is operated and maintained by the Town of Canandaigua. Please refer to **Figure 1** for a map of the General Location, **Figure 2** for a map of the Proposed Project Area at the Day Road Tank, and **Figure 3** for a map of the existing Water System Map showing the potential locations of the proposed flushing hydrants.

B. ENVIRONMENTAL RESOURCES PRESENT

The area of the proposed project is generally residential, commercial, and agricultural. According to the DEC online Environmental Resource Mapper tool, the project area is not located in an area of rare plants or animals, and will not require special environmental permitting. The project area is also outside of any freshwater emergent wetlands and freshwater forested/shrub wetlands. There are no New York State or Federal designated wetlands and streams that will need to be crossed during project improvements. An Environmental Resources Map is included in **Appendix A**.

The project is located within Ontario County's Agricultural District 1. The project will be contained within the parcel where the Day Road Tank is located, which is owned by the Town. A map showing the agricultural districts and proposed project area is included in **Appendix B**.

As part of the project planning process, a complete environmental review will take place including the State Environmental Quality Review (SEQR) Act and the National Environmental Policy Act (NEPA).

C. POPULATION TRENDS AND PARCEL INFORMATION

The proposed project will only impact the parcel on which the Day Road Tank is located (Tax ID 124.00-2-40.200). According to the 2012 Recommended Standards for Water Works (Ten States), the design period for new processes and equipment should be 20 years.

Therefore, both recorded and projected population estimates were considered for this time frame. Population data for the Town was obtained from the Genesee/Finger Lakes Regional Planning Council and the U.S. Census Bureau. Based on the data provided, the Town population makes up about 2.03% of the entire population of Ontario County. The population in Ontario County is growing at a rate of approximately 0.41% each year, while the population in the Town of Bristol is shrinking at a rate of approximately 0.13%. The following table estimates historical and projected populations for Ontario County and the Towns of Bristol and Canandaigua accordingly.

Year	Ontario County Population	Town of Bristol Population	Town of Canandaigua Population
2010	107,931	2,315	10,020
2020	112,458	2,284	11,109
2040	122,090	2,223	13,655

Population data for Ontario County, and the Towns of Bristol and Canandaigua are included in **Appendix C**.

D. COMMUNITY ENGAGEMENT

Community residents are welcome to attend public board meetings. Meeting minutes, annual water quality reports, and special notices are available to residents on the Town website.

III. EXISTING FACILITIES

The following sections discuss the state of the existing water system components, and provide details on those that will be addressed with the proposed system improvements and upgrades.

A. LOCATION MAP

Please refer to **Figure 1** for a map of the Town of Canandaigua Water Districts and **Figure 3** for a map of the Bristol Water District #1 Water System Map. Bristol Water District #1 is served from the Canandaigua – Bristol Water District.

B. HISTORY

The following sections describe the existing water distribution system and Town Water District that supplies the Day Road Tank.

1. Water Distribution System

Canandaigua Lake serves as a surface water source for the City of Canandaigua. The Canandaigua Town Consolidated Water District water is supplied from the City of Canandaigua (City), which operates a Water Filtration Plant on West Lake Road in the Town of Canandaigua. Treated water enters the Town of Canandaigua Water Districts through meter pits located at the City municipal line, or at the connection point with the City's transmission main. The Town of Canandaigua Consolidated Water District supplies treated water from the City to Bristol Water District #1 via the Canandaigua – Bristol Water District through the Pierce Park Pump Station located on Goodale Road near the Hamlet of Cheshire.

The Town of Canandaigua also provides water to the Towns of Farmington, Hopewell, Gorham and East Bloomfield.

2. Water District Extension #1

According to the 2020 Annual Drinking Water Quality Report, the Bristol Water District #1 serves approximately 203 people through 63 active service connections. The total water purchased was approximately 5.1 MG, with an average daily distribution of approximately 13,965 gallons, and approximately 4.2 MG was sold to customers. A copy of the water quality report is included in **Appendix D**.

C. CONDITION OF EXISTING FACILITIES

According to the 2020 Annual Water Quality Report, approximately 870,000 gallons were used to flush water mains due to stage two DBP levels that exceeded the limits of the EPA, flush fire hydrants, and fight fires.

The watermains within the Bristol Water District #1 are primarily 8” and 12” PVC and are in good condition. The Day Road water storage tank is glass lined steel, and has a volume of 125,000 gallons. The tank diameter is 28 feet, and the depth to overflow is approximately 27 feet. Based on the NAD88 datum, the base tank elevation is 1,144.5 feet. The tank’s high level is set at 25 feet, and the low level is set at 23 feet. A set of drawings and details of the Day Road tank are included in **Appendix E**.

D. FINANCIAL STATUS

The Canandaigua Water Department mails a water bill to each public water recipient on a quarterly basis. The Town charges the users inside Bristol Water District #1 a flat rate depending on the size of their service connection; users with a 3/4-inch connection are charge \$28.56 per quarter for the first 6,000 gallons, users with a 1-inch connection are charged \$47.60 per quarter for the first 10,000 gallons, and users with a 2-inch connection are charged \$142.80 per quarter for the first 30,000 gallons. Usage above these amounts is charged at a rate of \$4.76 per 1,000 gallons for users inside the district. The current water rates for the district are included in **Appendix F**.

The 2017 American Community Survey Statewide Median Household Income (MHI) for New York State is \$62,765, which is adjusted for certain counties by a Regional Cost Factor (RCF). The RCF for Upstate is 1.0, and therefore the adjusted MHI is \$62,765. The 80% MHI is \$50,212. According to 2020 demographic data, the MHI for the Town was \$76,016, the total estimated population in households was 2,136, and the Family Poverty rate was 5.5%. An income survey completed by G&G Municipal Consulting in July of 2020 determined the median household income of the Water District to be \$40,110. The income survey was submitted and accepted by RD.

E. WATER/ENERGY/WASTE AUDITS

Water, energy, and waste audits are not applicable to this report.

IV. NEED FOR PROJECT

The following sections describe the need for water distribution system improvements, due to multiple DOH violation letters related to high THM levels.

A. HEALTH AND SAFETY

The Environmental Protection Agency has set Maximum Containment Levels (MCLs) for total trihalomethanes (THMs) and haloacetic acids (HAAs) of 80 and 60 micrograms per liter, respectively, based on annual averages of quarterly sample results taken from the distribution system.

Under the Stage 2 DBP Rule, DBP level compliance is assessed based on the Locational Running Annual Average (LRAA) of each DBP group at each location where it is sampled compared to the MCL. The LRAA is the average concentration over the last four calendar quarters at a specific sample site. An LRAA value over the MCL constitutes a violation and requires public notice.

In addition to the LRAA, a locational Operational Evaluation Limit (OEL) for each DBP is calculated as a weighted average of the previous three quarters, with the most recent data weighed twice. In other words, the OEL is the sum of twice the current results, plus the previous quarter, plus the quarter before that, divided by 4. The OEL is compared to the MCL, but an OEL over the MCL does not constitute a violation. OELs are assessed to identify increases in DBPs before violations occur.

Based on the latest test results conducted by the Town from 2017 through 2021, the average THM level was 81 ug/L, which is slightly above the MCL of 80 ug/L. This is an MCL violation of the Code of Federal Regulations (CFR 141.64), and requires public notice to be provided to all customers on a quarterly basis for as long as the violation persists. It is likely the high levels of THMs are a by-product of drinking water chlorination. Consuming drinking water with high levels of THMs over many years may cause physiological problems related to the liver, kidneys, or central nervous system, in addition to an increased risk of cancer. Therefore, continued testing and water quality improvements are vital to the overall health and safety of the community. The following table lists the overall number of violations, LRAA violations, and OEL warnings for these years.

THM SAMPLES			
Year	No. Overall Violations	No. LRAA Violations	No. OEL Warnings
2017	1	3	3
2018	2	2	2
2019	1	4	3
2020	2	3	3
2021	1	1	0
TOTAL	7	13	11

Based on the latest test results conducted by the Town from 2017 through 2021, the average HAA level was 36 ug/L, which is far below the MCL of 60 ug/L. The following table lists the overall number of violations, LRAA violations, and OEL warnings for these years.

HAA SAMPLES			
Year	No. Overall Violations	No. LRAA Violations	No. OEL Warnings
2017	0	0	0
2018	0	0	0
2019	0	0	0
2020	0	0	0
2021	0	0	0
TOTAL	0	0	0

Copies of the latest DOH violation letters are included in **Appendix G**. Charts showing the trends of THM and HAA sampling are included in **Appendix H**.

B. TANK OPERATION AND MAINTENANCE

The Day Road tank provides storage for the lower portion of the Town of Bristol Water District. The tank is glass-lined steel, and was placed into service in 2007. Interior and exterior inspections are recommended every 10 years. The cathodic protection system requires replacement every 10 years as well.

The Pierce Park Pump Station was installed in 2007 and supplies the Canandaigua-Bristol Water District and the Bristol Water District #1 service area. The pump station fills the Day Road tank through a pressure reducing valve (PRV) and a pressure sustaining valve (PSV). When the tank calls for water, the PSV activates. When the tank is full, the PSV closes and the pumps are cycled off. The estimated peak flow fill rate is approximately 154 gpm.

C. REASONABLE GROWTH

Based on the latest consumption data, the total annual use for the service area was approximately 1,820,000 gallons, with an average daily use of 4,987 gpd. The water tank size is based on the needed fire flow and anticipated domestic water supply needs. User account information for the Town is included in **Appendix I**.

V. ALTERNATIVES CONSIDERED

The repeated high THM levels support the need for improvements to the Day Road storage tank. The following sections discuss various THM removal techniques, including increased monitoring to ensure improved overall system performance, health, and safety.

A. THM REMOVAL ALTERNATIVES

There are many alternative strategies to minimize DBPs, such as eliminating pre-chlorination, moving the chlorination point, practicing enhanced coagulation, optimizing chlorine dosing through disinfection benchmarking, and switching to chloramines for secondary disinfection.

The following sections propose alternatives to curb THM formation and growth. It is recommended to continue monitoring THM and chlorine residual levels, to identify seasonal or temperature related trends. Product brochures, specifications, and quotes for the recommended THM removal and ventilation system products, as well as the chlorine analyzer details are included in **Appendix J**.

1. Do Nothing

This alternative is not feasible given the public health risks due DBPs. The NYSDOH issued a violation for THMs and required the District to remediate.

2. IXOM GridBee™ System

The proposed GridBee™ system consists of a floating spray aeration system that sits within the existing tank and a ventilation system mounted to the tank ceiling. The proposed spray aeration system is an industry-leading solution with proven results and guaranteed performance, that creates powerful spray aeration and complete water column mixing. The spray aerator consists of a submersible pump with a low center of gravity and high overall stability, ceiling suspended pendulum weights that provide smooth, stable movement with tank fluctuation, and an adjustable intake hose and assembly which allows for flexibility of design to accommodate any tank. Supplemental mixing can also be provided if needed.

As THMs enter the tank, water is pumped through the intake hose and assembly up into the spray nozzle. The self-adjusting intake hose ensures the entire water column

is being treated, not just the near-surface areas. The floating spray aeration system volatilizes THMs into the tank headspace. A tank-mounted ventilation blower provides fresh air into the headspace, and allows the volatilized THMs to leave the tank. This system is designed to achieve a 50-60% reduction of THM levels in untreated water entering the tank during peak THM season, when starting THM levels exceed 60 µg/L, and temperatures exceed 60°F.

The *GridBee*[™] system is advantageous since it does not require any infrastructure changes, keeps the water in the tank, and it keeps the tank in service during installation. It also has a 25-year design life, requires little energy to operate, and does not require regular maintenance.

3. PAX TRS[™] System

The proposed PAX TRS[™] (Trihalomethane Removal System) system consists of a Powervent® active ventilation system, a floating surface aerator, a PAX water mixer, and an integrated control panel. The Powervent® active ventilation system is mounted to the tank roof, and removes THMs from the headspace, while simultaneously introducing fresh air. The surface aerator is designed for potable water applications, and features folding floats for easy installation. The PAX water mixer continuously circulates water high in THMs to the top of the tank, where they are volatilized and removed. The mixer eliminates short circuiting and dead zones. The integrated control panel allows for remote or manual operation of the equipment. This system is designed to achieve 50% reduction of THM levels entering the tank during peak THM season.

All components can be installed while the tank is in service. However, extra precaution will be required to remove any metal shavings or pieces that fall into the tank during the process. The surface aerator cable mount system will require a diver and/or raft if installed with a full tank.

B. WATER TANK ALTERNATIVES

The existing water storage tank has a volume of 125,000 gallons, and adequately provides storage for fire protection and average daily demands. According to the Insurance Services Office (ISO), residential homes spaced 10 to 30 feet require a minimum fire demand of 1,000

gallons per minute for duration of 120 minutes, or 120,000 gallons. The average daily demand was estimated at 4,283 gpd based upon the recorded use data for all users. Therefore, the minimum recommended storage volume is approximately 120,000 gallons, and a nominal 125,000-gallon reservoir is sufficient.

C. POTENTIAL CONSTRUCTION CONCERNS

Based on the information presently available, no significant construction problems are anticipated. In general, the project will be constructed on the existing parcel, with minimal site work required. The United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) was used to compile information regarding the topography, soil data, depth to any restrictive layer, depth to groundwater, and flooding considerations.

According to data from USDA-NRCS, the project area is comprised solely of Darien silt loam (71B). This is classified as Hydrologic Soil Group C/D. Group C soils have low infiltration rates when thoroughly wetted, and consist of moderately well to well drained soils. Group D soils have the highest runoff potential, a low infiltration rate when thoroughly wetted, and a high swelling potential. They can have moderate to very restrictive water movement. Therefore, there are few anticipated construction obstructions anticipated. A soil map and description are included in **Appendix K**.

D. SUSTAINABILITY CONSIDERATION ALTERNATIVES

The water tank size is based upon the needed fire flow and anticipated domestic water supply requirements. As the tank meets current and future demand requirements, no other sustainability measures are applicable.

VI. PROPOSED PROJECT

The following sections discuss the results of the analysis, the recommended alternative for THM removal in the tank, and the proposed project improvements. The system upgrades aim to reduce THM levels in the storage tank and distribution network, as well as improve overall water quality.

A. PRELIMINARY PROJECT DESIGN

Based on comparison of the two (2) THM removal systems, *GridBee*[™] provides an economical solution, without requiring infrastructure changes. The PAX TRS[™] system is nearly twice as expensive, and requires complicated installation procedures. The *GridBee*[™] system also provides a higher reduction in THMs for the untreated water entering the tank.

B. PROPOSED SCHEDULE

The Project will progress forward based upon availability of funding from USDA Rural Development. A general schedule is provided as follows:

Environmental Review (SEQR & NEPA)	3-4 months
Grant and Loan application & Notification	4-6 months
Design Phase Services	2-4 months
Permits, Approvals and Easements	2-3 months
Bidding Phase and Award of Contracts	1-2 months
Construction Phase	4-6 months

C. PERMITS, APPROVALS AND EASEMENT REQUIREMENTS

Temporary easements may be necessary for installation of the improvements. The proposed project area may require permits and approvals from the following agencies:

- New York State Department of Health Approval
- USDA Rural Development Approval

D. SUSTAINABILITY / ENVIRONMENTAL CONSIDERATIONS

In order to ensure effective THM removal in the storage tank, and downstream into the distribution system, it is recommended to install automated flushing hydrants. Automated flushing hydrants can mitigate community drinking water concerns related to taste, discoloration, and odor. In addition, they are less costly and time consuming for utilities, without causing additional wear on the hydrants used for fire protection. Overall, automated flushing hydrants conserve water, increase efficiency, and promote improved health and safety for the community.

E. CAPITAL COST ESTIMATE

The project costs have been developed using projections of construction cost factors that are representative of market conditions in this region. Additionally, a life cycle cost analysis was performed considering both capital costs and annual O&M costs over the design life of the project to determine the alternative with the lowest net present value. The following information represents the Preliminary Opinion of Probable Costs.

THM Removal System	Est. Capital Cost	Net Present Value
<i>GridBee</i> TM	\$198,000	\$211,950
PAX TRS TM	\$296,000	\$266,071

Therefore, the project alternative with the lowest capital cost estimate for improvement using the recommended *GridBee*TM system for the Day Road water storage tank is approximately \$198,000. This includes construction, mobilization and demobilization, contingency, engineering, legal, and administration fees. A detailed cost estimate and life cycle cost analysis is included in **Appendix L**.

F. ANNUAL OPERATING BUDGET

The adopted 2021 water budget for the joint Canandaigua-Bristol water district was \$96,946, with approximately \$5,321 attributed to transmission, and \$32,000 attributed to service and maintenance. The remaining \$59,625 covers serial bonds. A copy of the 2020 Town water budget is included in **Appendix M**.

1. Income

The required income for proposed system improvements will be incorporated into a predefined user rate.

2. Operation and Maintenance Costs

The Town will be responsible for the Operation and Maintenance (O&M) of the proposed water system improvements. The cost for O&M is included in the water rate charged to each user of the system.

3. EDU Analysis

Rural Development (RD) calculates a municipality's Equivalent Dwelling Unit (EDU) count based on flow. In order for RD to compare similar system costs across the country, all EDU calculations must use this methodology. RD considers vacant lots as half an EDU if they can be developed.

The Day Road tank serves 46 service connections south of Day Road on County Road 32 and NYS Route 64. Based on the calculations for water use in the community, the average residential consumption rate was about 54 gpd, whereas the sum of commercial, business, and industrial consumption rates was about 2,170 gpd. The RD breakdown of EDUs for all users was as follows.

Property Use	No. EDUs
Residential	39
Commercial / Industrial	40
Vacant	0
Total to Pay Debt Service	79
Total to Pay O&M	79

A copy of the RD EDU calculations for the Town is included in **Appendix N**.

4. Debt Repayment

The Town has approximately \$59,625 in joint serial bonds with the Town of Canandaigua. Proposed financing for the project has been developed based on the following assumptions:

- a. Total project cost is estimated at \$198,000 as per the capital cost estimate.
- b. The project costs could be financed by a USDA Rural Development loan of \$198,000 (38 years at 1.75%, intermediate rate).
- c. The new annual debt service cost per EDU would be approximately \$96 with the intermediate rate. If the project only received market rate, the new annual debt service per EDU would be approximately \$102.

A summary of the budget including RD financing is included in **Appendix O**.

Summary of Projected Annual Costs to Benefited Users	
Total Estimated Program Cost	\$198,000
RD Grant	\$0
Net Capital Cost to be Financed	\$198,000
Target Service Charge ⁽¹⁾	\$681.87
Average Annual Debt Service ⁽²⁾	\$7,177
Estimated Number of EDU's in service area	79
Estimated Annual Debt Service Charge per EDU	\$91
Existing Annual Debt per typical Single-Family Home	\$561.00
Estimated Annual Water Meter Charge, \$47.60/quarter	\$190.40
Estimated Annual O&M Charge per EDU ⁽³⁾	\$65.11
Estimated Additional Annual O&M	\$2,500
Estimated Additional Annual O&M per EDU	\$31.65
Total Estimated Annual Charge to a Typical User (Debt Service & Water Used & O&M and Additional O&M)	\$939.16

- (1) 1.7% of Median Household Income \$40,110
- (2) Assumes uniform annual debt service payment under the “Essentially Level Debt Method”, but the technique is subject to the Town’s fiscal advisor and funding agency requirements.
- (3) Based on an estimated O&M charge of \$0.56/\$1,000 Total Assessed Value (TAV) and a median household TAV of \$116,262.

5. Short-Lived Assets

There are no short-lived assets that would require the expenditure of capital dollars, other than the normal operation and maintenance expenses associated with operating the system.

VII. CONCLUSIONS AND RECOMMENDATIONS

Based on the historical elevated THM levels reported in the Town's water district, along with multiple violation letters from the DOH, it is recommended to install mixing and aeration equipment in the Day Road storage tank. Installation of a THM removal system will prevent accumulation of harmful THMs inside the tank, as well as prevent or reduce conveyance of THMs into the distribution system.

In addition, installation of automated flushing hydrants will ensure optimal water quality from the storage tank to the distribution system. Installation of a chlorine analyzer will continuously monitor free and residual chlorine in the system, reduce routine maintenance time, and allow for programmable alerts and real-time results.

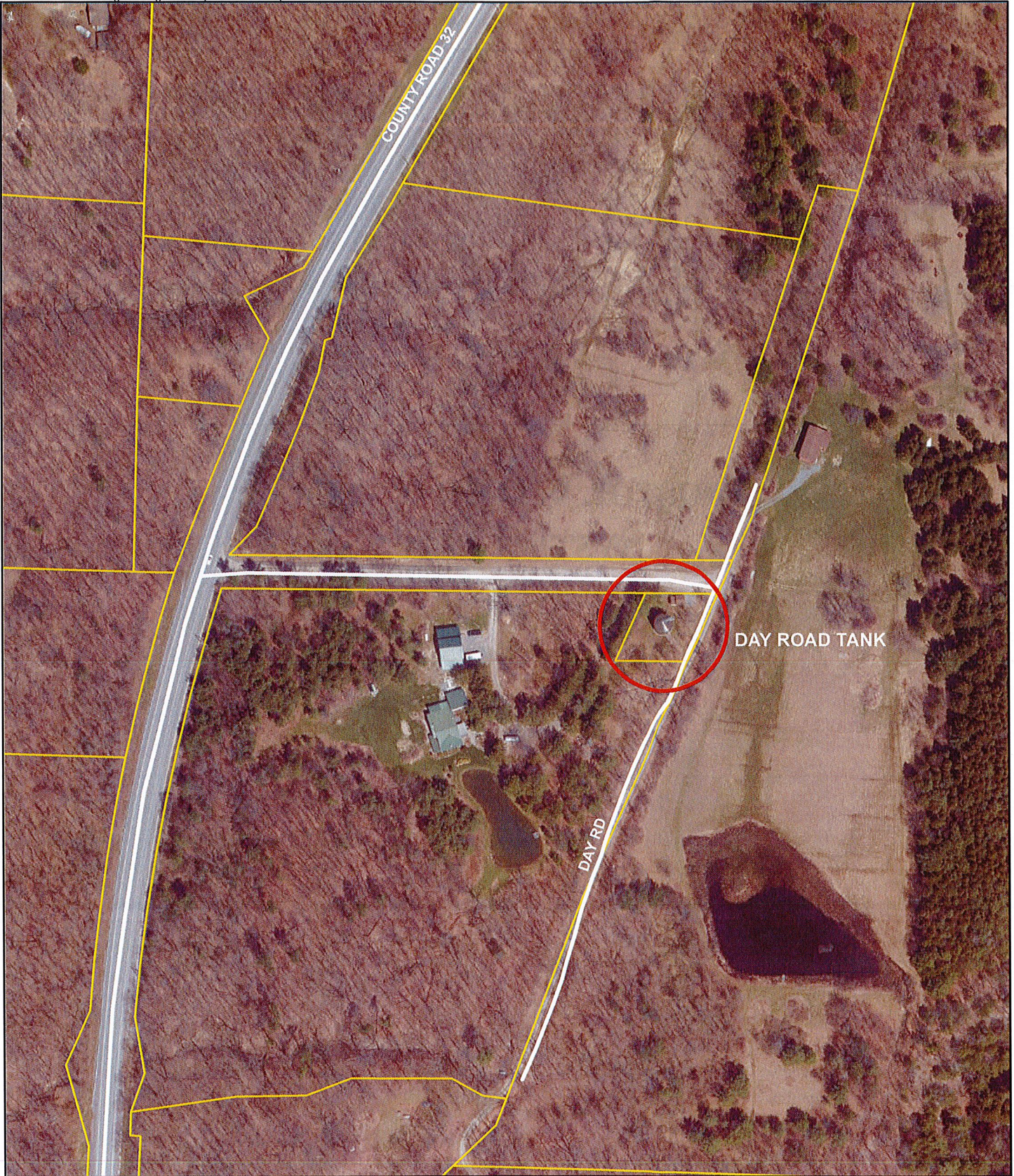
Assistance in the form of USDA RD funding in 2022 will enable the Town to address these infrastructure improvements, water quality, and other health and safety concerns.

FIGURE 1

GENERAL LOCATION MAP

FIGURE 2

PROPOSED PROJECT AREA MAP



DAY ROAD TANK BY-PRODUCT REMOVAL
TOWN OF BRISTOL, ONTARIO COUNTY, NY
PROJECT LOCATION MAP

1" = 200'

JAN 2022



MRB | *group*

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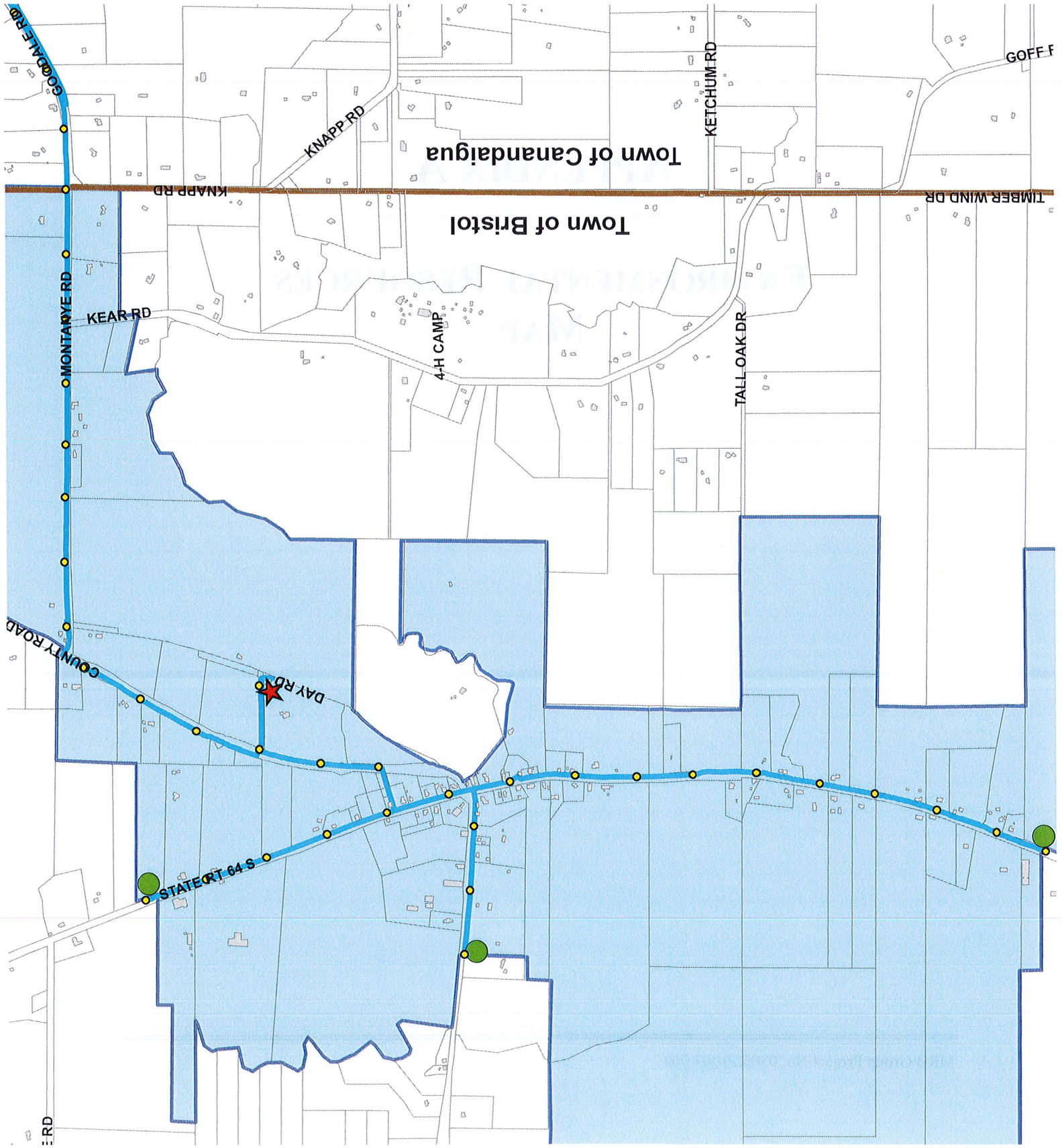
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FIGURE 3

BRISTOL WD #1 WATER SYSTEM MAP

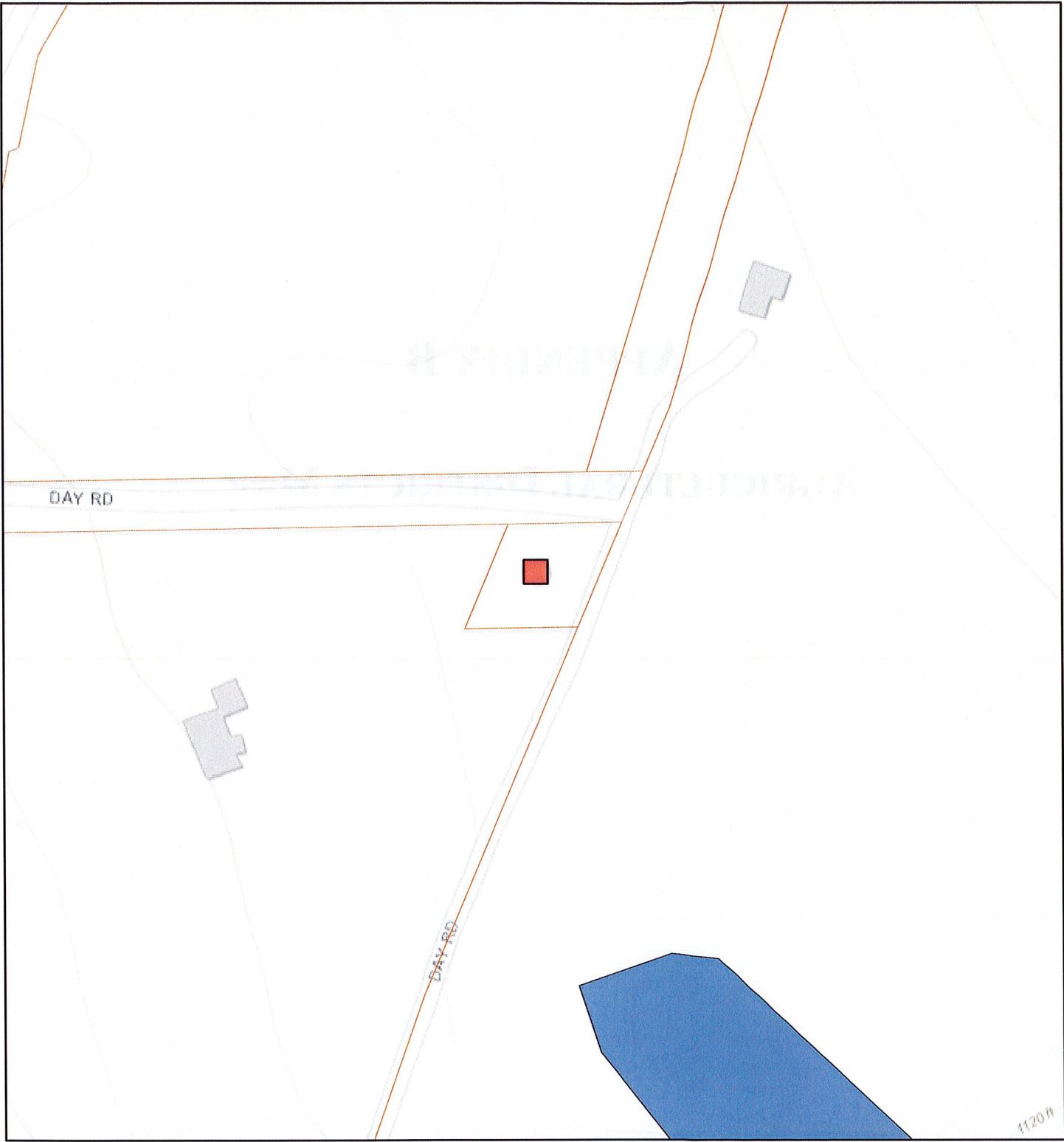
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APPENDIX A

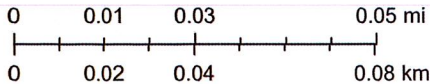
ENVIRONMENTAL RESOURCES MAP

Environmental Resources Map



September 1, 2021

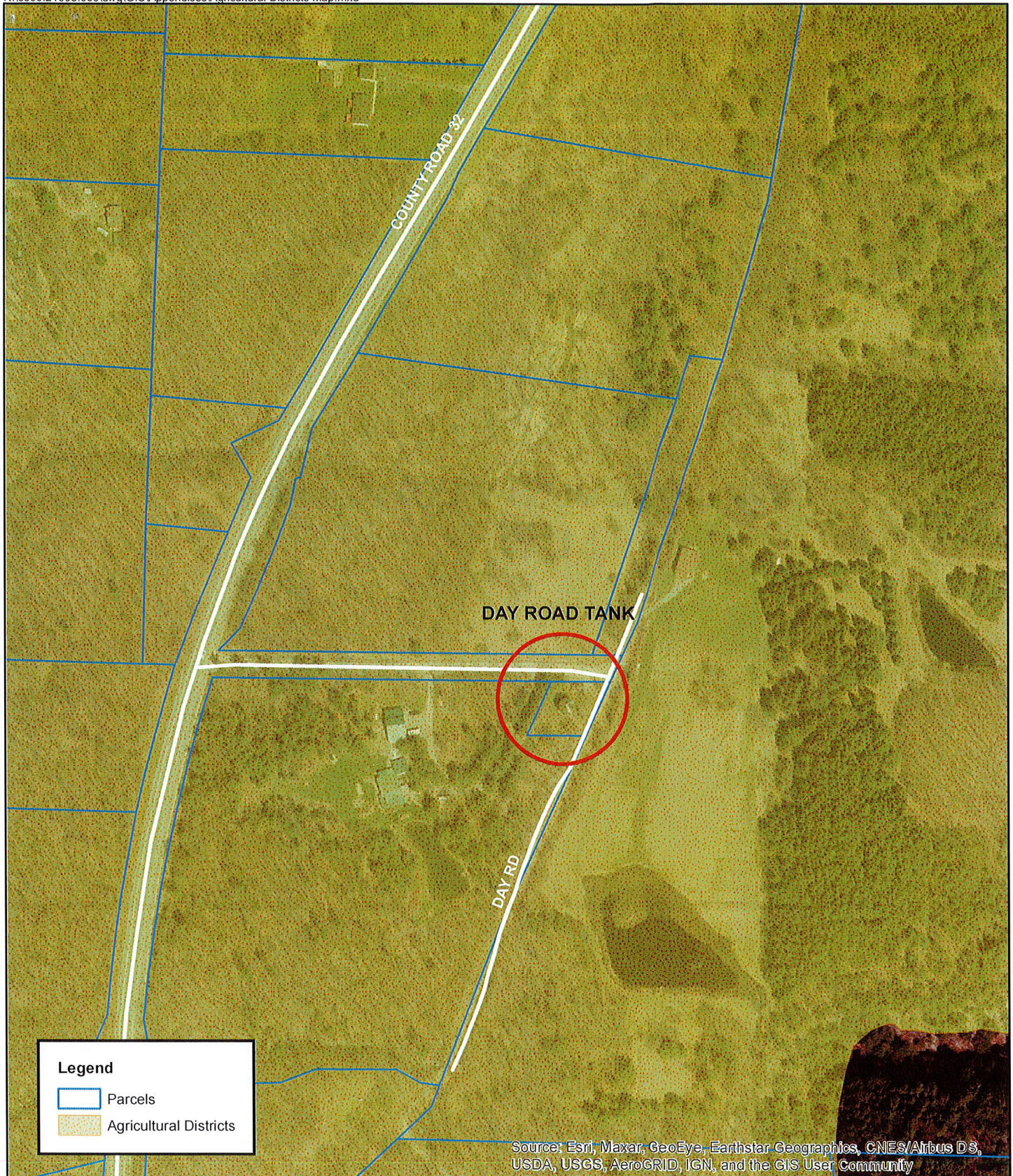
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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

APPENDIX B

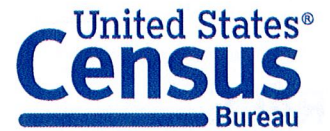
AGRICULTURAL DISTRICTS MAP



<p>DAY ROAD TANK BY-PRODUCT REMOVAL</p> <p>TOWN OF CANANDAIGUA, ONTARIO COUNTY</p> <p>AGRICULTURAL DISTRICTS MAP</p>	<p>1" = 250'</p>	<p>MRB <i>group</i></p> <p>Engineering, Architecture & Surveying, D.P.C.</p> <p>145 Culver Road, Suite 160 Rochester, NY 14620 (585) 381-9250 Phone www.mrbgroup.com</p>	<p>SHEET NO.</p>
	<p>SEP 2021</p>		<p>1 of 1</p>
	<p>Z</p>		<p>PROJECT NO.</p>
			<p>0300.21003</p>

APPENDIX C

ONTARIO COUNTY POPULATION DATA



RACE

Note: This is a modified view of the original table produced by the U.S. Census Bureau. This download or printed version may have missing information from the original table.

Label	Ontario County, Ne	Bristol town, Ont	Canandaigua town, Ontario C
▼ Total:	107,931	2,315	10,020
▼ Population of one race:	106,132	2,302	9,907
White alone	101,078	2,266	9,629
Black or African American alone	2,432	18	98
American Indian and Alaska Native alone	276	10	24
Asian alone	1,126	6	118
Native Hawaiian and Other Pacific Islande	24	0	0
Some Other Race alone	1,196	2	38
➤ Two or More Races:	1,799	13	113

Table Notes

RACE

Survey/Program: Decennial Census

Universe: Total population

Year: 2010

Table ID: P1

NOTE: Change to the California, Connecticut, Mississippi, New Hampshire, Virginia, and Washington

P. L. 94-171 Summary Files as delivered.

Source: U.S. Census Bureau, 2010 Census.

NOTE: For information on confidentiality protection, nonsampling error, and definitions, see

<http://www.census.gov/prod/cen2010/pl94-171.pdf>

RACE



Note: This is a modified view of the original table produced by the U.S. Census Bureau. This download or printed version may have missing information from the original table.

Label	Ontario County, Ne	Bristol town, On	Canandaigua town, Ontario
▼ Total:	112,458	2,284	11,109
▼ Population of one race:	105,861	2,164	10,578
White alone	98,880	2,115	10,153
Black or African American alone	2,662	12	142
American Indian and Alaska Native alone	265	5	26
Asian alone	1,383	12	141
Native Hawaiian and Other Pacific Islander a	24	1	0
Some Other Race alone	2,647	19	116
➤ Population of two or more races:	6,597	120	531

Table Notes

RACE

Survey/Program: Decennial Census

Universe: Total population

Year: 2020

Table ID: P1

Note: For information on data collection, confidentiality protection, nonsampling error, and definitions, see 2020 Census Redistricting Data (Public Law 94-171) Summary File Technical Documentation.

Source: U.S. Census Bureau, 2020 Census Redistricting Data (Public Law 94-171)

For information on the statistical methods used to protect confidentiality in these tables, see Disclosure Avoidance and the 2020 Census.

APPENDIX D

ANNUAL DRINKING WATER QUALITY REPORT

ANNUAL DRINKING WATER QUALITY REPORT FOR 2020
BRISTOL-CANANDAIGUA WATER DISTRICTS
PWS ID Numbers NY 3430008 and NY3430041

Introduction

We are pleased to present to you this year's Annual Water Quality Report. This report is designed to inform you about the quality water and services we deliver to you every day. The purpose of this report is to provide information about the quality of water that we provide to you. Our constant goal is to provide you with a safe and dependable supply of drinking water. We want you to understand the efforts we make to continually improve the water treatment process and protect our water resources. Last year, in the Towns of Bristol and Canandaigua your tap water met all State drinking water health standards. We are committed to ensuring the quality of your water. If you have any questions about this report or concerning your water utility, please contact either:

Town of Bristol:	James Fletcher, Water Superintendent	(585) 394-3300
Town of Canandaigua:	James Fletcher, Water Superintendent	(585) 394-3300
New York State Department of Health	Geneva District Office	(315) 789-3030

We want our valued customers to be informed about their water utility. If you want to learn more, please attend any of our regularly scheduled Town Board Meetings. The meetings are held:

Town of Bristol: **The second Monday of each month at 7:30 p.m. at the Bristol Town Hall located at 6740 County Road 32, Canandaigua, New York.**

Town of Canandaigua: **The third Monday of each month at 6:00 p.m. at the Canandaigua Town Hall located at 5440 Route 5 & 20 West, Canandaigua, New York.**

Where Does Our Water Come From?

Our water source is surface water source, Canandaigua Lake. The Canandaigua Town Consolidated Water Districts is supplied from City of Canandaigua. The City of Canandaigua operates a Water Filtration Plant located on West Lake Road in the Town of Canandaigua. After filtration, carbon can also be added for taste and odor control. The water is disinfected by injection of liquid chlorine, sodium hydroxide is added for pH control to reduce corrosion in the distribution system and then fluoride is added before being pumped to the distribution system. The treated water enters the Town of Canandaigua Water Districts through meter pits located at the City of Canandaigua municipal line or at the connection point with the City of Canandaigua's transmission main. The Town of Canandaigua Consolidated Water District supplies treated water from the City of Canandaigua to the Town of East Bloomfield through a meter pit located at the Canandaigua-East Bloomfield town line. Also, the Town of Canandaigua Consolidated Water District supplies treated water from the City of Canandaigua to the Bristol Water District Extension #1 through a pump station located on Goodale Road in the Hamlet of Cheshire. The Town of Canandaigua also provides water to the Towns of Farmington, Hopewell, and Gorham.

New York State Department of Health has completed a source water assessment for Canandaigua Lake with the following results:

This assessment found a moderate susceptibility to contamination for this source of drinking water. The number of agricultural lands in the assessment area results in elevated potential for protozoa, phosphorus, DBP precursors, and pesticides contamination. While there are some facilities present, permitted discharges do not likely represent an important threat to source water quality based on their density in the assessment area. However, it appears that the total amount of wastewater discharged to surface water in this assessment area is high enough to further raise the potential for contamination (particularly for protozoa). There is also noteworthy contamination susceptibility associated with other discrete contaminant sources, and these facility types include: IHWS, CBS, landfills, mines, RCRA, and TRI.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs,

springs and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or human activity.

Contaminants that may be present in source water include:

- > **Microbial contaminants**
- > **Inorganic contaminants**
- > **Pesticides and herbicides**
- > **Organic chemical contaminants**
- > **Radioactive contaminants**

Facts and Figures

- The **Town of Canandaigua Water District** purchases its water separately from the City of Canandaigua and serves approximately 7,180 residents through 2,634 service connections. The total water purchased in 2020 was 267,446,000 gallons. The daily average to the Distribution System was 732,000 gallons per day. The single highest day was 1,500,000 gallons. The amount of water sold to customers was 220,660,000 gallons. Approximately 40,000,000 gallons of water was lost due to water leaks in the older system, water main breaks, installing of new water main, 8,000,000 gallons of water was used to flush watermains, fire hydrants, fight fires, sale of bulk water etc. In 2020, water customers were charged a minimum quarterly bill of \$26.10 for a ¾ inch water meter, for the first 6,000 gallons of water usage. Any usage in addition to that was \$ 4.35 per thousand gallons of water used.

The **Town of Bristol Water District** purchases its water from the Town of Canandaigua and serves approximately 203 people through 63 service connections. The total water purchased in 2020 was 5,097,500 gallons. The daily average to the Distribution System was 13,965 gallons per day. The single highest day was 49,000 gallons. The amount of water sold to customers was 4,227,000 gallons. Approximately 870,000 was used to flush water mains due to stage two disinfection byproducts levels that exceeded the limits of the EPA, flush fire hydrants, and fight fires. In 2020, water customers were charged a minimum quarterly bill of \$28.56 for the first 6,000 gallons of water for a ¾ inch water meter. Any usage in addition to that was \$ 4.76 per thousand gallons of water used.

Information on Fluoride Addition

Our system is one of the many drinking water systems in New York State that provides drinking water with a controlled, low level of fluoride for consumer dental health protection. Fluoride is added to your drinking water by the City of Canandaigua before it is delivered to the Canandaigua Consolidated and Bristol water systems. According to the United States Centers for Disease Control, fluoride is very effective in preventing cavities when present in drinking water at an optimal range from 0.8 to 1.2 mg/l (parts per million). To ensure that the fluoride supplement in your water provides optimal dental protection, the State Department of Health requires that the City of Canandaigua monitor fluoride levels on a daily basis. During 2020 monitoring showed fluoride levels in your water were in the optimal range 100% of the time. None of the monitoring results showed fluoride at levels greater than the 2.2 mg/l MCL for fluoride.

Are There Contaminants In Our Drinking Water?

To ensure that tap water is safe to drink, we routinely test your drinking water. The New York State Department of Health and the Environmental Protection Agency prescribe regulations which limit the amount of certain contaminants in water provided by public water systems. These contaminants include: total coliform, turbidity, inorganic compounds, nitrate, nitrite, lead and copper, volatile organic compounds, total trihalomethanes, and synthetic organic compounds. The State Health Department's and the FDA's regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

In accordance with State regulations, the **City of Canandaigua** routinely monitors your drinking water for numerous contaminants. They test your drinking water for coliform bacteria, turbidity, inorganic contaminants, lead and copper, nitrate, volatile organic contaminants, total trihalomethanes, and synthetic organic contaminants. The table presented below depicts which contaminants were detected in your drinking water. The State allows us to monitor for certain contaminants less than once per year because the concentrations of these contaminants are not expected to vary significantly from year to year. Therefore, some of the data, though representative of the water quality, is more than one year old. Test results were all negative except for those indicated on the following table.

The **Canandaigua Consolidated Water District** tested the water for coliform bacteria seven samples once per month, and **the Bristol Water District Extension Number 1** tested the water for coliform bacteria one sample per month in each district.

The table presented below depicts which compounds were detected in your drinking water.

It should be noted that all drinking water, including bottled drinking water, may be reasonably expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's **Safe Drinking Water Hotline (800-426-4791)**.

TEST RESULTS							
Substance (Units)	Violation Y/N	Date of Sample	Level Detected	Range Low - High	MCLG	MCL	Likely Source of Contamination
Microbiological Contaminants							
Total Coliform Bacteria Town of Bristol No Cdga Consolidated no	No	Each Month	LT 1	N/A	0	>5% positive	Naturally present in the environment
Turbidity** (NTU) Individual	No	2020	0.17	0.01 - 0.25	N/A	TT=<0.3	Soil runoff
Turbidity** (NTU) Combined	No	2020	0.03	0.01 - 0.50	N/A	TT=<0.3	Soil runoff
Radiological Gross Alpha (pCi/l)	No	12/2013	0.0	N/A	0	15	Erosion of natural deposits
Radium 226 and 228 (pCi/L)	No	02/2013	0.04	0.4	0	5	Erosion of natural deposits
Inorganic Contaminants							
Lead (ppb) Cdga Consolidated 4	No	06/2020	1.8	ND to 6.1	N/A	AL=15	Corrosion of household plumbing systems, erosion of natural deposits
Copper (ppm) Cdga Consolidated	No	06/2020	0.028	0.0011-0.44	N/A	AL=1.3	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
Fluoride (ppm)	No	2020	0.78	0.7-1.2ppm	N/A	2.2	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
Barium (ppm)	No	02/2020	0.024	N/A	2	2	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills; runoff from Crop land

Nickel (ppb)	No	02/2019	1.1	N/A	100	100	Erosion of natural deposits; discharge from steel factories additive, fertilizer factories Runoff from fertilizer use, septic tank effluent, erosion of natural deposits Erosion of natural deposits, stainless steel manufacturing
Nitrate (ppm)	No	02/2020	0.27	N/A	10	10	
Chromium (ppb)	No	02/2020	1.7	N/A	100	100	

Volatile Organic Contaminants							
TTHM (ppb) [Total trihalomethanes]							By-product of drinking water chlorination
Stage 2: Canandaigua Consolidated							
Cooley site	No	2020	60.0 AVG.	41-85		80	
Onanda Site	No	2020	64.5 AVG.	41-85		80	
Town of Bristol	Yes	2020	83	41-85		80	

Total Halo acetic Acids (ppb)							Discharge from metals, plastic or fertilizer plant
Stage 2:							
Canandaigua Consolidated Cooley Site	No	2020	22.0 avg.	25-50	N/A	60	
Onanda Site	No	2020	29.75 avg.	25-50	N/A	60	
Town of Bristol	No	2020	34.5 avg	25-50	N/A	60	

Notes:

** Turbidity is a measure of the cloudiness of the water. Canandaigua City monitors it because it is a good indicator of the effectiveness of our filtration system.

> 0 site(s) out of 30 above the Action Level for Copper.

> 0 site(s) out of 30 above the Action Level for Lead.

Definitions:

Non-Detects (ND) - laboratory analysis indicates that the constituent is not present.

Action Level - the concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

Treatment Technique (TT) - A treatment technique is a required process intended to reduce the level of a contaminant in drinking water.

Maximum Contaminant Level - The "Maximum Allowed" (MCL) is the highest level of a contaminant that is allowed in drinking water. MCL's are set as close to the MCLG's as feasible using the best available treatment technology.

Maximum Contaminant Level Goal - The "Goal" (MCLG) is the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLG's allow for a margin of safety.

Maximum Residual Disinfectant Level (MRDL) - The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum Residual Disinfectant Level Goal (MRDLG) - The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLG's do not reflect the benefits of the use of disinfectants to control microbial contamination.

Parts per million (ppm) or Milligrams per liter (mg/l) - one part per million corresponds to one minute in two years or a single penny in \$10,000.

Parts per billion (ppb) or Micrograms per liter - one part per billion corresponds to one minute in 2,000 years, or a single penny in \$10,000,000.

Nephelometric Turbidity Unit (NTU) - nephelometric turbidity unit is a measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

Picocuries per liter (pCi/l) - A measure of radioactivity in water.

Locational Running Annual Average (LRAA) – average of samples at a location for year on a rolling basis

MCL's are set at very stringent levels. To understand the possible health effects described for many regulated constituents, a person would have to drink 2 liters of water every day at the MCL level for a lifetime to have a one-in-a-million chance of having the described health effect.

What Does This Information Mean?

As you can see by the table, our system had no violations. We're proud that your drinking water meets or exceeds all Federal and State requirements. We have learned through our monitoring and testing that some constituents have been detected. The EPA has determined that your water IS SAFE at these levels.

Microbiological Contaminants:

- (1) **Total Coliform** - Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially-harmful, bacteria may be present. Coliforms were found in more samples than allowed and this was a warning of potential problems.
- (3) **Turbidity** - Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

Inorganic Contaminants:

(17) **Lead** - As you can see by the table, our system had no violations.

Infants and young children are typically more vulnerable to lead in drinking water than the general population. It is possible that lead levels at your home may be higher than at other homes in the community as a result of materials used in your home's plumbing. If you are concerned about elevated lead levels in your home's water, you may wish to have your water tested and flush your tap for 30 seconds to 2 minutes before using tap water. Additional information is available from the Safe Drinking Water Hotline (1-800-426-4791).

Do I Need to Take Special Precautions?

Some people may be more vulnerable to disease causing microorganisms or pathogens in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice from their health care provider about their drinking water. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium, Giardia and other microbial pathogens are available from the Safe Drinking Water Hotline (800-426-4791).

Why Save Water and How to Avoid Wasting It?

Although our system has an adequate amount of water to meet present and future demands, there are a number of reasons why it is important to conserve water:

- saving water saves energy and some of the costs associated with both of these necessities of life;
- saving water reduces the cost of energy required to pump water and the need to construct costly new wells, pumping systems and water towers; and
- saving water lessens the strain on the water system during a dry spell or drought, helping to avoid severe water use restrictions so that essential fire fighting needs are met.

You can play a role in conserving water by becoming conscious of the amount of water your household is using, and by looking for ways to use less whenever you can. It is not hard to conserve water. Conservation tips include:

- Automatic dishwashers use 15 gallons for every cycle, regardless of how many dishes are loaded. So get a run for your money and load it to capacity.
- Turn off the tap when brushing your teeth.
- Check every faucet in your home for leaks. Just a slow drip can waste 15 to 20 gallons a day. Fix it up and you can save almost 6,000 gallons per year.
- Check your toilets for leaks by putting a few drops of food coloring in the tank, watch for a few minutes to see if the color shows up in the bowl. It is not uncommon to lose up to 100 gallons a day from one of these otherwise invisible toilet leaks. Fix it and you save more than 30,000 gallons a year.
- Use your water meter to detect hidden leaks. Simply turn off all taps and water using appliances, and then check the meter after 15 minutes. If it moved, you have a leak.

System Improvements

Canandaigua Consolidated installed 3,400 liner feet of 16-inch water main, 2,800 liner feet of 12-inch water main,

Monitoring Violations:

The Town of Bristol water district had four violations for 2020. All four violations were for exceeding the MCL of stage two disinfection by product. The Town of Canandaigua Water Superintendent informed the Town of Bristol water district residents by a letter all four times and informed the Town Supervisor.

Closing

Thank you for allowing us to continue to provide your family with quality drinking water this year. We ask that all our customers help us protect our water sources, which are the heart of our community. Please call our office if you have questions.

- > Town of Canandaigua, Water Superintendent Jim Fletcher (585) 394-3300
- > Town of Bristol, Water Superintendent Jim Fletcher (585) 394-3300
- > New York State Department of Health (315) 789-3030

This Report Covers Public Water Supply ID Numbers:

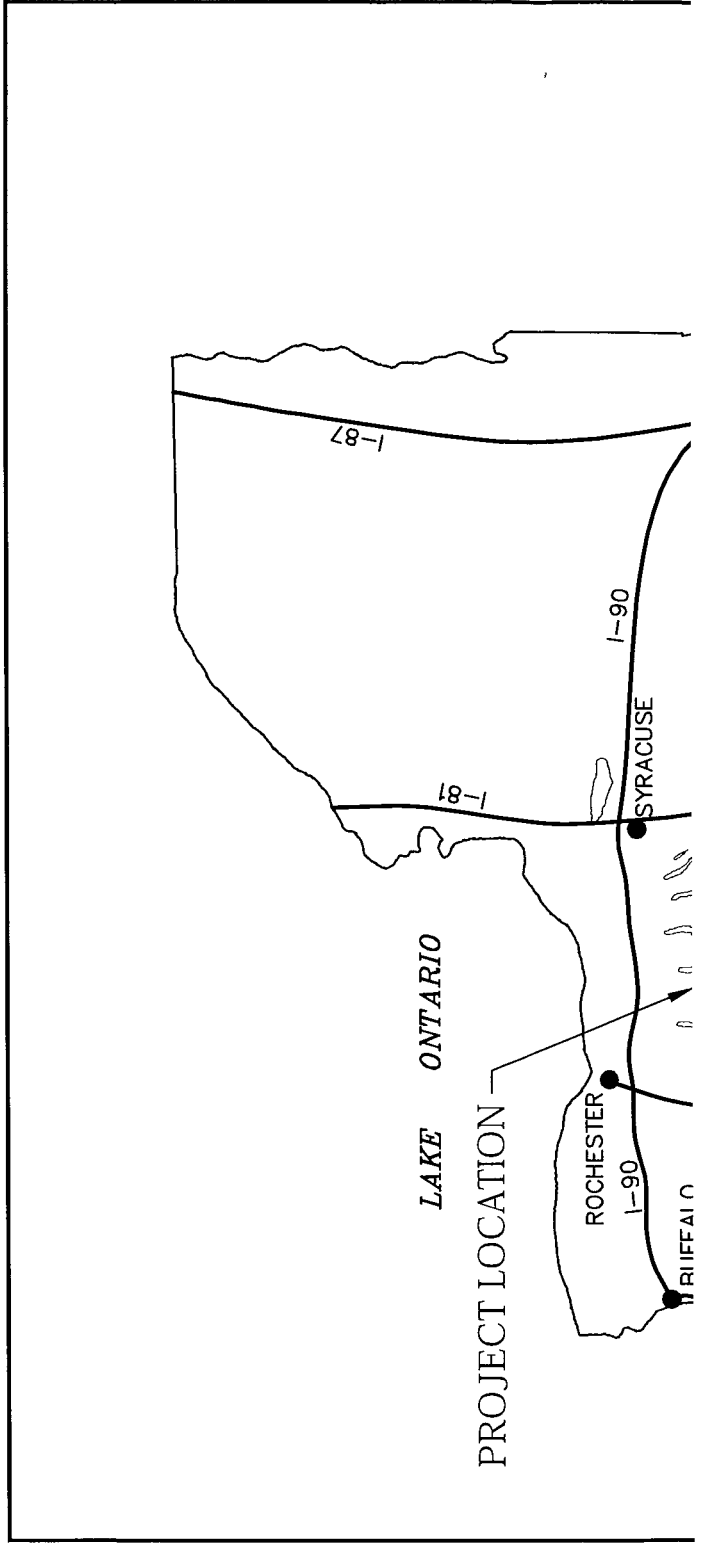
Town of Bristol: Bristol Water District Extension Number 1: 3430041

Town of Canandaigua: Canandaigua Consolidated Water District: 3430008

APPENDIX E

DAY ROAD TANK DRAWINGS

STORAGE TANK

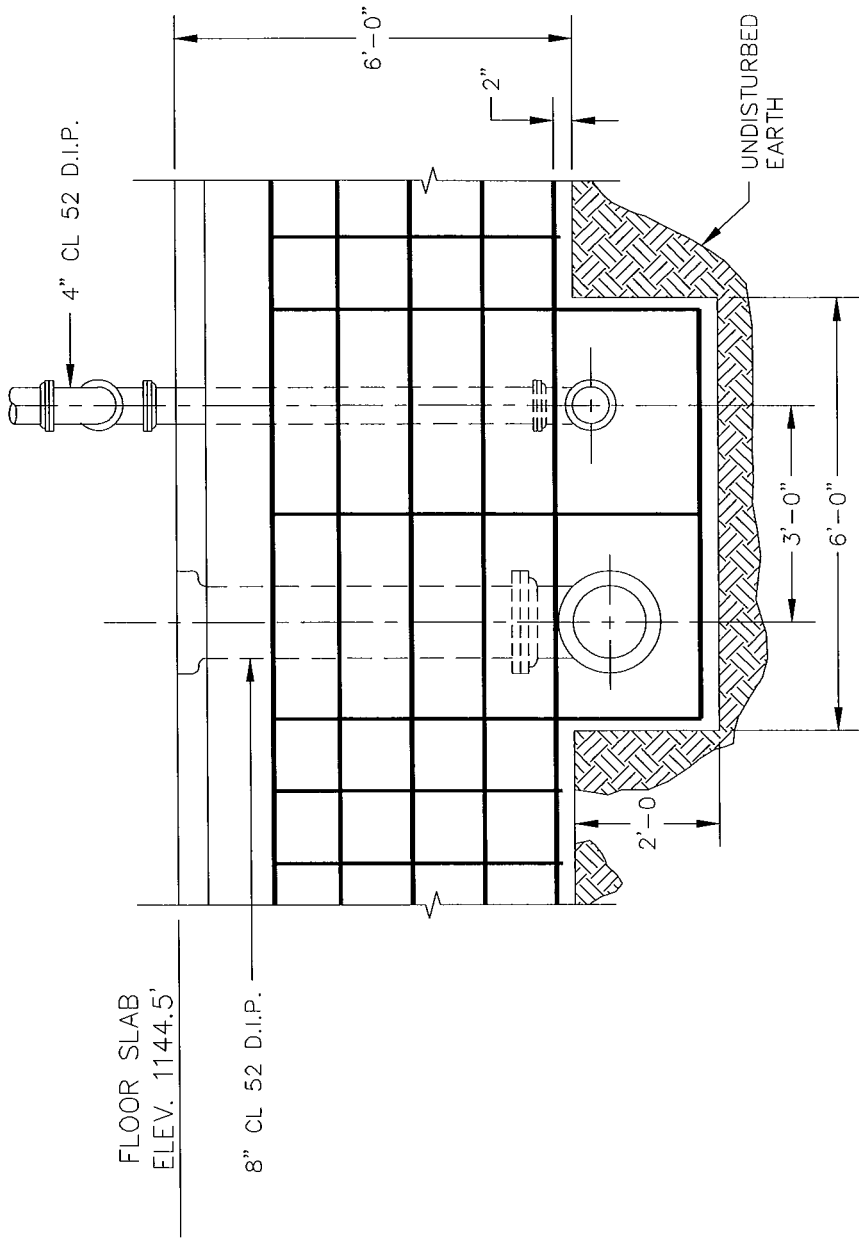


TRACT LIMIT LINE
(OUTSIDE FOUNDATION)
TRACT #2 / #3)

ED 4" TANK INLET PIPE
ACT #2)

D 8' x 8' WIDE RIP-RAP
ERFLOW SPILLWAY
CT #2)

DING

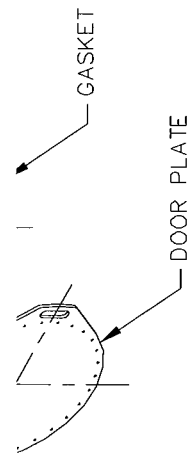


TYPICAL INLET/OUTLET ENCASEMENT SECTION C-C

N.T.S.

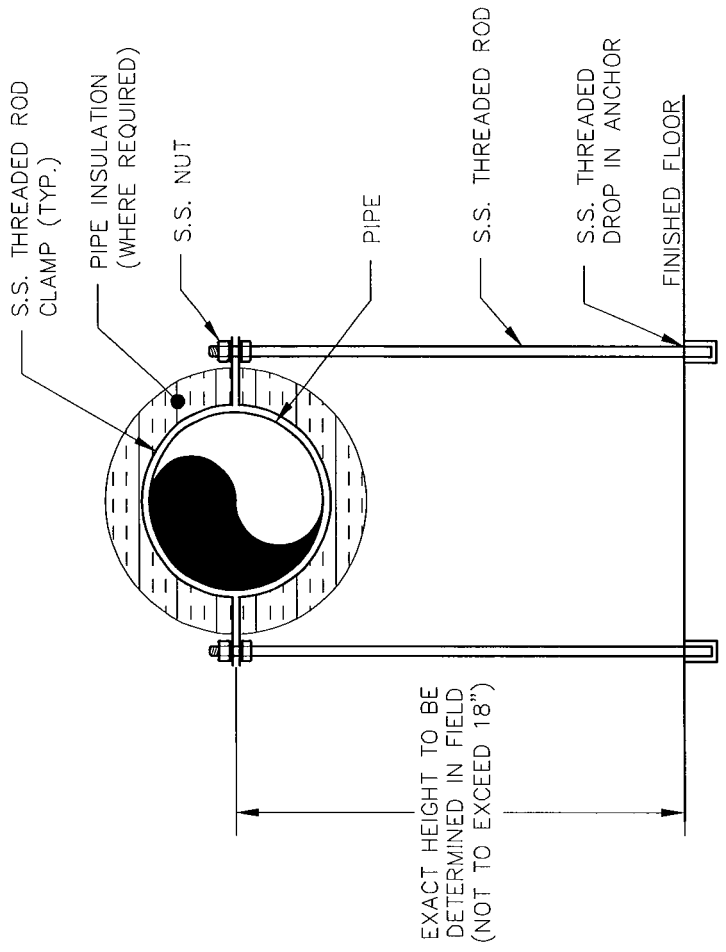
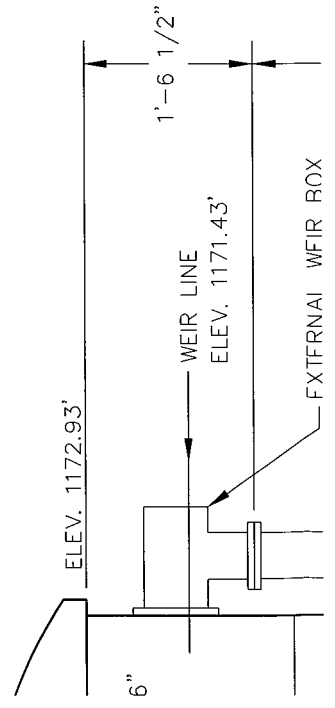


NOTE: CHAMFER THE REAMED HOLES ON THE TANK INTERIOR AS NECESSARY TO ALLOW THE BOLT HEADS TO SEAT PROPERLY. SEALER IS APPLIED TO THE COMPONENTS ONLY AFTER THE REMAINING PROCEDURES HAVE BEEN COMPLETED AND THE COMPONENTS ARE READY FOR FINAL ASSEMBLY. SEE DRAWING NUMBER 261337 FOR THE NECK WELDMENT TO ACCESS DOOR SHEET BOLT JOINT.



24" AND 30" ROUND ACCESS DOORS (W/ DAVIT) FOR GLASS COATED TANKS INSTALLATION DETAIL

N.T.S.



EXIST. ASPHALT COURSES CUT IN THIS AREA



- TACK COAT ON EXISTING ASPHALT SURFACE GRADE HFMS 2H NYSDOT MATERIAL DESIGNATION 702-3401
- MIN. ASPHALT REPLACEMENT: DRIVEWAYS < 2" NYSDOT TYPE 3 BINDER 1" NYSDOT TYPE 7 TOP
- NYS D.O.T. 304.12M CRUSHER RUN STONE

DETECTABLE TRACER TAPE

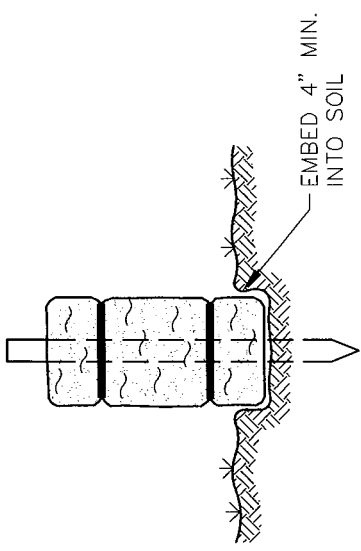
PIPE

o. 1 & No. 2 STONE BEDDING OR UNSTABLE TRENCH CONDITIONS (ROBE) AND IN ROCK



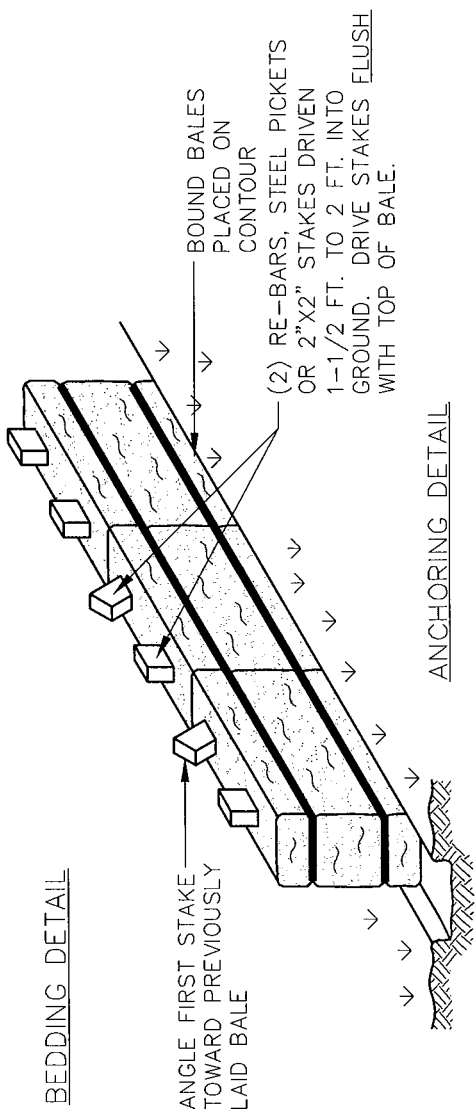
ENCH DETAIL

(DRIVEWAYS)



DRAINING AREA NO MORE THAN 1/4 ACRE PER 100 FEET OF STRAW BALE DIKE FOR SLOPES LESS THAN 25%

BEDDING DETAIL



NOTES:

1. BALES SHALL BE PLACED AT THE TOE OF A SLOPE OR IN SWALE LINES AS SHOWN ON THE PLANS, WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF (4) INCHES, AND PLACED SO THE BINDINGS ARE HORIZONTAL.
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY EITHER (2) STAKES OR RE-BARS DRIVEN THROUGH THE BALE. THE FIRST STAKE IN EACH BALE SHALL BE DRIVEN TOWARD THE PREVIOUSLY LAID BALE AT AN ANGLE TO FORCE THE BALES TOGETHER. STAKES SHALL BE DRIVEN FLUSH WITH THE BALE.
4. INSPECTION SHALL BE FREQUENT AND REPAIR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED
5. BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE

STRAW BALE DETAIL

N.T.S.

APPENDIX F

WATER RATES

Town of Canandaigua
2020 Fee Schedule
(Effective April 1, 2020)

No permit or certificate shall be issued, no approval shall be granted, no application shall be considered complete, no park reservation shall be confirmed, and no public hearing shall be scheduled or held until the fees, as established by the Town Board, have been paid in full. Accepted forms of payment are: cash, check, or credit card (Visa, Mastercard, and Discover).

WATER DEPARTMENT

Meters for Canandaigua Consolidated & Bristol Water Districts Only:		
(The pricing includes tapping of the water main, bronze saddle, corporation stop, curb box valve, curb box, valve box, SS rod, water meter, ERT, and right angle meter valve and inspection of trench)		
	¾"	\$850
	1"	\$925
	1.5"	\$1,757
	2"	\$2,222
	Water meter larger than 2"	Contact Water Superintendent
	¾ inch water meter, ERT, right angle meter valve and inspection	\$550
	1 inch water meter, ERT, right angle meter valve and inspection	\$600
Meter pits are required when the location of the structure is farther than 500 feet from the road.		
	¾" meter pit	\$550
	1" meter pit	\$790
Replacement Cost of Water Meter Materials:		
	Electronic reading device (ERT)	\$260
	¾" water meter replacement	\$90
	1" water meter replacement	\$190
	1 ½" water meter replacement	\$725
	2" water meter replacement	\$960

Directional Drilling Under A Road:	Up to 2" Pipe	\$1,200
	2" and larger	Contact Water Superintendent
Testing water meter for accuracy		\$50

Hydrant Meter Rental (Includes a water meter and back flow device that will be	\$50 rental
--	-------------

connected to the hydrant by the Water Department. A \$500 deposit is required. When equipment is returned in working condition, deposit will be refunded). Hydrant meter rentals will be invoiced monthly.	fee/month plus \$4.35 per 1,000 gallons
--	---

Water Charge to Town of East Bloomfield	\$2.62 per 1,000 gallons
Water Charge to the Town of Hopewell, Town of Farmington, and Town of Gorham	\$2.086 per 1,000 gallons

Canandaigua Consolidated District Fees:			
Meter Size	Gallons of Consumption	Minimum Bill \$4.23 per 1,000 Gallons	Additional Cost Per 1,000 Gallons
¾"	0 – 6,000	\$26.10	\$4.35
1"	0 – 10,000	\$43.50	
1 ½"	0 – 16,000	\$69.60	
2"	0 – 30,000	\$130.50	
3"	0 – 50,000	\$217.50	
4"	0 - 80,000	\$348.00	
6"	0 – 160,000	\$696.00	
8" – 12"	0 – 200,000	\$870.00	

Bristol Water District Fees:			
Meter Size	Gallons of Consumption	Minimum Bill \$4.64 per 1,000 Gallons	Additional Cost Per 1,000 Gallons
¾"	0 – 6,000	\$28.56	\$4.76
1"	0 – 10,000	\$47.60	
1 ½"	0 – 16,000	\$76.16	
2"	0 – 30,000	\$142.80	
3"	0 – 50,000	\$238.00	
4"	0 - 80,000	\$380.80	
6"	0 – 160,000	\$761.60	
8" – 12"	0 – 200,000	\$952.00	

Fee Schedule for Town of Canandaigua Water Department to Repair the Water System:	
The purpose of this section is for the setting of fees associated with the Town of Canandaigua Water Department to repair any damage that may occur to the water system by an outside agency. Some examples, including but not limited to, are damage to the water main, water service, curb stop, or meter pit or any other water infrastructure that is in the right of way. The Water Department does not maintain any water infrastructure after the curb stop. The need for repair and the type of repair are at the sole discretion of the Town of Canandaigua Water Superintendent. Additional materials fees may apply. The responsible party will be invoiced according to the following:	

Employees:		
	Labor per man hour, straight time	\$ 45.00
	Labor per man hour, on overtime	\$ 67.50
	Administrative cost, per hour	\$ 80.00
Heavy Equipment:		
	Excavator 20 ton, per hour	\$ 150.00
	Mini excavator, per hour	\$ 85.00
	Dump truck, per hour	\$ 85.00
	Water loss, calculated by the Water Superintendent	\$ 5.50 per 1,000 gallons

History:

Adopted by the Town Board of the Town of Canandaigua 6/6/77. Amended in its entirety by resolution on 11/7/83, 6/11/90, and 5/8/95 except for those fees listed separate under local law. Further amended 4/3/07, 12/18/07, 3/3/09, 4/21/09; 12/15/10; 1/3/11; 2/13/12, 1/28/13, 1/6/14, 4/28/14, 1/5/15, 12/21/15, 5/16/16, 7/18/16, 9/19/16, 1/9/2017, 4/17/17, 5/15/17, 1/8/18, 5/21/18, 8/20/18; 1/7/19, 2/11/2019, 3/18/19, 7/1/19, 8/19/19, 1/6/2020 and March 16, 2020.

APPENDIX G

DOH VIOLATION LETTERS



Department of Health

F

ANDREW M. CUOMO
Governor

HOWARD A. ZUCKER, M.D., J.D.
Commissioner

SALLY DRESLIN, M.S., R.N.
Executive Deputy Commissioner

September 12, 2019

Bristol Town Board
6740 County Road 32
Canandaigua, NY 14424

RE: **PUBLIC WATER SUPPLY**
Bristol WD #1
(MCL Violation - DBP)
Bristol (T) – Ontario County

Attn: Robert Green, Jr., Supervisor

Gentlemen:

Routine samples analyzed quarterly for disinfection by-products indicate the presence of Total Trihalomethanes at a locational running quarterly average of 86.75 micrograms per liter (ug/L) which exceeds the Maximum Contaminant Level (MCL) of 80 ug/L. Therefore, Bristol WD #1 is in violation of the of Code of Federal Regulations, Section 141.64 for the 3rd quarter (July 1 – September 31) of 2019.

SSC Section 5-1.52 Table 13 requires Public Notification to be issued by all the public water systems to the system's customers. SSC Section 5-1.78(d) requires the public notification be completed by mail or direct delivery within 30 days after the violation (**by October 12, 2019**) and continuing at least once every three months for as long as the violation exists. Customers should be asked to notify tenants, if they have any. A copy of the notification must be provided to all customers and to this office **by October 12, 2019 and quarterly thereafter until the system returns to compliance.**

If you have any questions on this matter, please feel free to contact this office.

Sincerely,

Kendall Larsen
Public Health Engineer 1

Enc: Public Notice
cc: Bristol Town Water Department - Attn: Mr. Fletcher, Supt. (w/enc)

P:\DATA\Water\Violation Letters\Public Notice\Bristol WD1 DBP VIOL Q3 2019.docx

GENEVA DISTRICT OFFICE 624 Pre-Emption Road, Geneva, NY 14456 315-789-3030 phone 315-781-0831 fax gedo@health.ny.gov



ANDREW M. CUOMO
Governor

Department of Health

HOWARD A. ZUCKER, M.D., J.D.
Acting Commissioner

SALLY DRESLIN, M.S., R.N.
Executive Deputy Commissioner

(F)

November 30, 2018

Bristol Town Board
6740 County Road 32
Canandaigua, NY 14424

RE: **PUBLIC WATER SUPPLY**
Bristol WD #1
(MCL Violation – DBP)
Bristol T – Ontario County

Attn: Robert Green, Jr., Supervisor

Gentlemen:

Routine samples analyzed quarterly for disinfection by-products indicate the presence of Total Trihalomethanes at a locational running annual average of 84 micrograms per liter (ug/l) which exceeds the Maximum Contaminant Level (MCL) of 80 ug/l. Therefore, Bristol WD #1 is in violation of the Code of Federal Regulations, Section 141.64.

SSC Section 5-1.52 Table 13 requires Public Notification to be issued by all the public water systems to the system's customers. SSC Section 5-1.78(d) requires the public notification be completed by mail or direct delivery within 30 days after the violation (**by December 31, 2018**) and continuing at least once every three months for as long as the violation exists. Customers should be asked to notify tenants, if they have any. A copy of the notification must be provided all customers and to this office **by December 30, 2018 and quarterly thereafter until the system returns to compliance.**

As a result of this notification, you must investigate options and propose actions to reduce the disinfection byproducts formed in your system. I would be happy to meet with you to discuss options. Please submit your written action proposal to this office **by December 30, 2018.**

If you have any questions on this matter please feel free to contact this office.

Sincerely,

Kendall Larsen
Assistant Engineer

enc: Public Notice

pc: Bristol T Water Dept. – Attn. Mr. Fletcher, Superintendent (w/ enc)



ANDREW M. CUOMO
Governor

Department of Health

HOWARD A. ZUCKER, M.D., J.D.
Acting Commissioner

SALLY DRESLIN, M.S., R.N.
Executive Deputy Commissioner

December 1, 2017

Bristol Town Board
6740 County Road 32
Canandaigua, NY 14424

RE: **PUBLIC WATER SUPPLY**
Bristol WD #1
(MCL Violation – DBP)
Bristol T – Ontario County

Attn: Robert Green, Jr., Supervisor

Gentlemen:

Routine samples analyzed quarterly for disinfection by-products indicate the presence of Total Trihalomethanes at a locational running annual average of 82 micrograms per liter (ug/l) which exceeds the Maximum Contaminant Level (MCL) of 80 ug/l. Therefore, Bristol WD #1 is in violation of the Code of Federal Regulations, Section 141.64.

SSC Section 5-1.52 Table 13 requires Public Notification to be issued by all the public water systems to the system's customers. SSC Section 5-1.78(d) requires the public notification be completed by mail or direct delivery within 30 days after the violation (**by December 31, 2017**) and continuing at least once every three months for as long as the violation exists. Customers should be asked to notify tenants, if they have any. A copy of the notification must be provided all customers and to this office **by December 31, 2017 and quarterly thereafter until the system returns to compliance.**

As a result of this notification, you must investigate options and propose actions to reduce the disinfection byproducts formed in your system. I would be happy to meet with you to discuss options. Please submit your written action proposal to this office **by December 31, 2017.**

If you have any questions on this matter please feel free to contact this office.

Sincerely,


Kendall Larsen
Assistant Engineer

enc: Public Notice

pc: Bristol T Water Dept. – Attn. Mr. Fletcher, Superintendent (w/ enc)

**NOTIFICATION
TOTAL TRIHALOMETHANES**

Date: December 30, 2019

To: Customers/Residents of: Bristol Water District #1

From: Town of Canandaigua Water Department

Required water quality tests conducted quarterly and averaged as a locational running annual average for the previous twelve months indicated the presence of total trihalomethanes at 84 micrograms per liter (ug/l), which is above the maximum contaminant level (MCL) allowed in a public water supply of 80 micrograms per liter (ug/l). This is a maximum contaminant level violation of the Code of Federal Regulations (CFR 141.64.) This violation requires public notice be provided to all customers on a quarterly basis for as long as the violation exists.

The New York State Department of Health sets drinking water standards and has determined that the presence of total trihalomethanes is a possible health concern. Trihalomethanes are a group of chemicals that includes chloroform, bromoform, bromodichloromethane, and chlorodibromomethane. Trihalomethanes are formed in drinking water during treatment by chlorine, which is the most commonly used disinfectant in New York State. Chlorine reacts with certain acids that are in naturally-occurring organic material (e.g., decomposing vegetation such as tree leaves, algae or other aquatic plants) in surface water sources such as rivers and lakes. The amount of trihalomethanes formed in drinking water during disinfection can change from day to day, depending on the temperature, the amount of organic material in the water, the amount of chlorine added, and a variety of other factors. Drinking water is disinfected by public water suppliers to kill bacteria and viruses that could cause serious illnesses. For this reason, disinfection of drinking water by chlorination is beneficial to public health.

Some studies suggest that people who drink chlorinated water (which contains trihalomethanes) or water containing elevated levels of trihalomethanes for long periods of time may have an increased risk for certain health effects. For example, some studies of people who drank chlorinated drinking water for 20 to 30 years show that long term exposure to disinfection by-products (including trihalomethanes) is associated with an increased risk for certain types of cancer. A few studies of women who drank water containing trihalomethanes during pregnancy show an association between exposure to elevated levels of trihalomethanes and small increased risks for low birth weights, miscarriages and birth defects. However, in each of the studies, how long and how frequently people actually drank the water, as well as how much trihalomethanes the water contained is not known for certain. Therefore, we do not know for sure if the observed increases in risk for cancer and other health effects are due to trihalomethanes or some other factor. The individual trihalomethanes chloroform, bromodichloromethane and dibromochloromethane cause cancer in laboratory animals exposed to high levels over their lifetimes. Chloroform, bromodichloromethane and dibromochloromethane are also known to cause effects in laboratory animals after high levels of exposure, primarily on the liver, kidney, nervous system and on their ability to bear healthy offspring. Chemicals that cause adverse health effects in laboratory animals after high levels of exposure may pose a risk for adverse health effects in humans exposed to lower levels over long periods of time.

The following areas have been affected: Bristol Water District #1

The following steps are being taken to correct this violation:

Increased flushing

At this time no additional precautions by customers/residents are necessary. If you have any questions please contact Town of Canandaigua at (585) 394-3300.

**NOTIFICATION
TOTAL TRIHALOMETHANES**

Date: June 25th, 2020

To: Customers/Residents of: Bristol Water District #1

From: Town of Canandaigua Water Department

Required water quality tests conducted quarterly and averaged as a locational running annual average for the previous twelve months indicated the presence of total trihalomethanes at 84 micrograms per liter (ug/l), which is above the maximum contaminant level (MCL) allowed in a public water supply of 80 micrograms per liter (ug/l). This is a maximum contaminant level violation of the Code of Federal Regulations (CFR 141.64.) This violation requires public notice be provided to all customers on a quarterly basis for as long as the violation exists.

The New York State Department of Health sets drinking water standards and has determined that the presence of total trihalomethanes is a possible health concern. Trihalomethanes are a group of chemicals that includes chloroform, bromoform, bromodichloromethane, and chlorodibromomethane. Trihalomethanes are formed in drinking water during treatment by chlorine, which is the most commonly used disinfectant in New York State. Chlorine reacts with certain acids that are in naturally-occurring organic material (e.g., decomposing vegetation such as tree leaves, algae or other aquatic plants) in surface water sources such as rivers and lakes. The amount of trihalomethanes formed in drinking water during disinfection can change from day to day, depending on the temperature, the amount of organic material in the water, the amount of chlorine added, and a variety of other factors. Drinking water is disinfected by public water suppliers to kill bacteria and viruses that could cause serious illnesses. For this reason, disinfection of drinking water by chlorination is beneficial to public health.

Some studies suggest that people who drink chlorinated water (which contains trihalomethanes) or water containing elevated levels of trihalomethanes for long periods of time may have an increased risk for certain health effects. For example, some studies of people who drank chlorinated drinking water for 20 to 30 years show that long term exposure to disinfection by-products (including trihalomethanes) is associated with an increased risk for certain types of cancer. A few studies of women who drank water containing trihalomethanes during pregnancy show an association between exposure to elevated levels of trihalomethanes and small increased risks for low birth weights, miscarriages and birth defects. However, in each of the studies, how long and how frequently people actually drank the water, as well as how much trihalomethanes the water contained is not known for certain. Therefore, we do not know for sure if the observed increases in risk for cancer and other health effects are due to trihalomethanes or some other factor. The individual trihalomethanes chloroform, bromodichloromethane and dibromochloromethane cause cancer in laboratory animals exposed to high levels over their lifetimes. Chloroform, bromodichloromethane and dibromochloromethane are also known to cause effects in laboratory animals after high levels of exposure, primarily on the liver, kidney, nervous system and on their ability to bear healthy offspring. Chemicals that cause adverse health effects in laboratory animals after high levels of exposure may pose a risk for adverse health effects in humans exposed to lower levels over long periods of time.

The following areas have been affected: Bristol Water District #1

The following steps are being taken to correct this violation:
Increased flushing

At this time no additional precautions by customers/residents are necessary. If you have any questions please contact Town of Canandaigua at (585) 394-3300.

**NOTIFICATION
TOTAL TRIHALOMETHANES**

Date: December 17, 2020

To: Customers/Residents of: Bristol Water District #1

From: Town of Canandaigua Water Department

Required water quality tests conducted quarterly and averaged as a locational running annual average for the previous twelve months indicated the presence of total trihalomethanes at 84 micrograms per liter (ug/l), which is above the maximum contaminant level (MCL) allowed in a public water supply of 80 micrograms per liter (ug/l). This is a maximum contaminant level violation of the Code of Federal Regulations (CFR 141.64.) This violation requires public notice be provided to all customers on a quarterly basis for as long as the violation exists.

The New York State Department of Health sets drinking water standards and has determined that the presence of total trihalomethanes is a possible health concern. Trihalomethanes are a group of chemicals that includes chloroform, bromoform, bromodichloromethane, and chlorodibromomethane. Trihalomethanes are formed in drinking water during treatment by chlorine, which is the most commonly used disinfectant in New York State. Chlorine reacts with certain acids that are in naturally-occurring organic material (e.g., decomposing vegetation such as tree leaves, algae or other aquatic plants) in surface water sources such as rivers and lakes. The amount of trihalomethanes formed in drinking water during disinfection can change from day to day, depending on the temperature, the amount of organic material in the water, the amount of chlorine added, and a variety of other factors. Drinking water is disinfected by public water suppliers to kill bacteria and viruses that could cause serious illnesses. For this reason, disinfection of drinking water by chlorination is beneficial to public health.

Some studies suggest that people who drink chlorinated water (which contains trihalomethanes) or water containing elevated levels of trihalomethanes for long periods of time may have an increased risk for certain health effects. For example, some studies of people who drank chlorinated drinking water for 20 to 30 years show that long term exposure to disinfection by-products (including trihalomethanes) is associated with an increased risk for certain types of cancer. A few studies of women who drank water containing trihalomethanes during pregnancy show an association between exposure to elevated levels of trihalomethanes and small increased risks for low birth weights, miscarriages and birth defects. However, in each of the studies, how long and how frequently people actually drank the water, as well as how much trihalomethanes the water contained is not known for certain. Therefore, we do not know for sure if the observed increases in risk for cancer and other health effects are due to trihalomethanes or some other factor. The individual trihalomethanes chloroform, bromodichloromethane and dibromochloromethane cause cancer in laboratory animals exposed to high levels over their lifetimes. Chloroform, bromodichloromethane and dibromochloromethane are also known to cause effects in laboratory animals after high levels of exposure, primarily on the liver, kidney, nervous system and on their ability to bear healthy offspring. Chemicals that cause adverse health effects in laboratory animals after high levels of exposure may pose a risk for adverse health effects in humans exposed to lower levels over long periods of time.

The following areas have been affected: Bristol Water District #1

The following steps are being taken to correct this violation:

Increased flushing

At this time no additional precautions by customers/residents are necessary. If you have any questions please contact Town of Canandaigua at (585) 394-3300.

**NOTIFICATION
TOTAL TRIHALOMETHANES**

Date: December 14, 2021

To: Customers/Residents of: Bristol Water District #1

From: Town of Canandaigua Water Department

Required water quality tests conducted quarterly and averaged as a locational running annual average for the previous twelve months indicated the presence of total trihalomethanes at 84 micrograms per liter (ug/l), which is above the maximum contaminant level (MCL) allowed in a public water supply of 80 micrograms per liter (ug/l). This is a maximum contaminant level violation of the Code of Federal Regulations (CFR 141.64.) This violation requires public notice be provided to all customers on a quarterly basis for as long as the violation exists.

The New York State Department of Health sets drinking water standards and has determined that the presence of total trihalomethanes is a possible health concern. Trihalomethanes are a group of chemicals that includes chloroform, bromoform, bromodichloromethane, and chlorodibromomethane. Trihalomethanes are formed in drinking water during treatment by chlorine, which is the most commonly used disinfectant in New York State. Chlorine reacts with certain acids that are in naturally-occurring organic material (e.g., decomposing vegetation such as tree leaves, algae or other aquatic plants) in surface water sources such as rivers and lakes. The amount of trihalomethanes formed in drinking water during disinfection can change from day to day, depending on the temperature, the amount of organic material in the water, the amount of chlorine added, and a variety of other factors. Drinking water is disinfected by public water suppliers to kill bacteria and viruses that could cause serious illnesses. For this reason, disinfection of drinking water by chlorination is beneficial to public health.

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The following areas have been affected: Bristol Water District #1

The following steps are being taken to correct this violation:
Increased flushing

At this time no additional precautions by customers/residents are necessary. If you have any questions please contact Town of Canandaigua at (585) 394-3300.

**NOTIFICATION
TOTAL TRIHALOMETHANES**

Date: March 2, 2022

To: Customers/Residents of: Bristol Water District #1

From: Town of Canandaigua Water Department

Required water quality tests conducted quarterly and averaged as a locational running annual average for the previous twelve months indicated the presence of total trihalomethanes at 84 micrograms per liter (ug/l), which is above the maximum contaminant level (MCL) allowed in a public water supply of 80 micrograms per liter (ug/l). This is a maximum contaminant level violation of the Code of Federal Regulations (CFR 141.64.) This violation requires public notice be provided to all customers on a quarterly basis for as long as the violation exists.

The New York State Department of Health sets drinking water standards and has determined that the presence of total trihalomethanes is a possible health concern. Trihalomethanes are a group of chemicals that includes chloroform, bromoform, bromodichloromethane, and chlorodibromomethane. Trihalomethanes are formed in drinking water during treatment by chlorine, which is the most commonly used disinfectant in New York State. Chlorine reacts with certain acids that are in naturally-occurring organic material (e.g., decomposing vegetation such as tree leaves, algae or other aquatic plants) in surface water sources such as rivers and lakes. The amount of trihalomethanes formed in drinking water during disinfection can change from day to day, depending on the temperature, the amount of organic material in the water, the amount of chlorine added, and a variety of other factors. Drinking water is disinfected by public water suppliers to kill bacteria and viruses that could cause serious illnesses. For this reason, disinfection of drinking water by chlorination is beneficial to public health.

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The following areas have been affected: Bristol Water District #1

The following steps are being taken to correct this violation:

Increased flushing

At this time no additional precautions by customers/residents are necessary. If you have any questions please contact Town of Canandaigua at (585) 337-4745.



Department of Health

KATHY HOCHUL
Governor

MARY T. BASSETT, M.D., M.P.H.
Commissioner

KRISTIN M. PROUD
Acting Executive Deputy Commissioner

July 1, 2022

MRB Group
145 Culver Road, Suite 160
Rochester, NY 14620

RE: **PUBLIC WATER SUPPLY**
Bristol WD #1
(REVIEW—Day Road THM Removal
Bristol (T) - Ontario County

Attn: Gregory Hotaling, PE

Dear Mr. Hotaling:

I have completed an initial review of the preliminary engineering report regarding the above project received on March 3, 2022. I am pleased to endorse the report with the following comments to be addressed during final design.

1. Aeration of water typically dissipates free chlorine present. Please discuss the current and expected chlorine residuals for the tank and system distal ends, and any plans for addressing low free chlorine levels if the aeration does reduce the chlorine below detectable levels.
2. The estimates submitted by Koester for an online DPD chlorine analyzer and reagents are for total chlorine. Please revise this to free chlorine.
3. Final plans and specifications shall be submitted to our office for review and approval prior to construction beginning.

I have retained the report for our files. If you have any questions or would like to discuss the project further, please do not hesitate to contact me.

Sincerely,

Kendall Larsen
Assistant Engineer

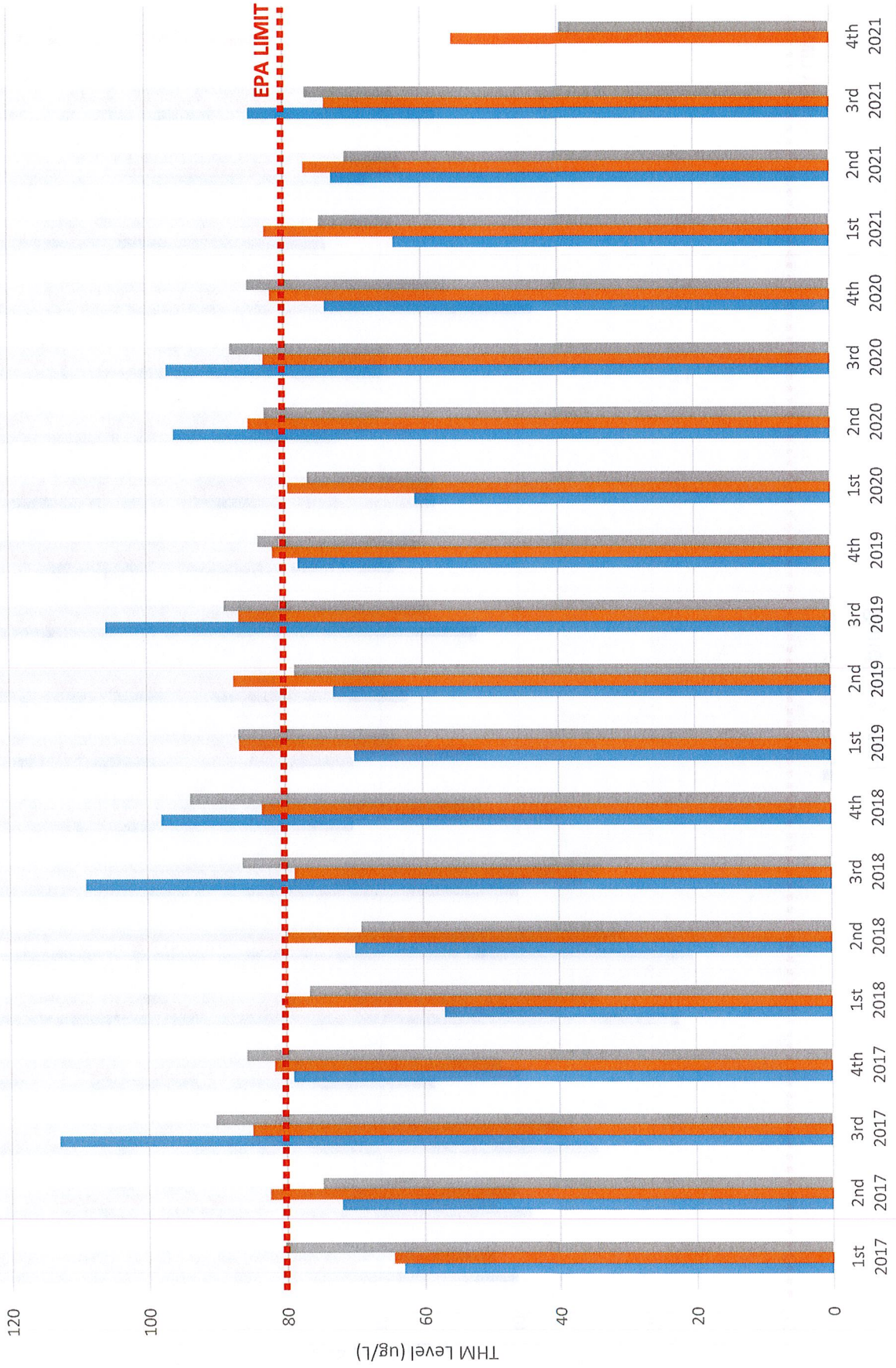
ecc: Bristol Town Water Dept – Attn: Mr. Fletcher, Supt.

APPENDIX H

SAMPLING RESULTS

THM Sampling

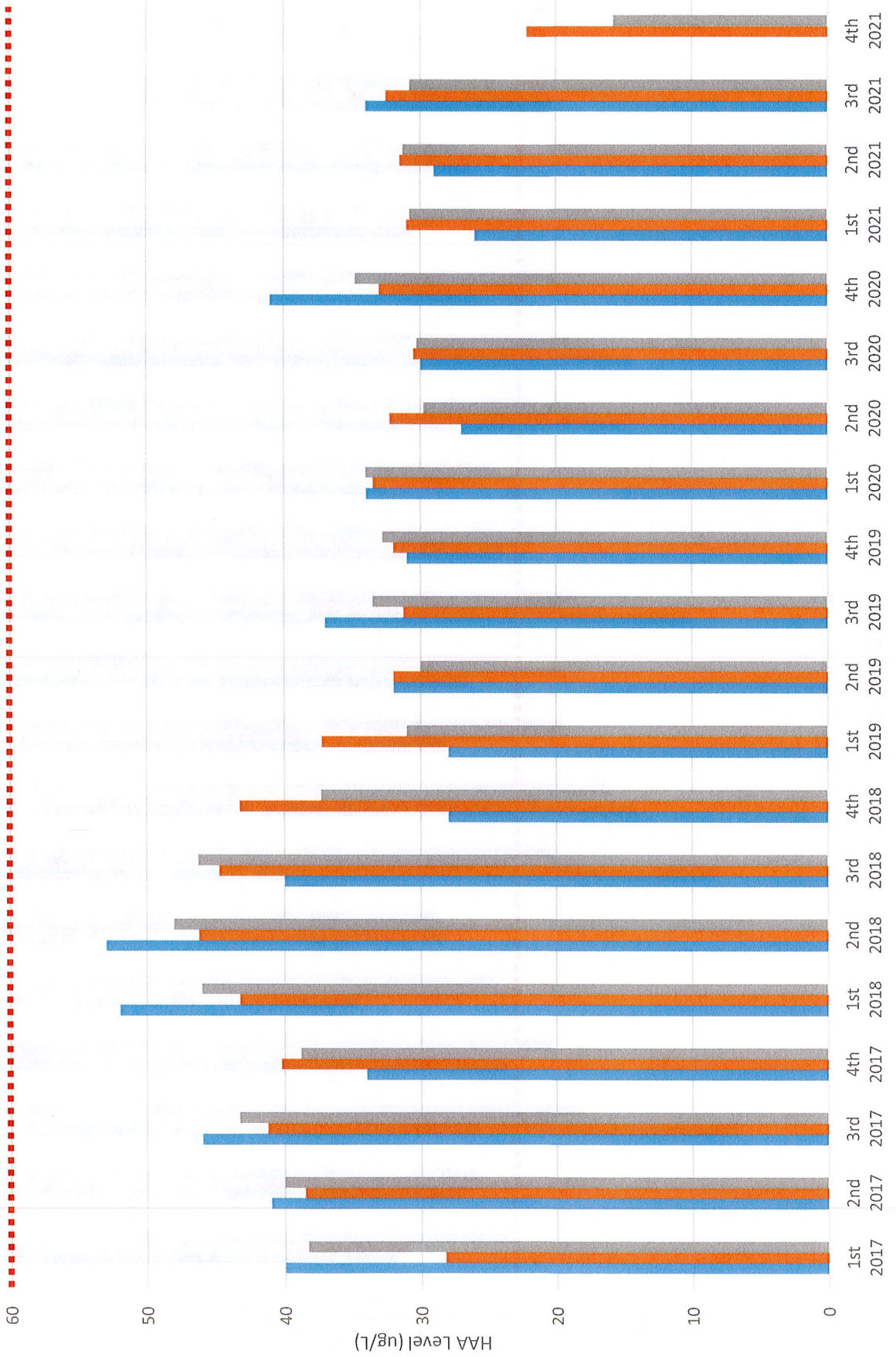
■ Result ■ LRAA ■ OEL



HAA Sampling

■ Result ■ LRAA ■ OEL

EPA LIMIT



APPENDIX I

USER ACCOUNT INFORMATION

Service City: Canandaigua, NY 14424
 Service Type: Bristol Metered Water Service
 Municipality: WD-201 Bristol-Cdga Water

Account #	Account Name	Service Address	Billing Address	Tax ID	Property Description	Property Class	Meter Size	Avg. Usage	EDU
10001832-0	Inc. #73 Dandy Mini Marts	6702 County Rd. 32	6221 Mile Lane Rd, Sayre, PA 18840	124.19-1-14.200	Minimart	486	3/4"	36,000	18,000
10001833-0	Town of Bristol	6742 County Rd. 32	6740 County Rd. 32, Canandaigua, NY 14424	124.19-1-1.100	Office Building	652	2"	598,000	299,000
10001834-0	Bristol Library	6750 County Rd. 32	6750 County Rd. 32, Canandaigua, NY 14424	124.19-1-3.200	Libraries	611	3/4"	1,000	500
10001837-0	Bristol Volunteer Fire Dept.	4350 State Route 64	4350 State Route 64, Canandaigua, NY 14424	124.00-1-20.000	Police and Fire Protection, Electrical Signal	662	1"	13,000	6,500
10001838-0	William Duerr	4407 State Route 64	4407 State Route 64, Canandaigua, NY 14424	124.19-2-3.000	One Family Year-Round Residence	210	3/4"	4,000	2,000
10001839-0	Harold F. Parrish	4475 State Route 64	4475 State Route 64, Canandaigua, NY 14424	124.19-2-7.000	One Family Year-Round Residence	210	3/4"	7,000	3,500
10001840-0	Elsa Filley	4477 State Route 64	4477 State Route 64, Canandaigua, NY 14424	124.19-2-6.100	One Family Year-Round Residence	210	3/4"	15,000	7,500
10001841-0	Daniel West	4504 State Route 64	4504 State Route 64, Canandaigua, NY 14424	124.19-1-7.000	One Family Year-Round Residence	210	3/4"	8,000	4,000
10001842-1	Ryan Thompson	4507 State Route 64	4507 State Route 64, Canandaigua, NY 14424	124.19-2-19.000	One Family Year-Round Residence	210	3/4"	30,000	15,000
10001843-0	Richard Thomas	4505 State Route 64	4505 State Route 64, Canandaigua, NY 14424	124.19-2-18.000	One Family Year-Round Residence	210	3/4"	7,000	3,500
10001844-0	Richard & Judy Holton	4514 State Route 64	4514 State Route 64, Canandaigua, NY 14424	124.19-1-11.000	One Family Year-Round Residence	210	3/4"	18,000	9,000
10001845-0	W. Randolph Warner	4600 State Route 64	4600 State Route 64, Canandaigua, NY 14424	138.00-1-7.100	Primary residential, also used in agricultural production	241	3/4"	44,000	22,000
10001846-1	Casey Catlin	4741 State Route 64	4741 State Route 64, Canandaigua, NY 14424	138.00-1-52.100	Rural Residence with Acreage	240	3/4"	11,000	5,500
10001847-0	Kay Gray	4801 State Route 64	681 High Street, apt 102, Victor, NY 14564	138.00-1-50.110	One Family Year-Round Residence	210	3/4"	7,000	3,500
10001848-0	Philp Kirkwood	4805 State Route 64	4805 State Route 64, Canandaigua, NY 14424	138.00-1-49.100	One Family Year-Round Residence	210	3/4"	14,000	7,000
10001852-0	Gene and Lorraine Mehlenbacher	4481 State Route 64	4481 State Route 64, Canandaigua, NY 14424	124.19-2-14.000	One Family Year-Round Residence	210	3/4"	14,000	7,000
10001857-0	Craig Heberle	4510 State Route 64	4510 State Route 64, Canandaigua, NY 14424	124.19-1-10.000	One Family Year-Round Residence	210	3/4"	23,000	11,500
10001858-1	Bailey Brown & Parker Ross	6719 County Rd. 32	6719 County Rd. 32, Canandaigua, NY 14424	124.19-1-5.000	One Family Year-Round Residence	210	3/4"	25,000	12,500
10001859-0	Christopher Hart	6731 County Rd. 32	6731 County Rd. 32, Canandaigua, NY 14424	124.19-1-4.000	One Family Year-Round Residence	210	3/4"	17,000	8,500
10001861-0	Brian & Jodie Case	4519 State Route 64	4519 State Route 64, Canandaigua, NY 14424	124.00-1-29.111	Rural Residence with Acreage	240	3/4"	50,000	25,000
10001862-0	Richard B. Parsons	4820 State Route 64	4820 State Route 64, Canandaigua, NY 14424	138.00-1-53.211	Multiple Use or Multi-purpose	480	1"	37,000	18,500
10001868-0	Kim Baudy	4499 State Route 64	327 S. Winebiddle, Pittsburgh, PA 15224	124.19-2-16.000	One Family Year-Round Residence	210	3/4"	1,000	500
10001870-0	Douglas Murray	4581 State Route 64	4581 State Route 64, Canandaigua, NY 14424	138.00-1-13.000	One Family Year-Round Residence	210	3/4"	11,000	5,500
10001873-0	Sheryl Mordini	4508 State Route 64	4508 State Route 64, Canandaigua, NY 14424	124.19-1-9.000	One Family Year-Round Residence	283	3/4"	103,000	51,500
10001880-1	Bristol Extracts, LLC	4376 State Route 64	5020 Foster Road, Canandaigua, NY 14424	124.00-1-63.200	Residence with Incidental Commercial Use	480	3/4"	103,000	51,500
10001881-1	Stephanie Collins	4580 State Route 64	4580 State Route 64, Canandaigua, NY 14424	138.00-1-9.000	One Family Year-Round Residence	210	3/4"	21,000	10,500
10001897-0	Lisa Kolady	4492 State Route 64	4492 State Route 64, Canandaigua, NY 14424	124.19-1-12.100	One Family Year-Round Residence	210	3/4"	20,000	10,000
10001909-1	Wesley Aikens	4516 State Route 64	4516 State Route 64, Canandaigua, NY 14424	124.19-1-12.100	One Family Year-Round Residence	210	3/4"	17,000	8,500
10001910-0	Brian Mueller	4517 State Route 64	4517 State Route 64, Canandaigua, NY 14424	124.19-2-23.000	One Family Year-Round Residence	210	3/4"	20,000	10,000
10001911-0	Donald C. Sanford	4610 State Route 64	4610 State Route 64, Canandaigua, NY 14424	138.00-1-6.000	One Family Year-Round Residence	210	3/4"	7,000	3,500
10001912-0	David & Jennifer Sanford	4616 State Route 64	4616 State Route 64, Canandaigua, NY 14424	138.00-1-5.000	One Family Year-Round Residence	210	3/4"	15,000	7,500
10001915-0	Cynthia Maracle & Darrell Panike	4513 State Route 64	4513 State Route 64, Canandaigua, NY 14424	124.00-2-34.000	Rural Residence with Acreage	240	3/4"	29,000	14,500
10001938-0	Mary Ellen Inglsby	4496 State Route 64	4496 State Route 64, Canandaigua, NY 14424	124.19-2-13.000	One Family Year-Round Residence	210	3/4"	83,000	41,500
10001955-1	Candi Holbert & Katharine Lozier	4509 State Route 64	4509 State Route 64, Canandaigua, NY 14424	124.19-2-20.000	One Family Year-Round Residence	210	3/4"	14,000	7,000
10001969-0	Michael Ostler	4401 State Route 64	4401 State Route 64, Canandaigua, NY 14424	124.00-2-47.111	One Family Year-Round Residence	210	3/4"	34,000	17,000
10001987-0	Lori M. Barend	4815 State Route 64	4815 State Route 64, Canandaigua, NY 14424	138.00-1-48.100	One Family Year-Round Residence	210	3/4"	20,000	10,000
10002005-0	Timothy Gantz	4578 State Route 64	4578 State Route 64, Canandaigua, NY 14424	138.00-1-10.000	One Family Year-Round Residence	210	3/4"	42,000	21,000
10002017-0	William Cotter	4497 State Route 64	4497 State Route 64, Canandaigua, NY 14424	124.19-2-15.000	One Family Year-Round Residence	210	3/4"	12,000	6,000
10002018-0	W. Brian Malotte	4808 State Route 64	4808 State Route 64, Canandaigua, NY 14424	138.00-1-3.120	One Family Year-Round Residence	210	3/4"	14,000	7,000
10002029-1	Roger Tones	6709 County Rd. 32	6709 County Rd. 32, Canandaigua, NY 14424	124.19-1-8.000	One Family Year-Round Residence	210	3/4"	20,000	10,000
10002036-0	Alfred Dunn	4506 State Route 64	4506 State Route 64, Canandaigua, NY 14424	124.19-1-8.000	One Family Year-Round Residence	210	3/4"	7,000	3,500
10002046-0	Guy W. Rogers	4822 State Route 64	4822 State Route 64, Canandaigua, NY 14424	138.00-1-3.110	Primary residential, also used in agricultural production	241	1"	15,000	7,500
10002068-0	Daniel Barry	4590 State Route 64	4590 State Route 64, Canandaigua, NY 14424	138.00-1-8.000	One Family Year-Round Residence	210	3/4"	8,000	4,000
10002197-0	Cafe Sol	4503 State Route 64	4503 State Route 64, Canandaigua, NY 14424	124.19-2-17.100	Restaurants	421	3/4"	4,000	2,000
10002457-0	Edward Hicks	4518 State Route 64	4518 State Route 64, Canandaigua, NY 14424	124.19-1-13.110	One Family Year-Round Residence	210	3/4"	19,000	9,500
10002689-0	Doug Mossbrook	4371 State Route 64	4353 Route 64, Canandaigua, NY 14424	124.00-2-50.110	Rural Residence with Acreage	240	3/4"	12,000	6,000 *

Scope of Supply - Factory Equipment Placement

IXOM Scope of Supply for delivery and placement of this equipment:

- Manufacture, deliver and place the above equipment into the tank; including supplying any crane or lifting assistance that may be needed.
- For Interior Equipment: IXOM will bring the electric cord from each piece of interior equipment supplied to the outside of the tank, via a IXOM supplied through-wall fitting and bring the electrical cord through a tank wall, roof, or vertical side of a raised hatch above overflow water level. The top of the through wall fitting contains 3/4" NPT internal threads for conduit connection.
- For a Roof Mounted Blower: IXOM will supply and IXOM will place the blower during equipment placement.
- For a Ground Mounted Blower: IXOM will supply and ship the blower in advance.
- If the City electrician connects this equipment to the power system while IXOM's crew that is placing the equipment is still on site, IXOM's crew will assist in startup of this equipment to check for proper motor rotation and to confirm the equipment is operating correctly. If the City electrician cannot make the final electrical connection to this equipment while IXOM's crew is on site, then the City will need to start up the equipment without IXOM present, which is generally not a problem. However, if the City requests IXOM to make a special trip for system startup, then the City must issue a separate purchase order to cover IXOM's cost for the special trip.

Customer Scope of Supply for IXOM delivery and placement of the above equipment:

Below is a standard scope of supply based on general tanks of this construction. Scope may change due to unique tank conditions.

- Confirm there are no interior obstructions which would impede the placement of our equipment.
- Verify Cathodic Protection (if present) will work with floating equipment and intake hoses that descend to reservoir floor.
- Provide services of the Tank Manufacturer to coordinate with IXOM on the location of the equipment penetrations. Tank Manufacturer to provide the sealed penetrations, through-tank fittings/nozzles.
- For a roof mounted blower(s):
 - Confirm in advance that the roof can handle the weight loading of the blower(s)
 - Make the air supply penetration through tank roof into the headspace above overflow level for blower(s) - 4" diameter.
- For a ground mounted blower(s)
 - Supply an adequately sized concrete pad to be located next to the tank for the ground mounted air ventilation system and provide securement of the blower skid to the concrete pad. Mount Blower to concrete pad, adapt to air ducting, and wire power source to Blower motor.
 - Supply exterior air duct from blower to tank headspace opening. Air ventilation system should be sized for 12" diameter air ducting. Air ducting shall be mounted to and penetrate the tank with a sealed connection to the tank roof and shall provide a downward air injection toward the water surface. Ducting shall be stainless steel or coated steel to prevent rusting inside and out. Ducting reducers may be necessary to provide transition connection between the discharge opening to the Blower discharge. A drainage tee shall be placed at the bottom of the air ducting to allow drainage of any moisture that may accumulate within the ducting. A flexible joint and damper is recommended at or near the blower connection.
 - Make (1) 12" diameter air supply hole FOR EACH BLOWER through tank roof into the headspace above overflow level, preferable in the near vicinity of our spray nozzle locations. IXOM Engineering Department can help with placement.
 - Provide (1) 1-5/16" diameter penetration FOR EACH SN Unit and GS Unit for IXOM electric cord through tank fittings.
- Provide and install T316SS Ceiling Anchors with interior cable eyelets: provided for Vertical Drop line Attachment Points, accessible by IXOM personnel while working in raft at full water level. Cables to be anchored into roof per tank manufacture's recommendations to support a 40lb suspended weight. Up to 2 drop lines per SN machine may be necessary.
- Supply/source new vents as required.
- Supply source power up to the point of IXOM's termination on the tank roof.
- Provide and Install the motor control panels and all associated electrical connections.
- Coordinate SCADA connections and integrations.
- Anything not supplied or listed in IXOM Scope to be supplied by others.
- Provide and execute all other functions and specifications not included in the IXOM scope.
- Include sales or other taxes; taxes are not included in this quote.
- Execute submittals to Engineer after purchase order.

Equipment Cost - See below for Equipment Details.

PN	Qty	Equipment Description	Purchase Cost Total
100380	1	SN5-IP-230 Floating Spray Nozzle machine:	Included
101805	1	6" Diameter Potable Intake Hose Assembly:	Included
102050	1	Potable Water Dual Tether Anchor Kit:	Included
10014018	60	Stainless Steel Tether Cable, priced per foot:	Included
102057	1	F4 Ventilation System 1PH:	Included
Equipment Subtotal:			\$53,747
Applicable Taxes:			-to be determined -
Factory Delivery, Placement with On-Site Training (Startup if customer supplied power is available):			\$16,885
Equipment and Factory Delivery, Placement Total Cost:			\$70,632
Optional Control Panel Cost (2 total control panels):			\$6,840
Equipment / Factory Delivery & Placement / Control Panels Total:			\$77,472

***OPTIONAL Control Panels*:**

IXOM can supply motor control panels for the THM removal system components (one panel required for each Spray Unit and Ventilation System), or the City can elect to supply the entire electrical system itself. See below for Equipment Details.

Note: If City changes voltage or phase of above equipment, other hp and voltage ratings can also be supplied.

Additional Options: Contractor placement and factory advisory services are available upon request, contact the factory for pricing.

APPENDIX L

COST ESTIMATES

MRB|group

Project Title: Town of Canandaigua - Day Road Tank THM Removal
 Project No.: 0300.21003
 Date: July 11, 2022
 Engineer: J. Lang-Bentley

Subject: Estimated project costs related to Day Road Tank THM removal using the GridBee System.

Sitework						
Item Number	Item Description	Quantity	Unit	Unit Price	Cost	
1.1	Mobilization / Demobilization	1	LS	\$ 5,000.00	\$	5,000.00
1.2	Site Improvements	1	LS	\$ 5,000.00	\$	5,000.00
					\$	10,000.00
GridBee THM Removal System						
Item Number	Item Description	Quantity	Unit	Unit Price	Cost	
2.1	GridBee THM Removal Spray Aeration System	1	LS	\$ 60,000.00	\$	60,000.00
2.2	On-Site Training and Installation	1	LS	\$ 20,000.00	\$	20,000.00
2.3	Control Panels	1	LS	\$ 7,000.00	\$	7,000.00
2.4	Miscellaneous Tank Modifications	1	LS	\$ 10,000.00	\$	10,000.00
2.5	Total Chlorine Analyzer	1	EA	\$ 7,000.00	\$	7,000.00
					\$	104,000.00
Distribution System						
Item Number	Item Description	Quantity	Unit	Unit Price	Cost	
3.1	Hydrant Units	0	EA	\$ 5,000.00	\$	-
3.2	Auto Flushing Unit	2	EA	\$ 5,000.00	\$	10,000.00
					\$	10,000.00
Additional Contracts						
Item Number	Item Description	Quantity	Unit	Unit Price	Cost	
4.1	Electrical	1	LS	\$ 15,000.00	\$	15,000.00
4.2	HVAC	1	LS	-	\$	-
4.3	Plumbing	1	LS	-	\$	-
4.4	SCADA / Controls	1	LS	\$ 7,500.00	\$	7,500.00
					\$	22,500.00
Construction Cost Summary						
				General Contract	\$	124,000.00
				Electrical Contract	\$	15,000.00
				HVAC Contract	\$	-
				Plumbing Contract	\$	-
				SCADA Contract	\$	7,500.00
				Sub-Total Construction Cost	\$	146,500.00
				Construction Contingency	\$	22,000.00
				TOTAL CONSTRUCTION COST W/ CONTINGENCY	\$	168,500.00
				Engineering, Bidding, & Construction Services	\$	22,000.00
				Administration, Financial, & Legal Services	\$	7,350.00
				TOTAL ENGINEERING, LEGAL, ADMIN COSTS	\$	29,350.00
				Total Estimated Project Cost	\$	197,850.00
				TOTAL PROJECT COST (ROUNDED)	\$	198,000.00

MRB|group

Project Title: Town of Canandaigua - Day Road Tank THM Removal
Project No.: 0300.21003
Date: July 11, 2022
Engineer: J. Lang-Bentley

Subject: Estimated project costs related to Day Road Tank THM removal using the PAX TRS system.

Sitework

Item Number	Item Description	Quantity	Unit	Unit Price	Cost
1.1	Mobilization / Demobilization	1	LS	\$ 15,000.00	\$ 5,000.00
1.2	Site Improvements	1	LS	\$ 15,000.00	\$ 5,000.00
					\$ 10,000.00

PAX TRS THM Removal System

Item Number	Item Description	Quantity	Unit	Unit Price	Cost
2.1	PAX TRS THM Removal System	1	LS	\$ 133,100.00	\$ 133,100.00
2.2	System Installation	1	LS	\$ 30,900.00	\$ 30,900.00
2.3	Miscellaneous Tank Modifications	1	LS	\$ 5,000.00	\$ 5,000.00
2.4	Total Chlorine Analyzer	1	EA	\$ 7,000.00	\$ 7,000.00
					\$ 176,000.00

Distribution System

Item Number	Item Description	Quantity	Unit	Unit Price	Cost
3.1	Hydrant Units	0	EA	\$ 5,000.00	\$ -
3.2	Portable Flushing Unit	2	EA	\$ 5,000.00	\$ 10,000.00
					\$ 10,000.00

Additional Contracts

Item Number	Item Description	Quantity	Unit	Unit Price	Cost
3.1	Electrical	1	LS	\$ 65,000.00	\$ 15,000.00
3.2	HVAC	1	LS	\$ -	\$ -
3.3	Plumbing	1	LS	\$ -	\$ -
3.4	SCADA / Controls	1	LS	\$ 10,000.00	\$ 7,500.00
					\$ 22,500.00

Construction Cost Summary

General Contract	\$	196,000.00
Electrical Contract	\$	15,000.00
HVAC Contract	\$	-
Plumbing Contract	\$	-
SCADA Contract	\$	7,500.00
Sub-Total Construction Cost	\$	218,500.00
Construction Contingency	\$	32,800.00
TOTAL CONSTRUCTION COST W/ CONTINGENCY	\$	251,300.00
Engineering, Bidding, & Construction Services	\$	32,800.00
Administration, Financial, & Legal Services	\$	10,950.00
TOTAL ENGINEERING, LEGAL, ADMIN COSTS	\$	43,750.00
Total Estimated Project Cost	\$	295,050.00
TOTAL PROJECT COST (ROUNDED)	\$	296,000.00

Completed By: J. Boorsma, P.E.
 Checked By: G. Hotaling, P.E.
 Project Name: Bristol WD No. 1 PER

Job No: 0300.21003
 Page: 1 of 1
 Date: 7/11/22



Engineering, Architecture, Surveying, P.C.

Subject: Life Cycle Cost Analysis - IXOM GridBee vs PAX TRS Capita

Alternative #1: GridBee THM Removal System				
Item Description	Unit Price	Quantity	Units	Cost
GridBee THM Removal System	\$ 104,000	1	LS	\$ 104,000
Distribution System Improvements	\$ 10,000	1	LS	\$ 10,000
Electrical Improvements	\$ 22,500	1	LS	\$ 22,500
Mobilization & Site Improvements	\$ 10,000	1	LS	\$ 10,000
Subtotal				\$ 146,500

Alternative #2: PAX TRS THM Removal System				
Item Description	Unit Price	Quantity	Units	Cost
PAX TRS THM Removal System	\$ 176,000	1	LS	\$ 176,000
Distribution System Improvements	\$ 10,000	1	LS	\$ 10,000
Electrical Improvements	\$ 22,500	1	LS	\$ 22,500
Mobilization & Site Improvements	\$ 10,000	1	LS	\$ 10,000
Subtotal				\$ 218,500

Proposed Alternative	Capital Cost	Annual Operation & Maintenance Cost	"Real" Discount Rate	Salvage Value	Investment (Years)	Present Worth of Annual O&M Costs	Net Present Value
1) GridBee	\$146,500	\$2,155	1.2%	\$0	38	\$65,450	\$211,950
2) PAX TRS	\$218,500	\$1,566	1.2%	\$0	38	\$47,571	\$266,071

APPENDIX M

TOWN WATER BUDGET

Account Number	Account Name	2021 2021 Adopted	2020 2020 Adopted	2019 2019
Fund: SW505 - CANANDAIGUA BRISTOL JOINT WATER DISTRICT				
Revenue				
SW505.1001.00000	REAL PROPERTY TAXES.CANDGA BRISTOL WD	10,150.00	9,918.00	3,254.00
SW505.1030.00000	SPECIAL ASSESSMENT.CANDGA BRISTOL WD	61,149.00	17,761.00	17,712.00
SW505.2401.00000	INTEREST & EARNINGS.CANANDAIGUA BRISTOL	58.00	0.00	0.00
SW505.2770.00000	MISCELLANEOUS INCOME	0.00	42,814.00	49,019.00
SW505.3991.00000	STATE AID CAP PROJ	18,000.00	0.00	0.00
SW505.9000.00000	APPROPRIATED FUND BALANCE FOR BUDGET	7,589.00	1,147.00	0.00
	Total Revenue:	96,946.00	71,640.00	69,985.00
Expense				
SW505.8340.400.00000	SERVICES & MAINTENANCE.CONT.CANDGA BRIS	32,000.00	1,125.00	3,384.00
SW505.8350.400.00000	COMMON WATER.CONTRACTUAL.CANDGA BRIS	0.00	5,022.00	0.00
SW505.9710.600.00000	SERIAL BONDS BRISTOL.PRINCIPAL.CANDGA BRI	20,000.00	20,000.00	20,000.00
SW505.9710.700.00000	SERIAL BONDS BRISTOL.INTEREST.CANDGA BRIS	39,625.00	40,575.00	41,525.00
SW505.9903.900.00000	TRANSFER/WATER-MAINT.CANDGA BRISTOL WD	1,919.00	4,918.00	5,076.00
SW505.9903.901.00000	TRANSFER/WATER-MAINT...CANDGA BRISTOL W	3,402.00	0.00	0.00
	Total Expense:	96,946.00	71,640.00	69,985.00
Total Fund: SW505 - CANANDAIGUA BRISTOL JOINT WATER DISTRI		0.00	0.00	0.00
	Report Total:	0.00	0.00	0.00

APPENDIX N

EDU CALCULATIONS

MRB|group

Project Title: Town of Canandaigua - Day Road Tank THM Removal
 Project No.: 0300.21003
 Date: September 14, 2021
 Engineer: J. Lang-Bentley

Subject: EDU calculations based on annual water consumption categorized by user type.

Year	Total Use (1000 gal)	Residential		Unit Flowrate (gpd/conn)	Commercial		Institutional		Industrial		Total Connections
		Use (1000 gal)	Conn.		Use (1000 gal)	Conn.	Use (1000 gal)	Conn.	Use (1000 gal)	Conn.	
2021	1,565	773	39	54	180	4	612	3	0	0	46
Total/Average	1,565	773	39	54	180	4	612	3	0	0	46
EDUs	79		39		9		31		0		

	39 connections	4 connections	3 connections	46 connections	Total	%
Residential 100 - 399	773,000 gal/yr	180,000 gal/yr	612,000 gal/yr	1,565,000 gal/yr	773,000	49%
Commercial 400 - 599	4 connections	4 connections	3 connections	11 connections	180,000	12%
Institutional 600 - 699 800 - 994	3 connections	3 connections	0 connections	6 connections	612,000	39%
Industrial 700 - 799	0 connections	0 connections	0 connections	0 connections	0	0%
TOTAL	46 connections	11 connections	6 connections	63 connections	1,565,000	100%

46 connections
 1,565,000 gal/yr
1.6 MG

USDA - Rural Development Proposed Project Hook-Up Information

Applicant: Town of Canandaigua - Bristol WD #1

Project: Day Road Tank THM Removal

In order for USDA - Rural Development (RD) to determine a funding package for a Municipality, the number of EDUs (Equivalent Dwelling Units) that will pay debt service for the project must be determined.

1 EDU = 1 Typical Residential Household

Village - EDU count must include the entire Village.

Town - EDU count only includes services within the proposed District.

RD calculates a Municipality's EDU count based on flow. In order for RD to compare similar system costs across the state, all EDU calculations must use this method of calculation. If a municipality has calculated their EDUs previously, or uses an existing EDU count for billing purposes, RD can not accept that EDU calculation.

(1) Number of residential services (hook-ups) in proposed system	39	
(2) Total residential flow (actual or estimated) in proposed system	2,118	gpd
(3) Residential flow per day from typical residential user - (2)/(1)	54	gpd
(4) Residential flow per month from typical residential user	1,652	gpmmonth
(5) Number of commercial / business / industrial services (hook-ups) in proposed system	7	
(6) Total commercial / business / industrial flow (actual or estimated) in proposed system	2,170	gpd
(7) Commercial / business / industrial flow per month from typical user	9,429	gpmmonth
(8) Number of commercial / business / industrial EDUs - (6)/(3)	40	

If vacant land owners will be charged debt service, fill in line (9)

(9) Number of parcels	0
(10) What percentage of a user will the parcel be charged for debt service	50%
(11) Number of vacant land EDUs - (9) x (10)	0

TOTAL EDUs

(12) Total number of EDUs to pay Debt Service - (1)+(8)+(11)	79
(13) Total number of EDUs to pay Operation & Maintenance - (1)+(8)	79

Bulk Users (Water Only) - Wholesale purchasers, not large volume commercial or residential

Bulk Cost (per 1,000 gallon or cubic feet) \$ 4.76

Bulk User Description Bristol WD

Volume used per month, per Bulk User 0

Operation & Maintenance for proposed system (Annual Costs)

1- Administration	\$ 7,500.00
2- Cost to treat / purchase	\$ 15,000.00
3- Salaries / Benefits	\$ -
4- Supplies	\$ -
5- Utilities	\$ -
6- Other (specify) _____	\$ -
Total:	\$ 22,500.00

Certification - I certify to the best of my knowlegde the information provided above is correct and accurate

Applicant / Title

Engineer / Architect

APPENDIX O

FINANCING OPTIONS

MRB|group

Project Title: Town of Canandaigua - Day Road Tank THM Removal
 Project No.: 0300.21003
 Date: January 28, 2022
 Engineer: J. Lang-Bentley

Subject: Cost and finance projection based on USDA Rural Development (RD) rates and potential grant dollars.

Loan Rate Basis	Total Project Cost	Grant	Finance Amount	Total EDUs	Interest Rate	Loan Period	Existing Debt Service	New Debt Service (annual payment)	New Total Annual Debt Svc Cost Per EDU
Market Rate	\$ 198,000	\$ -	\$ 198,000	79	2.125%	38	\$ 59,625	\$ 7,647	\$ 97
Intermediate Rate	\$ 198,000	\$ -	\$ 198,000	79	1.750%	38	\$ 59,625	\$ 7,177	\$ 91
Poverty Rate	\$ 198,000	\$ -	\$ 198,000	79	1.25%	38	\$ 59,625	\$ 6,578	\$ 83

