



**2022**

**ANNUAL REPORT**





## Brunswick Sewer District

***Mission:***

***To protect the health and environment of the communities we serve through wastewater collection and treatment in an environmentally responsible, efficient, and reliable manner.***

***Adopted: June 19, 2014***

***Vision:***

***We aspire to provide exceptional service through qualified Board and Staff utilizing innovation and technology to be good environmental and fiscal stewards.***

***Adopted: July 10, 2014***



**Brunswick Sewer District  
10 Pine Tree Road  
Brunswick, Maine 04011**

Normal Hours of Operation: Monday - Thursday (except holidays)  
6:30 am - 4:30 pm

**2022 Annual Report  
For year ending December 31, 2022**

## **Helpful Information**

- **Main Phone Number and Emergency: 207-729-0148**
- **General email (monitored by a real person) [info@brunswicksewer.org](mailto:info@brunswicksewer.org)**
- **Please Note: If your sewer line backs up, call the Brunswick Sewer District first. We will come and check the main line sewer. If you call a plumber and they find the blockage is in the main line, the Sewer District will NOT reimburse for the expenses incurred.**
- **If in doubt, just call 207-729-0148. We are happy to assist.**
- **Pay your bills online or through ACH. Visit [brunswicksewer.org](https://brunswicksewer.org) for more information.**
- **All Board meetings are recorded. Minutes and videos can be found at [brunswicksewer.org](https://brunswicksewer.org).**
- **If you are building a new house, adding an apartment, or changing your sewer use in any way, a permit is required. Fees vary based on the work. There is no fee for repairing of existing connections, but a permit is still required. All permits are obtained online at [brunswicksewer.org](https://brunswicksewer.org)**
- **For information regarding new connections and specifications, visit [brunswicksewer.org](https://brunswicksewer.org) and click on “policies”.**



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# Introduction

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## From the General Manager

People often say that things move slowly in the municipal world, and often times that is the case. 2022 was different. 2022 was a year of rapid change for the Brunswick Sewer District. Our long-time general manager and collection and pumping division supervisor, with a combined 67 years of experience, both retired on December 31, 2021. This provided both an opportunity and challenge for our remaining staff. Fortunately, but not accidentally, the District's remaining staff were well trained and experienced. They met the challenge head on and came out as winners! Below is a summary of a few of the things the District accomplished this year.

## 2022 Accomplishments

- **Staff Reorganization** – We reorganized staff and filled vacancies from within. The District saved over \$300,000 in salaries and benefits for 2022. That trend will continue in 2023, but as we take on more sewer lines and customers, and face upcoming retirements, we will need to bring in more staff. It takes nearly 2 years to fully train an operator.
- **Net Energy Billing Agreement** – The District worked with ReVision Energy and signed onto a Net Energy Billing agreement for a solar farm in Acton, Maine. The Net energy billing agreement allows the District to offset our energy usage and take advantage of solar incentives. Our electricity bill was cut nearly in half, with a savings of over \$60,000. The agreement is for 20 years, so those savings will be passed on to customers for the next two decades.
- **Topsham Terms of Agreement** – The District has a 50 year treatment agreement with the Topsham Sewer District that will expire on December 31, 2023. Over the past year we worked with the Topsham Sewer District and representatives from the Town of Brunswick to draft terms of a new agreement that will serve both communities for the next 10-20 years. Both parties have agreed on the terms, and we plan to finalize the formal agreement in early 2023.
- **Early Budget** – As the new general manager, one of my first initiatives was to revamp the budget process and begin the timeline much earlier. Budgeting is always a challenge and we never have all of the information as prices can change rapidly, but our goal was to complete the process early to allow ample time for discussion and rate hearings (if necessary). The first draft of the budget was presented in June. The final budget and rates were adopted in October.
- **5-Year Capital Plan** – Part of the improved budget process included development of a 5-year capital plan that summarized the future needs for all divisions. The plan, which was completed in June, provided insight into future expenses and it provided information to improve and expedite discussions during the budget process.



- **Sewer Expansion** – The District is working with the town and residents to explore the possibility of expanding sewer access to locations within the town growth zone, particularly the area around outer Maine Street and Maquoit Road. We worked with an engineer to develop preliminary plans for adding public sewer to the Linnhaven mobile home park and we held a neighborhood meeting to discuss the subject with residents.

When I took over as general manager on January 1, 2023, my goal was to utilize LEAN business practices in a municipal setting to optimize our operations. The methodology isn't meant to cut costs, although we did see significant savings, rather it is meant to improve our efficiency of operations and maximize our staff output. We made great strides in 2022 and we will continue to pursue optimization in 2023.

The District prides ourselves on being a top-notch employer. Our employees generally stick around for the entirety of their careers. We do this through good pay, great benefits, flexible schedules, educational assistance, and mutual respect. If we continue to treat our employees as our most valuable resource, we will continue to meet our goals. Our goals for 2023 are as follows:

- Finalize agreement with Topsham Sewer District (10 year, plus extensions)
- ~~Develop a formal Annual Report~~
- Review of Rate Classes
  - Proposed elimination of fixture counts
  - Proposed elimination of BSD Customer owned meters
  - Proposed elimination of sewer use billing adjustment (outside watering)
- Updated user rules and regulations
  - To align with current rate classes and billing practices
  - Entrance charge use
  - Metering
- Increased community involvement and awareness
  - Outreach to younger generations
  - Develop a handout for kids, organize school trips
- I & I Reduction
  - Roof Drains and Catch Basins
  - Inflow study at pump stations
  - Monitor and track sump pumps
- Develop a GIS based conceptual facilities extension plan
- Develop and review a BSD succession plan

*Did you know . . .*

*Regardless of the outside weather or the depth of a line, a sewer line temperature typically stays about 55 +/- degrees Fahrenheit.*

*Whether it is 18 or 4 feet deep or the temperature is 88 or -20 degrees it is still 55 degrees in the line.*



- Prepare for the Future of Wastewater
  - Enhanced employee training
  - Research and knowledge of industry trends and standards
- Partner with Town on Maquoit Bay Water Quality Management Study

As you can see, and if you are reading this, you know that we've already accomplished the goal of generating an annual report. We hope you enjoy learning more about the sewer district and we look forward to many more years of publishing this historical document that is our annual report. We enjoy serving our customers and providing the best possible value. Thank you for your continued support.

Rob Pontau  
General Manager



## History of the Brunswick Sewer District

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With the State legislatures passage of chapter 77 of the Private and Special Act of 1947, An Act to Incorporate the Brunswick Sewer District and transfer to It the Sewers of the Brunswick Village Corporation, The Brunswick Sewer District was officially formed. On February 16<sup>th</sup>, 1948, the inhabitants of Brunswick approved the District's Charter with a vote of 177 "yes" to 80 "no" and on March 13, 1948 a transfer deed was signed by the three assessors of the Brunswick Village Corporation and the five Trustees of the Brunswick Sewer District.

The District was originally formed in 1947, but the story began many decades before.

Back in 1894, nearly 130 years ago and almost 80 years before the passage of the Clean Water Act (1972), the Brunswick Village Corporation made a request to the Selectmen of Brunswick for a license to dig up the streets for the start of the installation of a sewer system. The license was granted on June 6, 1894. The first homes connected to the new system in 1894 were as follows:

- November 20 - #29 Federal St. – home of Geo. Hughes (currently the Brackett Funeral Home)
- November 22 - #3 Green St. and #2 Lincoln St.
- November 24 - #23 School St.
- November 26 - #5 Green St.
- November 28 - #7 School St. and #8 School St.
- December 7 - #9 Maine St. and #10 Maine St. (the original Town Hall building)

Before the 20<sup>th</sup> century, pipes collected sewage from households and disposed of it directly into the Androscoggin river. There was no treatment of any kind. The inhabitants of Brunswick and the Brunswick Sewer District, being leaders and stewards of the environment, constructed the first primary treatment plant in 1967; a full 20 years after being incorporated, but still 5 years before the passage of the Clean Water Act. Primary treatment consists of large tanks that settle solids and remove scum from the surface. Approximately 60% of solids are removed through primary treatment.

In 1991 the District completed construction of a secondary treatment upgrade. This project included installation of two large trickling filters and two secondary clarifiers. Combined with disinfection in a newly constructed chlorine contact tank, the treatment plant is now capable of removing more than 90% of solids and BOD.

In 2019 the District completed another upgrade. The \$22 million project didn't change any processes. This upgrade replaced outdated equipment, added automation and SCADA, improved the architectural layout and office spaces, and added a facility for the Pumping and Collection Divisions.

Since the first houses were connected to sewer lines in 1894, the District has grown to include more than 100 miles of pipe, nearly 1700 maintenance holes, and has almost \$50 million in total assets. The District treats more than 750 million gallons of sewage each year and removes and disposes of approximately 2,200 cubic yards of biosolids that would otherwise flow into the Androscoggin River.





## Administration/Management

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### MANAGEMENT STAFF

Robert Pontau Jr, PE  
General Manager  
rpontau@brunswicksewer.org

Jennifer Nicholson  
Operations Manager  
jnicholson@brunswicksewer.org

Lorraine Caron  
Finance Manager  
lcaron@brunswicksewer.org

## Board of Trustees

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The affairs of the District shall be managed by a five (5) member Board of Trustees, who are charged with sound and prudent management of the financial resources of the District.

### CHAIR

Charles R. Priest  
Attorney  
Appointed: February 2005  
Term Expires: March 2026

### VICE CHAIR

John Foster  
Civil Engineer  
Appointed: March 2019  
Term Expires: March 2025

### TREASURER

Douglas Rice  
Civil Engineer  
Appointed: September 2014  
Term Expires: March 2024

### ASSISTANT TREASURER

John Fitzpatrick  
Owner of New Meadows Marina  
Appointed: March 2022  
Term Expires: March 2025

### TRUSTEE CLERK

Jacqueline R. Sartoris  
Attorney  
Appointed: January 2016  
Term Expires: March 2026



## Operations and Compliance Report

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**2022** offered staff an opportunity for growth. Brunswick Sewer District faced two retirements in December including the General Manager. With the appointment of a new General Manager, Robert Pontau, he developed a new organization chart to provide employees with these growth opportunities. Jennifer Nicholson became the new Operation and Compliance Manager; Ernie Bergeron became the Director of the Collection Division; Mike Jouver became the Director of Pumping Division; and Matthew Densmore became Director of Treatment Operations. Their promotions allowed for other promotions within their divisions. The three Directors have forged a closer working relationship than existed in the past. There is more communication between the divisions and more cooperation. The Operations and Compliance Manager spends at least one day a week working within each division's workspace. This helps bridge communications.

BSD has faced new legislation with the passing of LD1911, *An Act to Prohibit the Contamination of Clean Soils with So-called Forever Chemicals*. While BSD had stopped land spreading in 2019, this legislation ended the use of compost, so BSD had to change from sludge disposal at Hawk Ridge to landfilling at Juniper Ridge.

LD 1964, *An Act to Update Certain Water Quality Standards and to Reclassify Certain Waters of the State*, passed in March 2022. The section of the Androscoggin BSD discharges will change from "C" to "B" pending the outcome of the dam license as class "C." BSD is still running under its discharge license issued in 2015.

Other projects in 2022 include the treatment plant testing influent and effluent in partnership with Biobot for Covid and with Verily for Covid, Influenza A & B, Mpox, RSV, Norovirus GII, and HMPV (human metapneumovirus). BSD is also testing PFAS in partnership with the DEP.

Due to the excessive costs of diesel fuel and running the generator to shave the peak the Operations and Compliance Manager reached out to Competitive Energy Services. After looking through BSD's electrical contract and Central Maine Power Bills BSD decided to negotiate a new electricity contract to take advantage of the solar credits rather than losing them. BSD will still run the generator to peak shave but will run it during predicted heat waves which usually occur in August to save diesel fuel.

BSD obtained a matching grant through the Clean Water SRF to take on a Fiscal Sustainability Plan. RFPs went out and the contract was awarded to Wright-Pierce. There have been several meetings and tours and the project should wrap up in March 2023. The FSP will help figure out future capital projects along with the Climate Adaptation Plan (CAP).

Juneteenth became a federal and BSD holiday. Pine Street capital project was completed. Woodland and Mariner pump station upgrades have begun with several setbacks. The admin building received a new heating and air conditioning system. BSD sold the CAT portable generator.

BSD earned the SHAPE safety award for three more years and received safety grants for buying PPE. There was one reported injury in 2022 for a total of twenty-one missed workdays.

The Treatment Operations division sold a pick up truck and obtained a Nissan Leaf EV. The vehicle is used for errands close to town.



## Administration Division

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### ADMINISTRATIVE STAFF

Darcy Dutton  
Accounts Specialist & Customer Service  
ddutton@brunswicksewer.org

Lisa True  
Accountant  
ltrue@brunswicksewer.org

Bonnie Shippen  
Administrative Assistant  
bshippen@brunswicksewer.org



### DIVISION RESPONSIBILITIES

The Administrative Division provides billing, accounting, payroll and benefits, permitting, information, and general administrative record keeping functions required of the District. Much of the division's attention is directed toward compliance with safety and governmental regulations. The division is also responsible for management of the district and coordinating activities among the District's operations divisions, outside agencies, organizations, and the ratepayers.

### ACCOMPLISHMENTS

**Software Conversion** - The administrative staff completed their first fiscal year with all Munis software modules installed. The modules converted are general ledger, accounts receivable and payable, cash receipting, purchasing, utility billing, and general billing. Having a large part of the conversion training done remotely during the Covid lockdown presented its challenges to the staff. The conversion required many hours of input and review to confirm that all data from the old software transferred properly. We are looking forward to implementing new features (see Future Goals) that this software provides. This will give our ratepayers the ability to have access to their accounts live.

**Form Redesign** - The district's forms were redesigned to be compatible with the new software. This included redesigning our utility and general billing invoices and our (non-payment and late payment) reminder notices. Account payable checks were reformatted to be able to use the electronic signature feature of the new software.

## FUTURE GOALS

**Year 2023** - The division plans to accomplish the following in the new year:

- Continue training on Munis software, including learning Cubes report writer module.
- Implement e-billing to our ratepayers and setting up a customer service portal.
- Upgrade the district's on-line customer payment portal.
- Continue to work on streamlining processes, procedures, and forms.

### Future Goals

- Electronically pay vendors.
- Digitize permanent district documents.



### *Did you know . . .*

*Although the first flushable toilet was invented by John Harrington in 1596, it wasn't until the late 1800's that it became a common addition to most upscale homes. Thomas Crapper, an Englishman plumber, revolutionized the commode by adding an improved tank filling mechanism. This mechanism, better known as the ballcock supply valve, can still be found in many household toilets in use today. Crapper's name became synonymous with the toilet thanks to World War I American servicemen who brought the term back home after the war.*



## Collection Supervisor Summary

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### DIVISION STAFF

Ernest J. Bergeron II  
Director of Collection Systems  
ebergeron@brunswicksewer.org

Erik Walliing  
GIS Coordinator  
ewalling@brunswicksewer.org

Bryan Chonko  
Operator & Maintenance  
bchonko@brunswicksewer.org

Aaron Temple  
Operator & Maintenance (part-time)  
atemple@brunswicksewer.org

### DIVISION RESPONSIBILITIES

The Collection Division is responsible for operating and maintaining all District equipment and facilities – 103 miles of lines, 1684 maintenance holes - used to collect and transport the wastewater to the Water Pollution Control Facility at 8 Pine Tree Road. This responsibility extends by contract to facilities owned by the town of Brunswick at Mere Point, and Topsham Sewer District, and the Midcoast Regional Redevelopment Authority (MRRA). The Division also provides monitoring and inspection of wastewater facility construction for District and Development projects.



### ACCOMPLISHMENTS

- **Town Street Paving Program** - Staff reset to grade 40 sanitary maintenance hole (SMH) frames and covers in order to bring them back flush with the new pavement.
- **Line Replacement Projects** - Sections of line were replaced on Pine Street by Crooker Construction and on Weymouth Street by Ray Labbe & Sons Inc. and liners were installed on Pine Street and Hawthorne Street Right-of-Way (ROW) by Vortex.

### COLLECTION SYSTEM

#### Line Maintenance:

**Flushed** – 37,274' (7 miles [7.21% of system]).

**Video Inspection and Recording for Maintenance** – 15,054' (2.8 miles [2.88% of system])

**Maintenance holes rehab's** – 4 total

**Line Replacement:**

1. **Pine Street** - Installed 212' of 8" diameter mainline sewer from house #9 to house #5.5 to replace the 6" VCP line. This up sized the main to match the 8" lines upstream. SMH 191 was also replaced at this time. The contractor was working at depths of 15+ feet and proximity to very large trees, utility poles.
2. **Weymouth Street** - Replaced 146' of 8" diameter AC pipe with 8" PVC pipe to remove a large sag in front of house #60.
3. **Hawthorne Row** - 218' of liner was installed in the 8" VC pipe, which is the cross over line from Hawthorne to Chamberlin Ave.
4. **Pine Street** - 854' of liner was installed in the 8" VC pipe starting at the end of Chamberlain Avenue and ending at house #9.
5. **Armory Street** - A 4' spot liner was installed to repair a hole in a wye fitting for house #1.
6. **Church Road** - The cone was replaced to lower the structure for road rehab –SMH 6044.

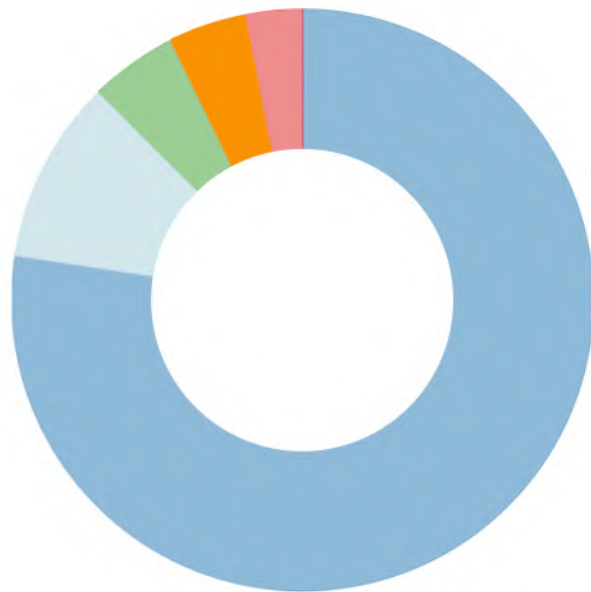


**GENERAL**

- The 11+ year old CCTV equipment was replaced in the 2015 Ford van by the staff. The new system is from Envirosight in New Jersey; at a cost of \$107,047. The old Cobra equipment was sold back to Cobra as parts for \$8000.
- Collections acquired a RTK GPS Rover for \$9500 which allows Erik to improve record keeping, and tie cards, and he's been working on updating/improving multiple layers of our GIS map.
- Collections staff is working with Wright-Pierce on the Fiscal Sustainability Plan
- A class was held on site for the Augusta/Biddeford sewer districts on how to install spot liners/necessary equipment needed by the Collections Director.
- Collections participated in Construction Career Day in West Bath with many other local organizations.
- The RV dump station was upgraded to allow easier dumping and less chance of spills.
- Boody Street – The crew investigated sewer odors and located 2 homes hooked to the storm system and worked with the contractor to fix the problem.
- Bryan Chonko joined the Collection crew in February.
- Kaia Williams joined the Collection crew as a summer employee.



## BSD Sewer Lines – Condition



### Pipe Condition Rating & Corresponding Footage

Excellent	4.4% (17,113.3)
Good	77.4% (301,029.0)
Okay	10.5% (40,731.7)
Poor	4.4% (17,165.2)
Bad	3.3% (12,937.6)

Chart shows percent condition ratings and their associated footages for Brunswick Sewer District sewer lines – January 9, 2023



### Did you know . . .

The term “fatberg” is commonly used by sewer workers to describe the floating chunks of mixed grease, oil, hair, makeup pads, “flushable” wipes (NOT!) and sanitary products that cause blockages and wreak havoc on public sewer systems. In London, England the biggest fatberg to have been removed from a sewer is one the size of a bus. The culprit was made up of approximately 15 tons of a greasy, disgusting mass of rock-solid debris. It was so large that it reduced flow of the city’s wastewater system to just 5% of its normal capacity. Only toilet paper should be flushed!

## Pumping Supervisor Summary

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### DIVISION STAFF

Michael Jouver  
Director of Pumping Systems  
mjouver@brunswicksewer.org

Gerald Bibber  
Senior Operator  
gbibber@brunswicksewer.org

Daniel Munsey  
Safety Coordinator/Operator  
dmunsey@brunswicksewer.org

### DIVISION RESPONSIBILITIES

The Pumping Division is responsible for the operation and maintenance of 31 Stations in Brunswick & Topsham. These facility's collect waste water from neighboring areas to pump the waste to The Water Pollution Control Facility at 8 Pine Tree road for treatment. We maintain 15 stations & 7 Leach Fields at Mere Point for the Town of Brunswick.

### PUMP STATIONS

- **Arrowhead Station-** The 6' valve pit flat top was replaced along with some barricade fencing installed to keep the station from being exposed to the neighborhood. Some pavement was replaced as well by BSD.
- **Meadow Brook-** The 8' wet well top was replaced, new pump rails were installed, new control panel and converted the pumps to be VFD driven. The grounds have been regraded, seeded and a new entrance to the walking trail was completed by BSD.

### OTHER DUTIES

The Pumping Division is also responsible for the monthly data collection and maintenance of 60 water meters on the outskirts of town for billing purposes. 1417 Dig Safes were marked as well as 36 inspections and tie cards. Biweekly Permit checks are completed to insure the services are not completed without inspections.



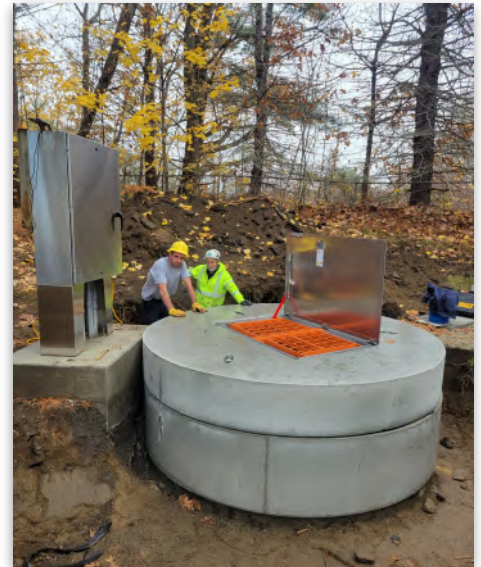


## ACCOMPLISHMENTS

Some of the other tasks completed this year is the Cooks Corner right of way clearing, Wiring 4 Heat Pumps at the Admin Building, Grounds maintenance, Station Drone photos, replace lighting at Bath Road 1 & 2 Stations along with replacing some damage wallboard and repaint the interior and wet well cleaning of all stations.

## ONGOING PROJECTS

Woodland and Mariner Station at Brunswick Landing are in the process of being rebuilt with this comes a lot of overseeing of the plans and inspecting of the work. These are private stations that upon completion of the improvements MRRA will offer the two pump stations for acceptance by the BSD. We have been working closely with the developer, engineers, and contractors to achieve this much needed rehab.



*Did you know ...*

*Sewers do not always stink! In fact, less than 5% of what is in the sewer line are solids. In the morning and evening hours it can smell quite sweet due to all the soaps, dish washing detergents, shampoos, and other personal care products.*



## Treatment Plant Supervisor Summary

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### DIVISION STAFF

Matthew Densmore  
Director of Treatment  
mdensmore@brunswicksewer.org

Jason Prout  
Senior Lab Tech  
jprout@brunswicksewer.org

Logan Anair  
Operator (Part-Time)  
lanair@brunswicksewer.org

Brandon Elwell  
Chief of Plant Maintenance  
belwell@brunswicksewer.org

Thomas Mason  
Senior Operator  
tmason@brunswicksewer.org

### DIVISION RESPONSIBILITIES

The Treatment Operations Division is responsible for the operation and maintenance of the District's 3.85 million gallon (0.515 million cu. ft.) per day Harry G. Shulman Water Pollution Control Facility and the equipment necessary to support it. Included in that responsibility is operation of the municipal wastewater biosolid (sludge) disposal program, the pre-treatment program, and the extensive sampling, testing, and record keeping required as a condition of regulatory agency permits for all of the District's treatment operations.



### ACCOMPLISHMENTS

The discharge permit requires the treatment plant to achieve a minimum of 85% removal for both BOD (Biological Oxygen Demand) and TSS (Total Suspended Solids). Testing to determine the CBOD (Carbonaceous Biological Oxygen Demand) removal is not required by permit. It is performed to monitor treatment process efficiency.

### STAFF PROMOTIONS

Matthew Densmore - Promoted from Senior Operator to Director of Treatment.

Jason Prout - Promoted from Lab Tech to Senior Lab Tech.

Tom Mason - Promoted from Chief of Plant Maintenance to Senior Operator

Brandon Elwell - Promoted from Operator to Chief of Plant Maintenance

### LAB TESTING

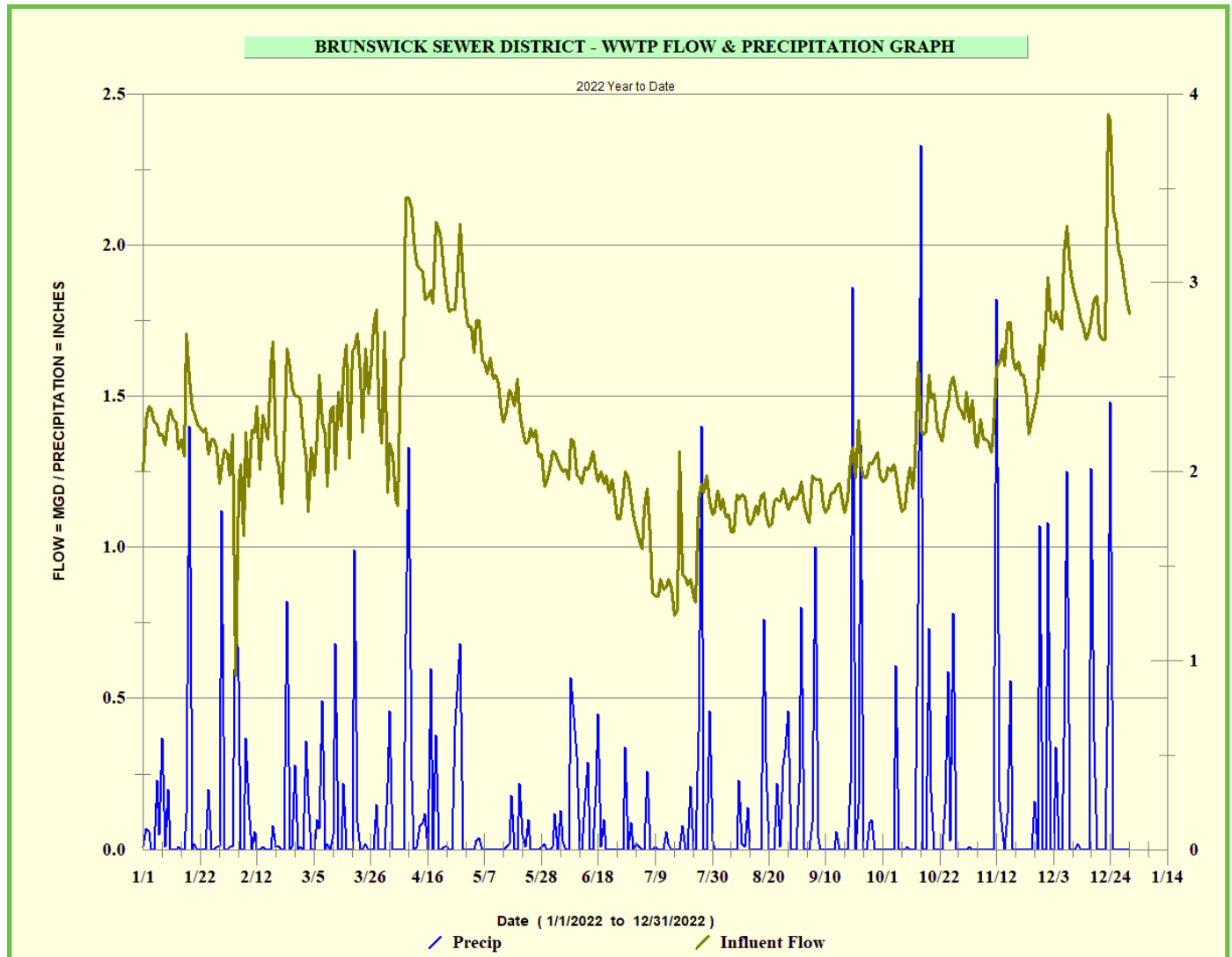
- Senior Lab Tech Jason Prout is collecting and shipping Influent Samples 3 Days a week for testing of SARs-Covid-19, RSV, Human Metapneumovirus, MPOX, and Norovirus.
- Effluent samples are also picked up monthly by courier and tested by Alpha Lab and tested for PFAS for the DEP.

## SLUDGE DISPOSAL

With the passing of LD1911 sludge is now going to a landfill in Old Town, ME. Trucking time and disposal costs have both been greatly increased.

### Treatment Plant Operational Annual Summary

	2022		2021			2020	
A. FLOW	Annual Total (Gal)	% Total Flow	Annual Total (Gal)	% Total Flow	% Change	Annual Total (Gal)	% Total Flow
Total Flow	818,280,000		677,530,000		17.2%	726,470,000	
NASB	55,202,176	6.7%	55,202,176	8.3%	-1.4%	57,579,931	7.9%
TSD	122,268,961	14.9%	119,975,980	17.7%	1.9%	129,002,694	17.8%
Septage	2,680,775	0.33%	2,680,775	0.39%	2.7%	2,732,599	0.38%
Sludge	2,247 CY		2,247 CY		1.0%	2,202 CY	
Daily Maximum	3,890,000	12/23/22	of permit		(Single one-day maximum for the year.)		
Daily Maximum	2,700,000	12/15/22			(Single one-day maximum for the year.)		
Daily Average	2,988,710	77.6%			(Average of 12 monthly daily averages.)		
Precipitation (In)	49.09				(Annual Total)		
Mo. Max	6.77	December			(Single one-month maximum for the year.)		
Daily Max	2.33	10/15/22			(Single one-day maximum for the year.)		
B. Lbs. Discharged							
BOD	Lbs.						
Mo. Annual Avg	446	46%	of permit		(Average of 12 monthly averages.)		
Mo. Daily Max	446.	December			(Single one-month maximum for the year.)		
TSS	Lbs.						
Mo. Annual Avg	436	45%	of permit		(Average of 12 monthly averages.)		
Mo. Daily Max	436	December			(Single one-month for the year.)		
C. % REMOVAL							
BOD	%						
Mo. Annual Avg	89.00	105%	of permit		(Average of 12 monthly averages.)		
Mo. Max	89.00	December			(Single one-month maximum for the year.)		
Mo. Min	89.00	December			(Single one-month minimum for the year.)		
TSS	%						
Mo. Annual Avg	90.64	107%	of permit		(Average of 12 month averages.)		
Mo. Max	90.64	December			(Single one-month maximum for the year.)		
Mo. Min	90.64	December			(Single one-month minimum for the year.)		



*Did you know . . .*

*In the United States alone there are approximately 800,000 miles of public sewer pipe and 500,000 miles of private sewer pipe. This equals about 52 trips around the Earth.*

*All this sanitary wastewater flows to 14,748 wastewater treatment plants which process a combined total of roughly 34 billion gallons of sewage per day!*



*Plan of Sewers - Brunswick, Maine  
February 1890*



# Financial Report - 2022

## BRUNSWICK SEWER DISTRICT UNAUDITED YEAR END FINANCIAL REPORT - 2022

	YTD BUDGET	ACTUAL BUDGET	VARIANCE OVER/ (UNDER)
<b>OPERATING REVENUE</b>			
Residential	\$2,715,161	\$2,640,762	(\$74,399)
Commercial	1,535,323	1,556,562	21,239
Drainage (Roof Drains & Catch Basins)	27,551	27,654	103
Topsham Sewer District	151,800	153,785	1,985
Septage	<u>402,460</u>	<u>442,154</u>	<u>39,694</u>
SUBTOTAL	\$4,832,295	\$4,820,917	(11,378)
<b>NON-OPERATING REVENUE</b>			
Jobbing	74,300	118,225	43,925
Interest Earned	25,200	31,379	6,179
Late Charges	2,400	21,518	19,118
Topsham Sewer District -Share of CWSRF Loan	195,245	173,133	(22,112)
Gain/(Loss) on Sale/Disposal of Asset	40,000	15,385	(24,615)
Miscellaneous	<u>10,500</u>	<u>19,665</u>	<u>9,165</u>
SUBTOTAL	\$347,645	\$379,305	\$31,660
<b>TOTAL OPERATING &amp; NON-OPERATING REVENUE</b>	<b>\$5,179,940</b>	<b>\$5,200,223</b>	<b>\$20,283</b>
<b>OPERATIONS, MAINTENANCE &amp; GENERAL EXPENSES</b>			
Salaries, Wages & Benefits			
Collection Division	\$898,628	\$757,799	(\$140,829)
Treatment Plant Division	650,417	647,899	(2,518)
Administrative Division	<u>885,487</u>	<u>673,813</u>	<u>(211,674)</u>
SUBTOTAL	\$2,434,532	\$2,079,511	(355,021)
Other Operating Expenses			
Collection Division	186,140	197,870	11,730
Treatment Plant Division	600,849	628,619	27,770
Administrative Division	<u>420,355</u>	<u>413,619</u>	<u>(6,736)</u>
SUBTOTAL	\$1,207,344	\$1,240,108	\$32,764
<b>TOTAL OPER, MAINT &amp; GENERAL EXPENSES</b>	<b>\$3,641,876</b>	<b>\$3,319,619</b>	<b>(\$322,257)</b>

## Financial Report (cont.)

	YTD BUDGET	ACTUAL BUDGET	VARIANCE OVER/ (UNDER)
<b>NON-OPERATING EXPENSE</b>			
Bond Interest & Principal	\$1,489,977	\$1,489,977	0
Capital Expenditures	648,999	639,939	(9,060)
Miscellaneous - Bank Fees	<u>8,400</u>	<u>8,343</u>	<u>(57)</u>
<b>TOTAL NON-OPERATING EXPENSE</b>	<b>\$2,147,376</b>	<b>\$2,138,260</b>	<b>(\$9,117)</b>

**NET VARIANCE TOTAL OVER/(UNDER)**  
**\$351,656**

### ADDITIONAL INFORMATION

Entrance Charge Program	\$44,550	\$89,903	\$45,353
Donated Assets	1,430,000	1,904,437	474,437
Depreciation	2,760,000	2,754,651	(\$5,349)

<b>RECEIVABLES AT</b>	<b><u>12/31/22</u></b>	<b><u>12/31/21</u></b>
Aged, 3 months	\$218,013	\$111,136
Liens	\$5,125	\$3,323

<b>CASH @ 12/31/22</b>	<b>\$2,398,634</b>
<b>INVESTMENTS @ 12/31/22</b>	<b>\$233,827</b>
<b>TOTAL</b>	<b>\$2,632,461</b>





## Rate History

BRUNSWICK SEWER DISTRICT History of Sewer User Rate: Rate Schedule I - Metered Use			
Year	User Rate (Per 1,000 CF)	Change in Rate	Average Annual User Charge (Per 8,000 CF)
1963	\$4.60		\$36.80
1968	\$6.40	39.1%	\$51.20
1975	\$9.00	40.6%	\$72.00
1977	\$9.90	10.0%	\$79.20
1978	\$6.80	-31.3%	\$54.40
1979	\$7.50	10.3%	\$60.00
1980	\$8.60	14.7%	\$68.80
1984	\$9.46	10.0%	\$75.68
1986	\$10.40	9.9%	\$83.20
1987	\$15.00	44.2%	\$120.00
1988	\$20.00	33.3%	\$160.00
1989	\$25.00	25.0%	\$200.00
1990	\$30.00	20.0%	\$240.00
1998*	\$34.65	15.5%	\$277.20
2004	\$40.00	15.4%	\$320.00
2008	\$42.00	5.0%	\$336.00
2010	\$44.20	5.2%	\$353.60
2013	\$46.85	6.0%	\$374.80
2015	\$53.60	14.4%	\$428.80
2016	\$59.50	11.0%	\$476.00
2017	\$66.05	11.0%	\$528.40
2018	\$72.60	9.9%	\$580.80
2019	\$76.20	5.0%	\$609.60
2020	\$80.00	5.0%	\$640.00
2022**	\$84.80	6.0%	\$678.40
2023	\$88.20	4.0%	\$705.60

\* Changed minimum billed use from 1000 cu. ft. to 800 cu. ft. per quarter.

\*\* Changed minimum billed use from 800 cu. ft. to 500 cu. ft. per quarter.

# Glossary of Common Wastewater Terms

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## COMMON TERMS USED IN WASTEWATER TREATMENT

### *Process Terminology*

BOD	Biochemical Oxygen Demand
CBOD	Carbonaceous Biochemical Oxygen Demand
DO	Dissolved Oxygen
F/M Ratio	Food to Microorganism Ratio
ORP	Oxidation/ Reduction Potential
OUR	Oxygen Uptake Rate
O & G	Oil and Grease
RAS	Return Activated Sludge
RBC	Rotating Biological Contactor
SA	Sludge Age
SDI	Sludge Density Index
SOUR	Specific Oxygen Uptake Rate
SRT	Solids Retention Time
SVI	Sludge Volume Index
VFD	Variable Frequency Drive
WAS	Waste Activated Sludge

### *Miscellaneous*

AC Pipe	Asbestos Clay Pipe
VC Pipe	Vitrified Clay Pipe
CFM	Cubic Feet Per Minute
CFR	Code of Federal Regulations
CFS	Cubic Feet Per Second
DMR	Discharge Monitoring Report
GPD	Gallons Per Day
GPM	Gallons Per Minute
MGD	Million Gallons Per Day
MG/L	Milligrams Per Liter
MOR	Monthly Operating Report
NPDES	National Pollutant Discharge Elimination System
POTW	Publicly Owned Treatment Works
PPM	Parts Per Millions
PSI	Pounds Per Square Inch
WRF	Water Reclamation Facility
WTP	Water Treatment Plant
WWTF	Wastewater Treatment Facility
WWTP	Wastewater Treatment Plant

## HELPFUL WASTEWATER TREATMENT TERMS

**AERATION:** The process of adding air to water. In wastewater treatment, air is added to refreshen wastewater and to keep solids in suspension. With mixtures of wastewater and activated sludge, adding air provides mixing and oxygen for the microorganisms treating the wastewater.

**AEROBES:** Bacteria that must have molecular (dissolved) oxygen (DO) to survive.

**AEROBIC BACTERIA:** Bacteria which will live and reproduce only in an environment containing oxygen which is available for their respiration (breathing), namely atmospheric oxygen or oxygen dissolved in water. Oxygen combined chemically, such as water molecules (H<sub>2</sub>O), cannot be used for respiration by aerobic bacteria.

**ALGAE:** Microscopic plants which contain chlorophyll and live floating or are suspended in water. They also may be attached to structures, rocks, or other similar substances. Algae produce oxygen during sunlight hours and use oxygen during night hours. Their biological activities appreciably affect the pH and dissolve oxygen of the water.

**ANAEROBIC:** A condition in which atmospheric or dissolved molecular oxygen is NOT present in the aquatic (water) environment.

**ANAEROBIC BACTERIA:** Bacteria that live and reproduce in an environment containing no “free” or dissolved oxygen. Anaerobic bacteria obtain their oxygen supply by breaking down chemical compounds which contain oxygen, such as sulfate (SO<sub>4</sub><sup>2-</sup>).

**ANAEROBIC DIGESTION:** Wastewater solids and water (about 5% solids, 95% water) are placed in a large tank where bacteria decompose the solids in the absence of dissolved oxygen.

**ANOXIC:** Oxygen deficient or lacking sufficient oxygen.

**BOD: Biochemical Oxygen Demand.** The rate at which organisms use the oxygen in water or wastewater while stabilizing decomposable organic matter under aerobic conditions. In decomposition, organic matter serves as food for the bacteria and energy results from its oxidation. BOD measurements are used as a measure of the organic strength of wastes in water.

**BAFFLE:** A flat board or plate, deflector, guide, or similar device constructed or placed in flowing water, wastewater, or slurry systems to cause more uniform flow velocities, to absorb energy, and to divert, guide, or agitate liquids (water, chemical solutions, slurry).

**BIOMASS:** A mass or clump of organic material consisting of living organisms feeding on the wastes in wastewater, dead organisms and other debris.

**BIOSOLIDS:** A primarily organic solid product, produced by wastewater treatment processes, that can be beneficially recycled. The word biosolids is replacing the word sludge.

**BULKING:** Clouds of billowing sludge that occur throughout secondary clarifiers and sludge thickeners when the sludge does not settle properly.

**CATCH BASIN:** An entry point to a storm sewer drainage system that typically includes a grate where stormwater enters the catch basin and a sump to capture sediment, debris, and associated pollutants.



**CAVITATION:** The formation and collapse of a gas pocket or bubble on the blade of an impeller or the gate of a valve. The collapse of this gas pocket or bubble drives water into the impeller or gate with a terrific force that can cause pitting on the impeller or gate surface. Cavitation is accompanied by loud noises that sound like someone is pounding on the impeller or gate with a hammer.

**CHLORINATION:** The application of chlorine to water or wastewater, generally for the purpose of disinfection, but frequently for accomplishing other biological or chemical results.

**CLARIFIER:** Settling Tank, Sedimentation Basin. A tank or basin in which wastewater is held for a period of time during which the heavier solids settle to the bottom and the lighter material will float to the water surface.

**COAGULANTS:** Chemicals that cause very fine particles to clump (floc) together into larger particles. This makes it easier to separate the solids from the water by settling, skimming, draining or filtering.

**COLIFORM:** A type of bacteria. The presence of coliform-group bacteria is an indication of possible pathogenic bacterial contamination. They can be found in the intestinal tracts of warm-blooded animals, and in plants, soil, air, and the aquatic environment. Fecal coliforms are those coliforms found in the feces of various warm-blooded animals; whereas the term “coliform” also includes various other environmental sources.

**COMPOSITE:** A composite sample is a collection of individual samples obtained at regular intervals, usually every one or two hours during a 24-hour time span. Each individual sample is combined with the others in proportion to the rate of flow when the sample was collected. The resulting mixture (composite sample) forms a representative sample and is analyzed to determine the average conditions during the sample period.

**CONFINED SPACE:** A space that Is large enough and so configured that an employee can bodily enter and perform assigned work; and has limited or restricted means for entry or exit; and Is not designed for continuous employee occupancy.

**CROSS-CONNECTION:** A connection between a drinking (potable) water system and an unapproved water supply. For example, if you have a pump moving non-potable water and hook into the drinking water system to supply water for the pump seal, a cross connection or mixing between the two water systems can occur. This mixing may lead to contamination of the drinking water.

**DECHLORINATION:** The removal of chlorine from the effluent of a treatment plant.

**DETENTION TIME:** The time required to fill a tank at a given flow or the theoretical time required for a given flow of wastewater to pass through a tank.

**DIGESTER:** A tank in which sludge is placed to allow decomposition by microorganisms. Digestion may occur under anaerobic (more common) or aerobic conditions.

**DISINFECTION:** The process designed to kill or inactivate most microorganisms in wastewater, including essentially all pathogenic (disease-causing) bacteria. There are several ways to disinfect, with chlorination being the most frequently used in water and wastewater treatment plants.

**DISSOLVED OXYGEN (DO):** Molecular (atmospheric) oxygen dissolved in water or wastewater.

**EFFLUENT:** Wastewater or other liquid - raw (untreated), partially or completely treated - flowing *FROM* a reservoir, basin, treatment process or treatment plant.

**FORCE MAIN:** A pipe that carries wastewater under pressure from the discharge side of a pump to a point of gravity flow downstream.

**GRAB SAMPLE:** A single sample of water collected at a particular time and place which represents the composition of the water only at that time and place.

**GRIT REMOVAL:** Grit removal is accomplished by providing an enlarged channel or chamber which causes the flow velocity to be reduced and allows the heavier grit to settle to the bottom of the channel where it can be removed.

**HEADWORKS:** The facilities where wastewater enters a wastewater treatment plant. The headworks may consist of bar screens, comminutors, a wet well and pumps.

**INFLOW:** Water discharged into a sewer system and service connections from sources other than regular connections. This includes flow from yard drains, foundation drains and around manhole covers. Inflow differs from infiltration in that it is a direct discharge into the sewer rather than a leak in the sewer itself.

**INFLUENT:** Wastewater or other liquid - raw (untreated) or partially treated - flowing *INTO* a reservoir, basin, treatment process or treatment plant.

**MICROORGANISMS:** Very small organisms that can be seen only through a microscope. Some microorganisms use the wastes in wastewater for food and thus remove or alter much of the undesired matter.

**NPDES PERMIT:** National Pollutant Discharge Elimination System permit is the regulatory agency document issued by either a federal or state agency which is designed to control all discharges of pollutants from all point sources and storm water runoff into U.S. waterways. A treatment plant that discharges to a surface water will have a NPDES permit.

**NITRIFYING BACTERIA:** Bacteria that change the ammonia and organic nitrogen in wastewater into oxidized nitrogen (usually nitrate).

**OXIDATION:** Oxidation is the addition of oxygen, removal of hydrogen, or the removal of electrons from an element or compound. In wastewater treatment, organic matter is oxidized to more stable substances.

**POLYMER:** Polymers are used with other chemical coagulants to aid in binding small, suspended particles to larger chemical flocs for their removal from water.

**PONDING:** A condition occurring on trickling filters when the hollow spaces (voids) become plugged to the extent that water passage through the filter is inadequate. Ponding may be the result of excessive slime growths, trash, or media breakdown.

**PRIMARY TREATMENT:** A wastewater treatment process that takes the place in a rectangular or circular tank and allows those substances in wastewater that readily settle or float to be separated from the water being treated.

**RAW WASTEWATER:** Plant influent or wastewater *BEFORE* any treatment.

**RECEIVING WATER:** A stream, river, lake, ocean or other surface or groundwater into which treated or untreated wastewater is discharged.

**RECIRCULATION:** The return of part of the effluent from a treatment process to the incoming flow.

**RETENTION TIME:** The time water, sludge or solids are retained or held in a clarifier or sedimentation tank.

**ROOF DRAINS:** A drain installed to receive water collecting on the surface of a roof and to discharge it into a leader, downspout, or conductor.

**SCREEN:** A device used to retain or remove suspended or floating objects in wastewater. The screen has openings that are generally uniform in size. It retains or removes objects larger than the openings. A screen may consist of bars, rods, wires, gratings, wire mesh, or perforated plates.

**SCUM:** Scum is composed of materials that float on water such as grease, oil, and fats.

**SEPTIC:** A condition produced by anaerobic bacteria. If severe, the wastewater produces hydrogen sulfide, turns black, gives off foul odors, contains little or no dissolved oxygen, and creates a high oxygen demand.

**SEWAGE:** The used water and water-carried solids from homes that flow in sewers to a wastewater treatment plant. The preferred term is WASTEWATER.

**SHORT-CIRCUITING:** A condition that occurs in tanks or basins when some of the water travels faster than the rest of the flowing water. This is usually undesirable since it may result in shorter contact, reaction, or settling times in comparison with the theoretical (calculated) or presumed detention times.

**SLUDGE:** The settleable solids separated from liquids during processing or the deposits of foreign material on the bottoms of streams or other bodies of water.

**SLUDGE DIGESTION:** The process of changing organic matter in sludge into a gas or liquid or a more stable solid form. These changes take place as microorganisms feed on sludge in anaerobic (more common) or aerobic digesters.

**SPOT LINER/REPAIR:** A trenchless (no-dig) method to repair defects, holes, or inconsistencies in pipes that includes placing a fiberglass or other material inside of the pipe.

**STORM SEWER:** A separate pipe, conduit or open channel (sewer) that carries runoff from storms, surface drainage, and street wash, but does not include domestic and industrial wastes.

**SUSPENDED SOLIDS:** Solids that either float on the surface or are suspended in water, wastewater, or other liquids, and which are largely removable by laboratory filtering.

**TOXICITY:** The relative degree of being poisonous or toxic. A condition which may exist in wastes and will inhibit or destroy the growth or function of certain organisms.

**TOTAL SUSPENDED SOLIDS (TSS):** small organic and inorganic particles including fats, oil and grease (FOG) which are measured during the TSS analysis. It is critical that a majority of these solids are removed during primary treatment to ensure biological treatment will perform efficiently.



**WASTEWATER:** The used water and solids from a community that flow to a treatment plant. Storm water, surface water, and ground water infiltration also may be included in the wastewater that enters a wastewater treatment plant. The term “sewage” usually refers to household wastes, but this word is being replaced by the term “wastewater”.

**WEIR:** A wall or plate placed in an open channel and used to measure the flow of water or used to control flow (from settling tanks and clarifiers) to assure a uniform flow rate and avoid short-circuiting.

**WET WELL:** A compartment or tank in which wastewater is collected. The suction pipe of a pump may be connected to the wet well or a submersible pump may be located in the wet well.

**ZOOGLAAL MASS:** Jelly like masses of bacteria found in both the trickling filter process. See also Biomass.

*Did you know . . .*

*A sanitary sewer is an underground pipe or tunnel system for transporting sewage from houses and commercial buildings to a sewage treatment plant or septic system.*

*A sewer pipe's life expectancy is about 75 to 100 years with good maintenance. Sewer pipes can be made of concrete, clay, cast iron or PVC (plastic). Most sewer lines are 4 – 6 inches in diameter but can be up to 12 inches.*

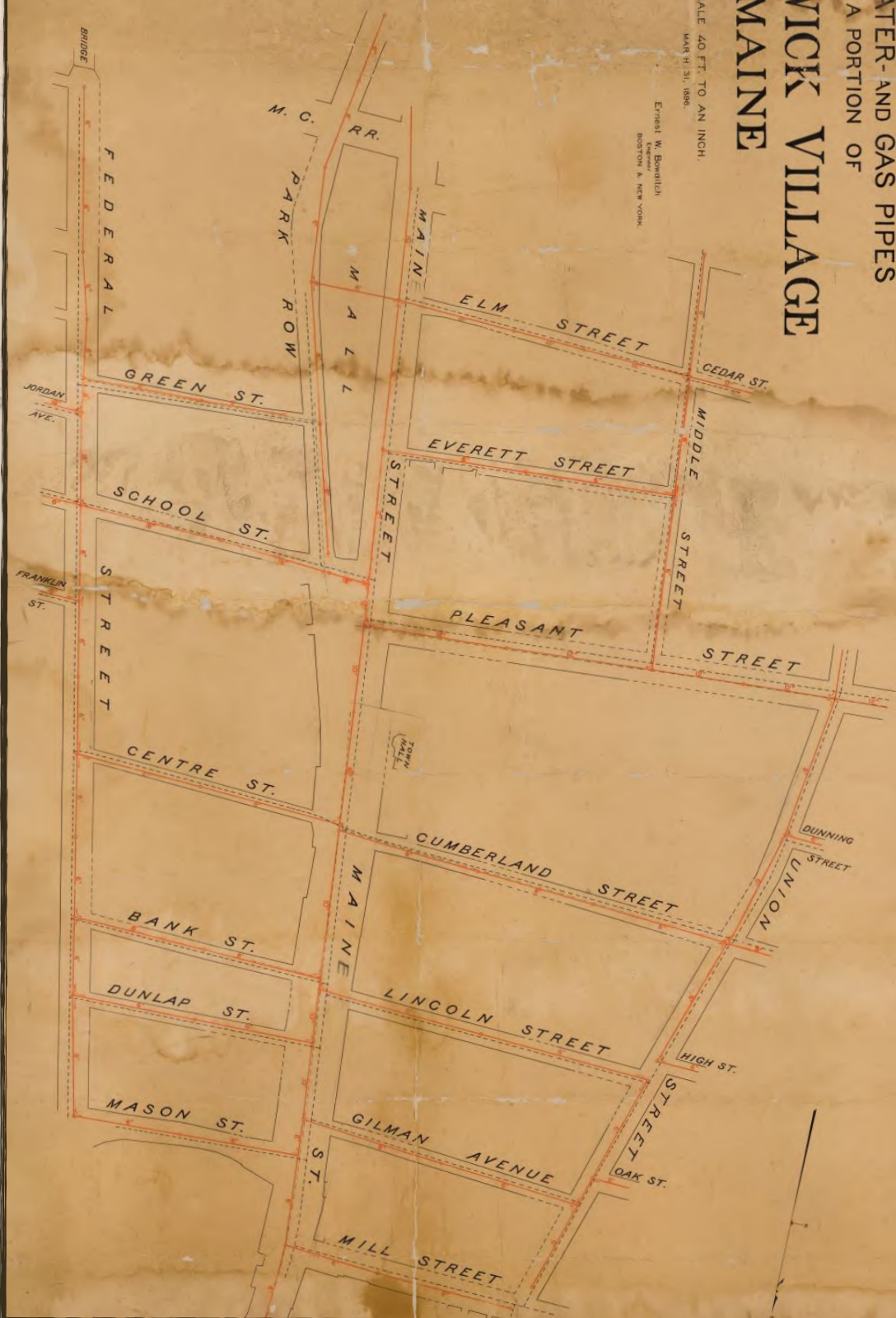
*The lifespan of a properly maintained septic system is 15 – 40 years. A typical residential septic tank is usually about 4 feet wide, 8 feet long and 6 feet high. Septic tanks should be pumped at 3 – to – 5- year intervals.*

PLAN SHOWING LOCATION OF  
SEWER-WATER AND GAS PIPES  
IN A PORTION OF  
**BRUNSWICK VILLAGE**  
**MAINE**

SCALE 40 FT. TO AN INCH.  
MAY 11 31, 1896.

Ernest W. Bowditch  
BOSTON & NEW YORK

Shaded in Red,  
Blue,  
Green



1896 Map of Brunswick Village, Maine





*Solar Farm in Acton, Maine*