Seabrook Water& Sewer Department

PO Box 456
Seabrook, NH 03874
(603)-474-9921

MEMORANDUM

To: Board of Selectmen

Cc: William Manzi III; Town Manager

From: Curtis Slayton; Water & Sewer Superintendent

Date: May 1, 2023

Subject: Monthly Report from March 2nd to Date

Below is a list of activities ongoing and completed by the Water & Sewer Department staff since the last report.

WATER

- Responded to 132 requests for service to include water turn on/off, inspections and meter repairs.
- Responded to 104 dig safe requests.
- 28,115,000 gallons of treated water was pumped into the distribution system in March 29,767,000 gallons in April.
- Meter reads were completed the first of every month.
- Bacteria samples were completed the first two weeks of the month.
- GIS work is ongoing.
- April 10th the raw watermain failed as it passed through the wall and into the treatment facility (see attached pictures) Water Department personnel, representatives from Jamco Construction and Water Line Industries met on site to create a plan and ordered parts to deal with the emergency. The next day we shut down the treatment facility and replaced 25 feet of pipe while on stored water.
- Work at the Merriman-Weare Disc Golf Course is moving forward. The Town Manager and the Water & Sewer Superintendent attended the planning board meeting and received approval. Brush clearing work is being done with a combination of water department employees and a private contractor. 9 baskets have been ordered; it will take 6 to 8 weeks for delivery.
- EPA performed an inspection on the Lead and Copper sampling program. NHDES was in attendance.
- NHDES sent the attached letter that the Weare Rd Wells A and B large groundwater withdrawal permit application has been received and is administratively complete.
- Meter testing at well #5
- Specific capacity test was done on GPW #7 GPW #4 BRW #1,2,3 and 4.

- Watermain routing report, completed with the $50,000 grant attached.
- Replaced chlorine lines in treatment facility.
- Marked gate valves in the street for paving operations.
- Transducer checks at the wells.
- Curbstop repair a 152 Atlantic.
- Cleaning brass at treatment facility and pump stations
- Painting at Bedrock well #5
- Tractor maintenance (greasing)
- Snow removal
- Spring cleanup around Water Treatment Facility.
- 1st quarter water and sewer bills were mailed at the end of April with the yearly consumer confidence report.
- Portable generator repair.
- Assisting Police Department with fire system repair proposals.
- Attend meeting at Fiesta Shows

SEWER

* 28 million gallons of wastewater treated in March 24 million in April
* 226 tons of biosolids was sent out in March and 158 tons in April
* Monthly operation reports sent to NHDES and USEPA
* Daily lab work 7 days a week
* The CMOM report was finished and submitted. (Report Attached)
* The old Fair Banks Morse pump that was removed from Centennial Pump Station was sent out for evaluation.
* On site meeting for the Blackwater Bridge Project, the contractor will return in May to finish clean up and paving work.
* Weekly pump station checks
* Snow removal
* Painting prep in pump galley.
* Replaced windshield in #92 truck
* RAS pump motor #2 was rebuilt
* Off float for screw pump was replaced
* Ordered new Gormann Rupp pump for Worthely one of the 2 pumps is beyond repair.
* Fixed fuel leak on JCB backhoe
* Repaired polymer pump #2
* Replace manhole frame and cover on Folly Mill Rd.
* Changed HVAC filters in Lab
* Fixed pump fault at Carroll Lane.
* Shoveled grit from aeration tank #2

*Outfall pump #1 back online now that VFD has been replaced, took over a year for the drive to arrive.
* Replaced VFD on #1 RAS pump.
* Heating system repaired in admin building by contractor.
* Followed up on EPA complaint that a local business was discharging to the sewer illegally.
* Replaced odor control fan at Centennial pump station.
* Repaired roller bearing on press #2
* Replaced solenoids for polymer carrying water system.
* Supported street paving operations by inspecting manhole frame and covers and replace as needed.
* Installed repaired hydropac on press #2
* Installed rebuilt electric motor at Ledge Rd pump station
* Replaced chlorine line to contact tank
* Swapped aeration tanks, #1 online, #2 offline
* Swapped chlorine contact tanks
* Larger pump station wet well cleaning
* Replaced pump station float at 15 Cross Beach.

Respectfully submitted.

Curtis Slayton, Water & Sewer Superintendent

SEABROOK WATER DEPARTMENT

Water Delivered

Year: **2023** Month: **March**

Gravel Packed Wells

1: **4,565,000**
3: **31,000**
7: **3,219,000**

Plant: **20,300,000**

Total: **28,115,000**

Previous Month / Year Mar-22 Total 25,838,000
Previous Month / Year Mar-21 Total 27,871,000

Respectfully submitted: George M. Eaton Chief Op

Date: 4/3/2023

SEABROOK WATER DEPARTMENT

Water Delivered

Year: **2023** Month: **April**

Gravel Packed Wells

1:	**4,294,000**
3:	**4,739,000**
7:	**270,000**

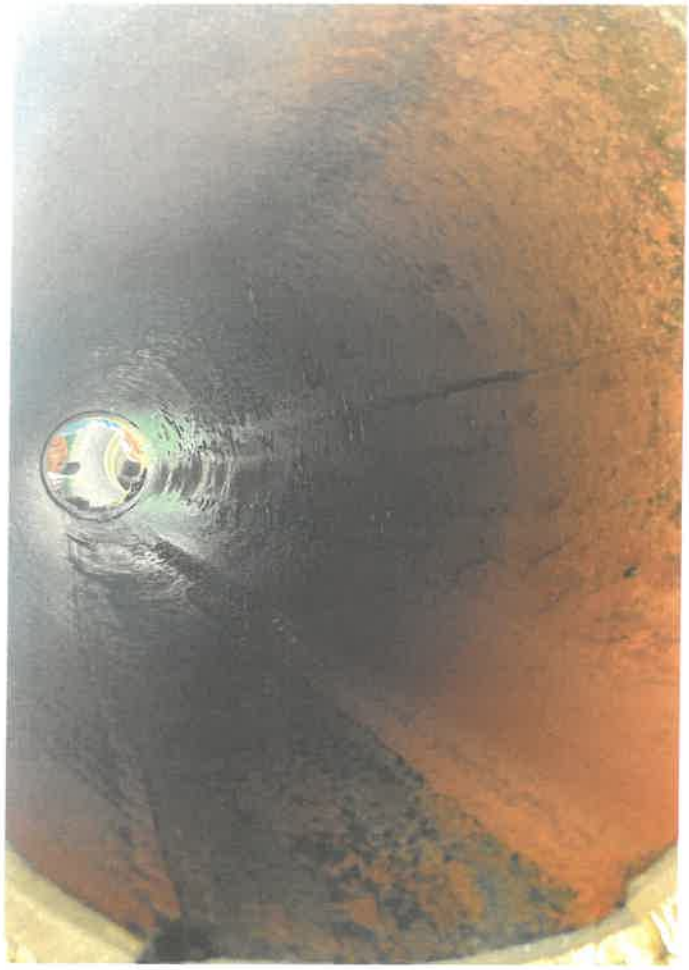
Plant: **20,464,000**

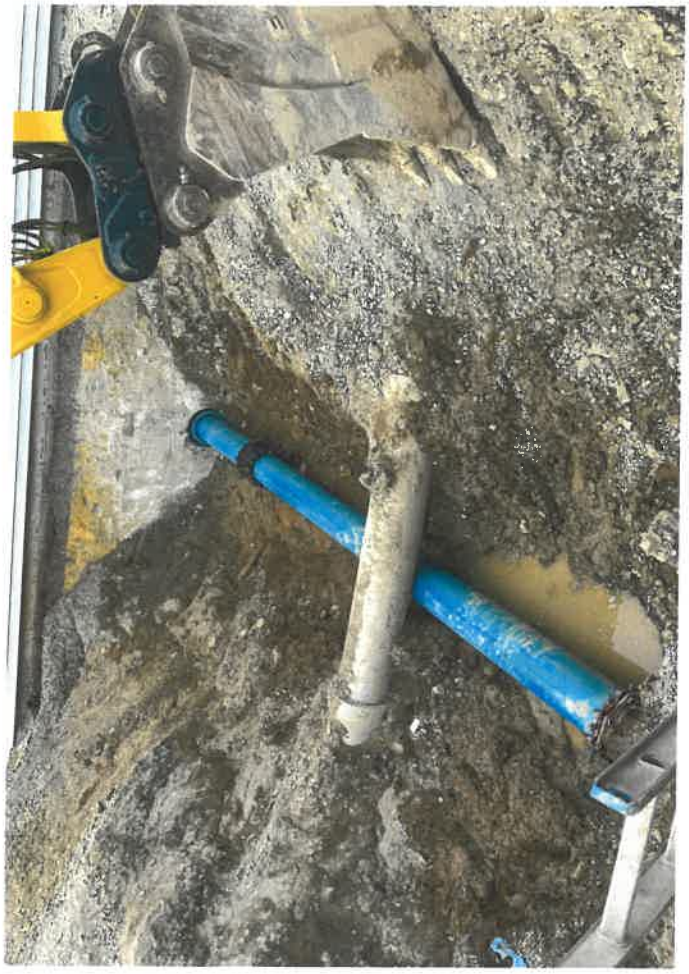
Total: **29,767,000**

Previous Month / Year	Apr-22	Total	29,098,000
Previous Month / Year	Apr-21	Total	25,046,000

Respectfully submitted: George M. Eaton Chief Op

Date: 5/2/2023





The State of New Hampshire
Department of Environmental Services

Robert R. Scott, Commissioner

April 21, 2023

Ray Talkington
Geosphere Environmental Management, Inc.
51 Portsmouth Avenue
Exeter, NH 03833

RE: Review for Administrative Completeness
Preliminary Large Well Siting/Large Groundwater Withdrawal Permit Application
CWS Seabrook; PWS ID 2111010; DR006472
Proposed Weare Road Wells A and B
Town of Seabrook

Dear Mr. Talkington:

The New Hampshire Department of Environmental Services (NHDES) has reviewed the preliminary community well siting and large groundwater withdrawal permit application (Preliminary Application) titled "Preliminary Report In Support of Large Groundwater Withdrawal Permit Application Town of Seabrook Water Department Weare Road Well A and Well B Seabrook, NH" prepared by Geosphere Environmental Management Inc. (GEM) on behalf of the Town of Seabrook, received April 13, 2023, for Administrative Completeness, in accordance with Env-Wq 403.14(a). A Preliminary Application is considered Administratively Complete when all of the materials required by Env-Wq 403.06 have been submitted to NHDES.

The purpose of this letter is to notify GEM that NHDES finds that the above-referenced Preliminary Application submitted is Administratively Complete. Note that per Env-Wq 403.14(d), NHDES' determination that the Preliminary Application is Administratively Complete is **not** a determination that the Preliminary Application is approvable as submitted or that all the information presented is necessarily correct.

At this time, per RSA 485-C:21, II, please send a complete copy of the Preliminary Application with a copy of the "Large Groundwater Withdrawal Permit Application Notification Form" via certified mail to each municipality and public water supplier in the potential impact area of the proposed withdrawal. **Copies are to be sent to the Towns of Seabrook and Hampton Falls.** The Preliminary Zone of Influence of the well extends North into Town of Hampton Falls. Therefore, the Town of Hampton Falls shall be included in all correspondence for this large groundwater withdrawal permit application at this time. Please provide copies of the return mail receipts to NHDES as soon as they are available.

Per RSA 485-C:21, III, **the deadline for a municipality or public water supplier to request a public hearing for this project is fifteen (15) days from the date they receive their copy of the Preliminary Application.** If a public hearing is requested, NHDES will inform GEM and the Town of Seabrook and coordinate with the entity that requested the hearing to arrange the date, time, and location of the hearing to be held within 30 days after the request. Following the hearing, there will be a 45-day period during which written comments on the Preliminary Application may be submitted to NHDES. If a public hearing is not requested, the 45-day written comment period will commence on the date of receipt of the application.

If you have any questions about this letter or any other groundwater permitting issues, please contact me at (603) 271-8866 or largegw@des.nh.gov.

Sincerely,

David Hisz
Drinking Water and Groundwater Bureau

cc: Curtis Slayton; Seabrook Water Department
Town Manager, Town of Seabrook
Town Administrator, Town of Hampton Falls
Andrew Koff; NHDES

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Weston & Sampson

100 International Drive, Suite 152, Portsmouth, NH 03801
Tel: 603.431.3937

April 10, 2023

Mr. Curtis Slayton
Water & Sewer Superintendent
Town of Seabrook
PO Box 456
Seabrook, NH 03874

Re: **Source Integration and Water Main Routing Analysis**

Dear Mr. Slayton:

Weston & Sampson Engineers, Inc. is pleased to provide the following report to the Town of Seabrook (the town) detailing a water main routing analysis performed to assess potential routes from the proposed municipal water supply sources at the properties identified as 121 Weare Road (Weare Road wells) and 45 Stard Road/ Fogg Property (Fogg Property wells) to the existing water treatment facility (WTF) located at 550 NH Route 107.

The analysis identified the required infrastructure to connect the proposed wells to the WTF. Three potential routing alternatives were considered under this analysis and a map depicting the raw water main routing options can be found in Appendix A: Raw Water Main Routing Options Map. The analysis also examined the infrastructure required to support the proposed well sites including pump stations, backup power, and site work. Estimated planning-level project costs included in this analysis include the engineer's opinion of probable costs for construction, engineering, and project contingency.

Background

The WTF was constructed in 2011 and currently treats groundwater from the town's existing gravel packed and bedrock well fields located south of the WTF. The twelve (12) existing wells consist of five (5) gravel packed and seven (7) bedrock wells and provide an approximate average daily flow of 1.0 million gallons per day (mgd) to the WTF. The locations of the town's proposed water supply wells were estimated based on the *Potential Bedrock Sources of Supply Stard Road Wellfield* hydro-geological report by Geosphere in 2018 provided by the town. The anticipated yields of the town's proposed water supply wells was additionally provided by Geosphere in March 2023 and were utilized to determine the size of the proposed raw water mains examined under the routing analysis. Additional consideration was given to include a proposed future well in the Pineo Wellfield located north of the Fogg Property wells. The approximate yield for the Pineo Wellfield was provided by the town. The estimated project costs for incorporating this well into the water system will not be included in this report, however, the estimated flow rate will be utilized for sizing the proposed raw water mains from the Fogg Property to the WTF. The flows in gallons per minute (gpm) and number of wells on the town's water supply sites are shown in the table below. When a range of flow rate for the existing wellfields is provided it signifies seasonal flow variations from the existing sources.

Table 1: Proposed Well Characteristics		
Well Site:	Number of Wells (#)	Estimated Flowrate (gpm)
Existing Wells	12	1700-2150
Weare Road	2	200*
Fogg Property	3	580*
Pineo Wellfield	1	300

*Anticipated flow rate provided by Geosphere.

A figure depicting the proposed well sites based on the hydrogeological report data can be found in Appendix B: Well Sites. As shown in Appendix B, the Fogg Property has three (3) proposed wells, Well F, Well L, and BTW 8-15. These wells have a combined yield of 580 gpm. According to the town Well L and BTW 8-15 may be incorporated during the initial stages of the project. Well F is intended to be incorporated in the future and its flow rate will be included in the raw water main sizing calculations. Additionally, future incorporation of the Pineo Wellfield well (300 gpm) will bring the total proposed maximum daily flow from the Fogg Property to 880 gpm which will be used for sizing proposed water mains from this well site. A maximum water flow rate of 1,080 gpm was used to size water mains carrying flow from the Fogg Property, Weare Road, and Pineo Wellfield sources.

Water Mains Common to Multiple Routing Alternatives

Multiple routing alternatives provided in this analysis contain proposed water mains common to multiple routing alternatives. This section of the routing analysis examines these pipe segments which will be referenced later in the report in the specific routing alternatives. The costs and total headloss of these proposed water main segments provided below will be included in each applicable alternative. The pipe material utilized in all pipe sizing assessments in the report is ductile iron (DI) which is the current town water main standard. However, the town has expressed willingness to explore other pipe material options due to the material costs and the current lead time for procuring DI pipe which is over 40 weeks. These alternative pipe materials and any potential headloss impacts and cost reduction will be discussed later in the report. The proposed pipe sizing for the routing analysis was determined based on headloss through each proposed pipe segment based on which combination of sources will the main be conveying and the proposed flow rate. The American Water Works Association (AWWA) M32 guidelines off the following criteria to assess water system conditions when determining a need for water main improvements or future water main sizing:

- Maintain headloss of 3.0 feet per 1,000 feet (ft/kft) of pipe or less in water mains with diameter of 16-inches or greater;
- Maintain headloss of 10 ft/kft of pipe or less in water mains with diameter of less than 16-inches;
- Maintain velocity of 5.0 feet per second or less in all water mains.

For the purpose of this analysis, a general limit of 4.0 ft/ kft was used to assess the sizing of the proposed mains. This was done to provide a more stringent headloss standard to pipe under 16-inches in diameter as the long-term pumping costs to overcome additional headloss will increase operating costs over time. A general limit of 4.0 ft/kft also allows additional flexibility with sizing 16-inch and greater diameter piping. A guideline of 3.0 ft/kft typically applies to large diameter transmission mains and is overly stringent for sizing of a potential raw water main to the town's WTF. Water main sizes of 10- and 14-inches were deemed less desirable for pipe sizing for ductile iron pipe due to availability of materials. These sizes were considered as appropriate for the sizing of proposed plastic piping.

NH Route 107 Crossing

A crossing of NH Route 107 (200 linear feet) is required at the NH Route 107/Weare Road intersection to connect proposed water main from the well sites to the cross-country easement leading to the WTF. The proposed raw water main at this location was assessed using a flow rate of 1,080 gpm to include the maximum flow from all proposed (and future) wells. The below table shows the headloss comparison between DI water main sizes at the proposed flow rate and water main length.

Table 2: NH Route 107 Crossing Pipe Comparison (DI)

Diameter	C value	Flow (gpm)	Headloss per 1000 ft (ft/kft)
8-inch	120	1080	24.3
12-inch	120	1080	3.4
16-inch	120	1080	0.8

As shown in the above table, the 8-inch pipe exceeds the design criteria of 4.0 ft/kft under a maximum proposed flow of 1,080 gpm. From the above assessment, it was determined that a proposed 12-inch main will accommodate the flows while meeting the stated design criteria, and therefore is recommended.

NH Route 107 is owned by the New Hampshire Department of Transportation (NHDOT) and will be subject to NHDOT construction requirements and design review. The crossing will ideally be installed via open cut water main installation, but NHDOT may request installation via horizontal directional drilling (HDD). Additionally, a pipe sleeve will likely be required by NHDOT under NH Route 107 to allow for ease of repair without disturbing the roadway. The town can seek a hardship request from NHDOT detailing the added costs and difficulty to conduct HDD at this location in an attempt to waive the requirement. The sleeve requirement can be waived through a hardship request if there is a significant amount of ledge below the roadway that can act as a natural pipe sleeve for a proposed water main installation. A hardship request to avoid HDD installation may also be considered by NHDOT if the subsurface conditions are found to be unfavorable. For the purposes of this analysis, the costs for HDD will be included to encompass "worst case" conditions which includes conducting an HDD in rock conditions. Additional costs associated with this installation include those associated with staging on both sides of NH Route 107, added installation costs, and a larger diameter pipe sleeve (if required).

The right of way (ROW) at the crossing location is a Standard ROW per NHDOT and will therefore will not be subject to more stringent restrictions found with other types of right of way including Controlled Access ROW (moderate restrictions) or a Limited Access ROW (heavy restrictions). For a map showing the extents of the NHDOT ROW and the ROW designations on NH Route 107, refer to Appendix C: NHDOT ROW Map. Further description of these ROW designations and the potential associated impacts is provided within this report. A water main installation via HDD at this location is also expected to utilize high density polyethylene (HDPE) standard dimension ratio (SDR) pipe rather than ductile iron. HDPE water main has a lower effective interior diameter than ductile iron and therefore a larger water main may be required. The below table shows the comparison between a new 10-, 12-, and 14-inch HDPE SDR 21 water main under the proposed flow rate and water main length. SDR 21 pipe is proposed for this application as the town maintains a low influent pressure at the WTF (typically between 17 – 25 psi) and the 100-psi pressure rating of SDR 21 would be adequate to transmit raw water.

Table 3: NH Route 107 Crossing Pipe Comparison (HDPE)				
Diameter	Effective Inside Diameter	C value	Flow (gpm)	Headloss per 1000 ft (ft/kft)
10-inch	9.66-inch	140	1080	7.3
12-inch	11.46-inch	140	1080	3.2
14-inch	12.59-inch	140	1080	2.0

As shown in the above table, the 10-inch pipe exceeds the design standard of 4.0 ft/kft under a flow of 1,080 gpm. From the above assessment, it was determined that the 12-inch HDPE (SDR 21) water main accommodates the proposed flows while meeting the design criteria, and therefore is recommended.

WTF Cross Country Easement

A proposed raw water main (975 linear feet) will be installed within the current WTF cross-country easement to connect the water main installed from NH Route 107 to the WTF. The water main will be installed adjacent to the existing sewer main currently located in the easement with a minimum 10-foot separation where feasible. The raw water main was assessed using a flow rate of 1,080 gpm, similar to the NH Route 107 Crossing. Therefore, a 12-inch water main is also recommended for this application based on the findings in Table 2.

Raw Water Main Routing Options

Three (3) raw water main routing options and their costs are presented below to construct a water main from the new municipal water supply sources to the existing WTF. Included with the cost of each option are the common water mains segments presented above. The two new supply sources off Weare Road and the Fogg Property are geographically separate from each other and the WTF and therefore require significant water main infrastructure to integrate into the existing water system. Refer to Appendix A – Raw Water Main Routing Options Map for a depiction of the routing options.

Option 1: NH Route 107

Option 1 includes the installation of proposed raw water main from the Fogg Property wells to Stard Road along the existing site access road, on Stard Road to NH Route 107, from the Weare Road wells to NH Route 107 via the powerline corridor (owned by Eversource), and on NH Route 107 (within the NHDOT ROW) from the intersection with Stard Road to the NH Route 107 Crossing at the existing WTF easement. Initial discussions with Eversource have indicated this seems to be a viable routing option based on the conditions described further within this report. In this option, the two raw water sources will connect on NH Route 107 adjacent to the powerline corridor. A breakdown of the linear footage of each segment is shown below.

- Fogg Property Access Road: 2,200 linear feet
- Stard Road: 1,000 linear feet
- NH Route 107: 7,600 linear feet
- Weare Road Wells to Powerline Corridor: 235 feet
- Powerline Corridor: 700 linear feet
- Common Water Mains: 1,175 linear feet

Total Water Main Length: 12,910 linear feet.

The raw water main from the Weare Road wells to the powerline corridor was assessed using a flow rate of 200 gpm (flow rate from Weare Road wells). The below table shows the comparison between a new 6-, 8-, and 12-inch water main under the proposed flow rate and water main length.

Table 4: Weare Road Well Site to Powerline Corridor Pipe Comparison			
Diameter	C value	Flow (gpm)	Headloss per 1000 ft (ft/kft)
6-inch	120	200	4.4
8-inch	120	200	1.1
12-inch	120	200	0.15

As shown in the above table, the 6-inch water main exceeds the design standard of 4.0 ft/kft under a flow of 200 gpm. It is recommended that an 8-inch water main be installed from the Weare Road well site to the powerline corridor.

The raw water main in the powerline corridor was assessed using a flow rate of 200 gpm. Typically, Eversource requires plastic water distribution pipe be installed if in a powerline easement. Therefore, HDPE (SDR 21) was used for the sizing of this water main segment. The below table shows the comparison between a new 6-, 8-, and 10-inch water main under the proposed flow rate and water main length.

Table 5: NH Powerline Corridor Pipe Comparison (HDPE)				
Diameter	Effective Inside Diameter	C value	Flow (gpm)	Headloss per 1000 ft (ft/kft)
6-inch	5.96-inch	140	200	3.4
8-inch	7.75-inch	140	200	0.9
10-inch	9.66-inch	140	200	0.3

As shown in the above table, the 6-inch HDPE pipe meets the design standard of 4.0 ft/kft under a flow of 200 gpm. However, it is recommended that an 8-inch HDPE water main be installed within the powerline corridor in this application to match the approximate pipe diameter size of the water main segment from the Weare Road wells to the powerline corridor.

The raw water main on the Fogg Property access road, Stard Road, and NH Route 107 up to the powerline corridor was assessed using a flow rate of 880 gpm (combined future flow from Fogg Property and Pineo Wellfield well sites). The below table shows the comparison between a new 8-, 12-, and 16-inch ductile iron water main under the proposed flow rate and water main length.

Table 6: Option 1 Pipe Comparison (Access Road, Stard Road, NH Route 107)			
Diameter	C value	Flow (gpm)	Headloss per 1000 ft (ft/kft)
8-inch	120	880	16.7
12-inch	120	880	2.3
16-inch	120	880	0.6

As shown in the above table, the 8-inch pipe exceeds the design standard of 4.0 ft/kft under a flow of 880 gpm. It

is recommended that a 12-inch water main be installed from the Fogg Property to the connection point with the Weare Road wells adjacent to NH Route 107.

The water main after the two sources connection point in NH Route 107 was assessed under the same flow condition as the common raw water main for the NH Route 107 Crossing (1,080 gpm). Therefore, a 12-inch water main is also recommended for this application based on the based on the findings in Table 2.

NH Route 107 is within the NHDOT compact zone and is maintained by the NHDOT. It will require a full width pavement overlay (per NHDOT) if the road is disturbed in the travel way, shoulder and/or within 10 feet of the edge of pavement and will also be subject to stringent trench backfill standards as required by NHDOT. It is anticipated that the proposed water main on NH Route 107 will be installed in the ROW of the road at the farthest point from the pavement to minimize pavement disruption and construction costs. NH Route 107 maintains both a Controlled Access ROW (moderate restrictions) and a Limited Access ROW (heavy restrictions) within limits of water main to be installed in Option 1. This routing option will incur additional costs to accommodate these restrictions as required by NHDOT including a separate access agreement to be executed between the town and NHDOT, a project review by the Concord NHDOT office, and review by the Traffic Control Committee. Refer to Appendix C – NHDOT ROW Map for the limits of both ROWs. The proposed raw water main will additionally cross Gove Brook (see Appendix A). This location will likely require a culvert crossing and wetland permitting through NHDES. Review of the town's GIS noted that the routing option will have approximately 11 existing utility crossings that will be assessed further during the design process.

The total length of water main and estimated headloss for Option 1 are 12,910 linear feet and 31.8 feet, respectively. Below is a breakdown of the estimated costs of installing the Option 1 water main infrastructure. As construction is anticipated in the 2025 construction season, all costs presented in this report are 2025 projected costs.

Costs	
12-inch Main from Fogg Property Well to Stard Road	$715,600
12-inch Main in Stard Road	$399,000
12-inch Main in NH Route 107 to Powerline Corridor	$2,492,500
8-inch Main from Weare Road Well to Powerline Corridor	$56,700
8-inch HDPE Main in Powerline Corridor	$160,400
12-inch Main from Powerline Corridor to Weare Road	$699,100
12-inch HDPE Main at NH Route 107 Crossing (HDD)	$668,900
12-inch Main in Cross-Country Easement to WTF	$317,100
Engineering and Contingency	$2,616,000
Option 1 Total Cost	=$8,125,300

Option 2: HDD to Mill Lane Site, Mill Lane, and Weare Road

Option 2 includes the installation of proposed raw water main on the Fogg Property to connect the proposed wells, installation from the Fogg Property to the Mill Lane well site via horizontal directional drilling (HDD), open trench installation from the well site to Mill Lane, from the Weare Road wells to Weare Road, and on Mill Lane and Weare Road to the NH Route 107 Crossing. In this option, the two raw water main sources will connect on Weare Road adjacent to the Weare Road well site. A breakdown of the linear footage of each segment is shown below.

- Fogg Property: 1,450 linear feet
- Fogg Property Wells to Mill Lane Well Site (HDD): 800 linear feet
- Mill Lane Access Road: 900 linear feet
- Mill Lane and Weare Road to Weare Road Wells Access Road: 2,500 linear feet
- Weare Road Wells to Weare Road: 450 linear feet
- Weare Road Well Access Road to NH Route 107 Crossing: 2,000 linear feet
- Common Water Mains: 1,175 linear feet

Total Water Main Length: 9,275 linear feet.

The Mill Lane well site was previously a water supply source for the town but is not currently active. Due to low well yield (approximately 60 gpm) and relatively poor water quality, the town has no existing plans to begin utilizing the wells for water supply purposes at this time. There is an undersized existing 6-inch asbestos clay (AC) water main between the Mill Lane wells and Mill Lane which is not desirable to be reused as part of this project. A new water main will be installed adjacent to the existing water main to avoid additional costs associated with the removal of AC water main. Option 2 is constructed almost entirely within town owned right-of-way and will not require NHDOT involvement outside of the NH Route 107 Crossing. The HDD water main will be constructed entirely under wetlands adjacent to the Mill Lane well site possibly requiring wetlands permitting for the New Hampshire Department of Environmental Services (NHDES). Additionally, the town's GIS was reviewed and noted that this routing option will have approximately 6 existing utility crossings that will be assessed further during the design process.

To further assess the feasibility of an HDD water main installed below the existing wetlands between the Fogg Property and the Mill Lane site additional engineering efforts were conducted. A review of the geophysical data provided in the integrated geophysical report by Hager GeoScience in 2015 and the hydro-geological report by Geosphere in 2018 was performed to determine the extent of ledge in the area. The 2015 report shows a ledge profile extending from the approximate site of the Fogg Property wells to the Mill Lane site that is approximately 30-55 feet below top of soil. Additionally, a field investigation and test bore was performed with Henniker Directional Drilling to pilot the alignment for the future HDD. Henniker conducted a 2-inch test bore in the area of the Fogg Property wells on February 6, 2023 to determine the feasibility of installing the proposed water main via a full-scale horizontal directional drill. Two 400-foot bores were conducted, one from the Mill Lane well site in the direction of the existing cell tower on the Fogg Property, and one from an access road by the cell tower toward the Mill Lane well site. The test bore starting from the Mill Lane Site drilled through mostly soft clay, encountering refusal in one location at a depth 27.6-feet. The test bore starting from the Fogg Property site drilled through sand-gravel-cobbles for the first 240-feet before reaching soft clay. Refusal was encountered at depths ranging from 10 to 13-feet. It was determined based on the information provided by the test borings that water main installation via HDD should be feasible at this location. It is anticipated that a directional drill would enter from the Mill Lane site and exit on the Fogg Property due to the rising ledge profile on the south/east end of the HDD extents.

The raw water main on the Fogg Property prior to the HDD extents was assessed under the same flow as the water main in NH Route 107 in Option 1 (880 gpm). Therefore, a 12-inch water main is also recommended for this application based on the findings from Table 6.

As previously stated, HDD water main is expected to use HDPE pipe. The 800 feet of HDD water main from the Fogg Property to the Mill Lane well site was assessed under a flow of 1,000 gpm utilizing HDPE pipe. The below table shows the comparison between a new 10-, 12-, and 14-inch HDPE water main under the proposed flow rate.

Table 7: HDD Pipe Comparison (Option 2)				
Diameter	Effective Inside Diameter	C value	Flow (gpm)	Headloss per 1000 ft (ft/kft)
10-inch	9.66-inch	140	880	5.0
12-inch	11.46-inch	140	880	2.2
14-inch	12.59-inch	140	800	1.4

As shown in the above table, the 10-inch pipe exceeds the design standard of 4.0 ft/kft under a flow of 880 gpm. Therefore, a 12-inch HDPE main is recommended to be installed via HDD from the Fogg Property to the Mill Lane well site.

The raw water main installed via open trench methods between the Mill Lane site and the Weare Road wells connection was assessed under a flow of 880 gpm which is the same flow as the NH Route 107 water main in Option 1. Therefore, a 12-inch water main is also recommended for this application based on the findings from Table 6.

The raw water main installed between the Weare Road well site and Weare Road was assessed using a flow rate of 200 gpm which is the same flow as the Weare Road well site to powerline corridor water main in Option 1. Therefore, an 8-inch water main is also recommended for this application based on the findings from Table 4.

The raw water main installed between the Weare Road wells connection, and the NH Route 107 Crossing was assessed under a flowrate of 1,080 gpm which is the same flowrate as the NH Route 107 Crossing. Therefore, a 12-inch water main is also recommended for this application based on the based on the findings in Table 2.

The total length of water main and estimated headloss for Option 2 are 9,275 linear feet and 26.8 feet, respectively. Below is a breakdown of the estimated costs of installing the Option 2 water main infrastructure.

Costs	
12-inch Fogg Property to connect wells to HDD	$471,600
12-inch HDPE Main from Fogg Property Well to Mill Lane Well Site (HDD)	$353,800
12-inch Main from Mill Lane Well Site to Mill Lane	$359,100
12-inch Main in Mill Lane and Weare Road to Weare Road Well Lateral	$997,400
8-inch Main from Weare Road Well to Weare Road	$108,600
12-inch Main in Weare Road past Lateral	$797,900
12-inch HDPE Main in NH Route 107 Crossing (HDD)	$668.900
12-inch Main in Cross-Country Easement to WTF	$317,100
Engineering and Contingency	$2,018,500
Option 2 Total Cost	=$6,092,900

Option 3: Powerline Corridor and NH Route 107

Option 3 includes the installation of proposed raw water main from the proposed Fogg Property and Weare Road well sites south to the existing powerline corridor (owned by Eversource), in the powerline corridor to NH Route 107, and on NH Route 107 to the NH Route 107 Crossing. Initial discussions with Eversource have indicated this seems to be a viable routing option based on the conditions described further within this report. In this option, the two raw water main sources will connect in the powerline corridor adjacent to the Weare Road well site. Additionally, it is anticipated that the water main would be located on the south side of the powerline corridor as this easement

boundary has fewer privately owned land abutters. A breakdown of the linear footage of each segment is shown below.

- Fogg Property Wells to Powerline Corridor: 500 linear feet
- Powerline Corridor to Weare Road Wells Connection in the Powerline Corridor: 4,300 linear feet
- Weare Road Wells to Powerline Corridor: 235 linear feet
- Weare Road Well Connection to NH Route 107 (in Powerline Corridor): 700 linear feet
- NH Route 107 to NH Route 107 Crossing: 1,900 linear feet
- Common Water Mains: 1,175 linear feet

Total Water Main Length: 8,860 linear feet.

Weston & Sampson reached out to Eversource about the installation of a water main within the powerline corridor. Eversource stated that it would be allowed within certain parameters and in the past they have granted municipalities an above ground easement for construction and maintenance access only. The raw water main would be located 5-feet off the (northerly) edge of the existing easement and would be 10-feet wide centered on the water main. Notably, there may be issues accessing the water main during winter months if there is a significant amount of snow in the easement. In this instance if a pipe were to be in need of repair, plowing the easement would be required to access the raw water main or the Fogg Property wells or Fogg Property and Weare Road wells could be temporarily out of service. Typically, Eversource requires plastic water distribution pipes be installed if in a powerline easement. Therefore, for water main sizing and cost purposes HDPE (SDR 21) pipe was utilized in this application. Further information from Eversource will need to be gathered if the option is selected to determine whether any financial compensation or land maintenance agreement is required.

The water main installed within the powerline corridor east of Weare Road is located within permanent conservation land protected by the Town of Seabrook. Appendix D: Environmental/Conservation Map depicts the extents of this area. The powerline corridor conservation land is broken up into two sections, the Grace C. Fogg Wildlife Preserve and the GRA Reserve. The Grace C. Fogg Wildlife Preserve is protected through a deed restriction on the use of the land, and the GRA Reserve is a conservation easement and therefore has a permanent legal restriction against future development and other activities. Information on both restrictions can be found with the respective deeds. Due to Eversource already maintaining the easement for the powerline corridor, and the town being the primary protecting agency, installation of a raw water main in the powerline corridor is not anticipated to be prohibited. However, additional permitting may be required for construction within the identified conservation/wetland areas depending on local requirements. Additionally, the town noted the existence of a graveyard on Weare Road by the powerline corridor. If the water main installation occurs in proximity to the existing graveyard, an archeological investigation may be required for the area which will incur additional costs.

The raw water main from the Fogg Property to the powerline corridor was assessed under the same flow as the water main in NH Route 107 in Option 1 (880 gpm). Therefore, a 12-inch water main is also recommended for this application based on the findings from Table 6.

The raw water main installed in the powerline corridor from adjacent to the Fogg Property to the connection point with the Weare Road wells was assessed under the same flow rate and pipe material (HDPE SDR 21) as the HDD in Option 2 (880 gpm). Therefore, a 12-inch HDPE water main is also recommended for this application based on the findings in Table 7.

The raw water main from the Weare Road wells to the powerline corridor was already assessed in Option 1 and is recommended to be 8-inch main based on the previous explanation and Table 4.

The raw water main from the connection of the Weare Road wells to the powerline corridor crossing was assessed under the same flow and pipe material (HDPE SDR 21) as the NH Route 107 Crossing (1,080 gpm). Therefore, a 12-inch water main is also recommended for this application based the findings in Table 3.

The raw water main from the powerline corridor to the NH Route 107 Crossing was assessed under the same flow as the NH Route 107 Crossing (1,400 gpm). Therefore, a 16-inch water main is also recommended for this application based on the findings in Table 2.

As previously stated, water main installed on/adjacent to NH Route 107 is within the NHDOT ROW. The water main in Option 3 is also intended to be installed within the ROW away from the existing pavement to minimize pavement impacts and project costs. The ROW between the powerline corridor and the NH Route 107 Crossing is identified as Controlled Access ROW. Appendix C: NHDOT ROW Map depicts the extents of this area. Additionally, the town's GIS was reviewed, and it is noted that the routing option will have approximately 5 existing utility crossings that will be assessed further during the design process.

The total length of water main and estimated headloss for Option 3 are 8,310 feet and 21.9 feet, respectively. Below is a breakdown of the estimated costs of installing the Option 3 water main infrastructure.

Costs	
12-inch Main from Fogg Property to Powerline Corridor	$172,600
12-inch HDPE Main in Powerline Corridor to Weare Road Wells Connection	$1,136,800
8-inch Main from Weare Road Wells to Powerline Corridor	$61,400
12-inch HDPE Main from Weare Road Wells Connection in Powerline Corridor to NH Route 107	$185,100
12-inch Main in NH Route 107 to NH Route 107 Crossing	$796,300
12-inch HDPE Main in NH Route 107 Crossing (HDD)	$668,900
12-inch Main in Cross-Country Easement to WTF	$317,100
Engineering and Contingency	$1,798,200
Option 3 Total Cost	= $5,136,100

Supporting Infrastructure

All of the water main routing alternatives presented above share supporting infrastructure required to pump the raw water from the well sites to the WTF. This includes infrastructure at both the Weare Road and Fogg Property well sites as described further within this section of the report. The cost of this infrastructure must be included in all routing alternative option costs to form the total project cost.

Fogg Property Well Site

The Fogg Property well site will have a paved access road from Stard Road to the site in the same location as the existing dirt access road to the cell tower (owned by Crown Castle). A new well pump station will be constructed to pump raw water from the well site to the WTF. The PS will be located adjacent to Well BTW 8-15 shown in Appendix B. The pump station will ideally house well BTW 8-15 to reduce project costs. All wells outside of the pump station will have variable frequency drives and pitless adapters. Three (3) phase power is currently available on the proposed site due to the cell tower and will be utilized by the pump station. Additionally, the existing cell tower diesel generator will need to be replaced with propane generator as diesel generators are not allowed within the 400-foot sanitary protective radius of the wells. The well pump station piping on the Fogg Property will be configured to accommodate future flow from the Pineo Wellfield and Fogg Property Well F.

Weare Road Well Site

The Weare Road well site will have a paved access road and bar gate coming from Weare Road. All wells will have variable frequency drives and pitless adapters. Additionally, fencing with vinyl camouflage slats will be provided around the wells to improve the aesthetic appearance and prevent vandalism. Three (3) phase power for the wells is available on Weare Road but will require a small utility allowance for extending the power to the well site.

The town has also mentioned removing the existing well pump building on the Mill Lane well site. The costs associated with this item are included within the contingency of the supporting infrastructure costs.

Below is a summary of the estimated costs of installing the supporting infrastructure at each location as described above. A detailed breakdown of the costs is included in Appendix E: Supporting Infrastructure Cost Breakdown.

Costs

Fogg Property Pump Station and Wells	$992,800
Weare Road Wells	$245,400
Contingency (30%)	$371,500
Well Infrastructure Total Cost	= $1,609,700

Raw Water Main Assessment

The town currently maintains a raw water main connection (originally installed in 2011) outside the WTF that was designed to connect the existing wellfields to the WTF and provide a tee and water main stub for the tie-in of additional future wells. In 2021, the town noted a pinhole leak in the ductile iron (DI) water main stub that would connect the future wells. After investigation, it was determined that the SCADA and chemical feed settings within the WTF and controlling the raw water flow into the WTF was potentially allowing for sulfuric acid (H_2SO_4) used for treatment in the WTF to backflow into the inlet raw water piping outside the WTF. Based on the observed pipe condition it is assumed that the sulfuric acid was collecting in this location and corroding the DI pipe causing pinhole leaks. To correct the issue, the town adjusted the SCADA programming at the WTF to turn off the chemical feed prior to raw water flow into the plant being turned off. This allows for the influent to the WTF to flush the residual chemical feed to be flushed from the injection location without potentially migrating back into the exterior piping outside the WTF. An image of the pipe corrosion and repaired the inlet piping is provided below.


Figures 1 & 2: Pipe Corrosion and Repair

The town additionally removed and replaced a portion of the interior raw water header piping adjacent to the sulfuric acid injection point in the WTF with plastic pipe to prevent further corrosion. It is recommended that the town replace a localized portion of the exterior water main outside the WTF and the existing wall penetration of the raw water main into the facility with PVCO or HDPE pipe while the Fogg and Weare well sources are being connected to the raw water main at this location. The material selection may depend on whether an alternative pipe material is chosen for the raw water main from the well sites (discussed further in the following section). It is also recommended that the size be increased from 12-inch to either 16-inch or 20-inch pipe (depending on pipe material) to accommodate the additional flow from the future well sources. This replacement will replace sections of existing pipe that may exhibit corrosion damage and mitigate future leaks of the piping. The pipe replacement work can be incorporated into the anticipated WTF shutdowns associated with this project. An allowance for this replacement is included in the costs presented below equal to $100,000.

Description of Recommended Routing Options/Project Costs

The following is a summary of the three (3) raw water main routing alternatives based on the analysis presented above. The table below presents the approximate water main length of each option, the associated headloss and construction cost estimate. The water main lengths and total headloss include totals from each of the alternatives and the water mains common to all alternatives. The total estimated cost includes the water main construction, supporting infrastructure, engineering, and contingency costs. Costs for supporting infrastructure are also included in the table below.

Table 8: Summary of Routing Options & Supporting Infrastructure

Route	Length of Pipe	Total Headloss	Estimated Cost*
Option 1	12,960 ft	31.8 ft	$9,850,000
Option 2	9,325 ft	26.8 ft	$7,817,500
Option 3	8,360 ft	23.3 ft	$6,860,800

*Inclusive of Supporting Infrastructure costs for well sites

Option 3 is the recommended routing option for the raw water main. Option 3 has the lowest capital cost for the project and shortest length of proposed raw water main. Option 3 will require further correspondence with Eversource to determine what financial compensation or agreement is required for the easement. Further consideration will also have to be given to the wetland permitting required to install raw water main using this routing. If there is concern about the accessibility of the raw water main in the winter months and the town would like to avoid this alternative, Option 2 is recommended. Option 2 has the second lowest cost and length of the proposed water main.

To further reduce the costs of the project as identified above, an alternative pipe material to ductile iron (DI) can be utilized. The town has indicated a willingness to consider alternative pipe materials to reduce the overall project costs. Plastic is a common pipe material alternative to DI due to its corrosion resistance, lower break rate, and durability. Utilization of plastic pipe can avoid the iron industry's supply chain issues, longer lead times, higher costs, and delays in product delivery. Plastic pipe is also compatible with existing DI pipe as it has the same outside diameter and can use the same fittings, valves, and appurtenances. The use of AWWA C909 molecularly oriented polyvinyl chloride (PVCO) or HDPE SDR pipe allow for a savings of approximately $25 and $33 per foot on material costs for open cut installation. PVCO and HDPE have a higher C-value resulting in lower headloss valves over the proposed water main route. For HDPE however, the effective inner diameter is lower than PVCO and DI and may require a larger diameter pipe to stay within headloss design standards. The following table outlines these aspects for each pipe material type. For the purpose of comparison, the information provided below is based on 12-inch pipe. Price estimates are from Spring 2023.

Table 9: Water Main Material Alternatives Comparison

Pipe Material:	Price per LF ($):	Lead Time (weeks):	Effective Inside Diameter (in.)
12-inch HDPE SDR 21	$19.86	6-8	11.5
12-inch PVCO C909	$47.00	4-6	12.1
12-inch DI CL52	$72.00	42	12.1

The following table shows the cost difference in utilizing alternative pipe materials mentioned above if Option 3 is selected. Although the material cost for HDPE is lower, there will be additional costs associated with installation due to the pipe fusing process and the need for additional labor and equipment to complete the pipe installation. Additionally, due to the lower effective diameter of HDPE, the size of the pipe had to be increased for some of the segments mentioned in the analysis to the next standard pipe size to maintain acceptable headloss. Option 3 additionally includes primarily plastic pipe as most of the water main routing is within the powerline corridor. The following table displays the costs if all other pipe segments that were initially provided as DI were installed with the different pipe material.

Table 10: Water Main Routing Option 3 Cost Comparison by Material

Pipe Material:	Total Project Cost
HDPE SDR 21	$6,300,300
PVCO C909	$6,511,600
DI CL52	$6,860,800

As the majority of the pipe length for Option 3 is located within the powerline easement and already requires the use of plastic pipe for installation the cost differential is relatively low. However, for Options 1 or 2 the cost

differential between plastic pipe and ductile iron pipe is significantly higher. It is recommended that the town consider utilizing HDPE SDR 21 or PVCO C909 pipe over DI to reduce the overall costs of the proposed project and provide additionally flexibility for the availability of the materials.

Water Quality and Source Management

A brief water quality assessment was completed focusing on the primary constituents that have affected the town's treatment process including pH, Iron (Fe), Arsenic (As), and Manganese (Mn). The goal of the assessment was to identify any high-level deviations that may impact treatment once the new well sources are incorporated into the WTF flow pattern. The existing well water quality data was provided by the town for their bedrock and gravel packed wells for the month of November 2022.The proposed well water quality data for the Fogg Property wells was gathered from the "Well Installation and Step-Drawdown Withdrawal Testing" report from Geosphere Environmental Management Inc. dated March 26, 2018. The proposed water quality data for the Weare Road wells came from water quality analytics reports from Geosphere Environmental Management Inc. dated April 28, 2021, and May 20, 2021. There is no water quality data available for the future Pineo Wellfield well. The water quality data for the proposed wells is from a single day of pump testing and may therefore produce different water quality results after water is pumped for a longer period of time or through additional sampling. Below is a table displaying the water quality data from the proposed wells compared to the averaged water quality of the existing wells. Well flow rates for the Fogg & Weare sources were updated with revised anticipated flow rates provided by Geosphere in March 2023. For further information please refer to Appendix F – Well Water Quality Data.

Table 11: Raw Water Quality Data – Existing and Proposed Wells

Date	Well Source	Flow (gpm)	pH	As (ug/L)	Fe (mg/L)	Mn (mg/L)
11/1/2022-11/15/2022	1, 2, 3, 4, 5, 5.1, 5.2, GP 2+4 (Existing)	1120	7.3	5	0.23	0.197
11/16/2022-11/28/2022	1, 2, 3, 5, 5.1, GP 2+4 (Existing)	942	7.4	4	0.13	0.179
11/29/2022	1, 2, 3, GP 2+4 (Existing)	770	7.3	3	0.13	0.186
7/13/2017	Well 8-15 (Fogg)	160*	7.5	5	0.18	0.085
7/13/2017	Well F (Fogg)	80*	7.7	12	0.33	0.037
1/15/2018	Well L (Fogg)	340*	7.9	14	0.17	N/A
4/28/2021	Well A (Weare)	150*	8.2	27	0.01	0.082
5/19/2021	Well B (Weare)	50*	8.4	22	N/A	0.085

*Flowrate revised from 2018 report to match updated March 2023 flow rates provided by Geosphere.

Excessively high and low pH can be detrimental for the use of water. A high pH causes a bitter taste, depresses the effectiveness of the disinfection of chlorine (requiring a higher concentration of chlorine), and causes encrusted mineral deposits in water pipes and appliances. On the other hand, low pH will corrode or dissolve metals and other substances. In this application, the pH of the proposed wells on the Fogg Property and Weare Road sites are noted to be slightly higher than the existing well sources ranging from 7.5 - 8.4. The town currently utilizes Sodium Hydroxide (NaOH) to adjust the raw water pH before the iron and manganese removal in the WTF. To remove iron and manganese from water with a filter, a high pH and sufficient oxygen content are necessary to ensure precipitation. The higher pH from the proposed wells may provide a small cost savings in the amount of NaOH used to adjust the pH in the raw water at the WTF.

Arsenic is naturally present in New Hampshire groundwater. Arsenic is associated with increased risks of bladder, lung, and skin cancers as well as circulatory problems. New Hampshire's new maximum contaminant level (MCL) of 5 parts per billion (ppb) for arsenic in public water systems took effect in July of 2021. NHDES has also adopted the same 5 ppb limit as an enforceable Ambient Groundwater Quality Standard (AGQS). The proposed wells (aside from Well 8-15) on the Fogg Property and Weare Road are anticipated to have significantly higher arsenic in the raw water than the existing wells. Therefore, treatment for arsenic at the WTF will require adjustment to adequately remove the contaminate at a higher concentration in the raw water.

Iron is a secondary or aesthetic contaminant due to its staining of plumbing fixtures and laundry. Manganese also causes these undesirable effects. The federal and state secondary aesthetic standards (reference levels), established under the Safe Drinking Water Act of 1974, are iron 0.30 mg/L and manganese 0.05 mg/L. The occurrence of manganese in drinking water above US Environmental Protection Agency's (EPA) Health Advisory Level of 0.3 mg/L is a human health risk concern. Over the long-term, consumption of water by the general population containing levels of manganese above 0.3 is not advisable. Manganese consumption has been linked to several types of cancer and developmental/reproductive effects. There are no health-based standards for iron in drinking water in New Hampshire. The concentrations of iron and manganese in the proposed wells on the Fogg Property and Weare Road were noted to be at or below the concentrations from the existing wells. Based on the Safe Drinking Water Act Standards, the wells that are above the aesthetic standards are Well F (Fogg Property) with an iron concentration of 0.33 mg/L, and Well 8-15, Well A, and Well B with manganese concentrations of 0.085, 0.082, and 0.085 mg/L, respectively. The treatment chemical dosages and frequency of backwash to treat iron and manganese still require minor adjustment when the new sources are online but are not anticipated to have a major impact to the existing treatment process.

Funding Strategy & Schedule Determination

The following section details supplementary funding sources for public infrastructure in addition to town funding/municipal bonding. Each source has varying criteria, application deadlines, scheduling considerations, and funding availability. The town has the ability to explore these funding options and can submit applications to these agencies once project components and timelines are better determined. Based on discussions with the town, it is anticipated construction will commence in 2025. Pertinent information to each funding source is provided below.

United States Department of Agriculture – Rural Development (USDA- RD)

Applications for Water & Waste Disposal Loan and Grant Program (NH) through the USDA-RD are accepted for state and local governments and private non-profit serving rural areas (<10,000 people.). According to the 2020 US Census, Seabrook has a population of 8,401. Funding availability includes long term, low interest loans, as well as grants. Applications for this program are accepted year-round online and through the local Rural Development office.

NH Community Development Finance Authority (CDFA) – Community Development Block Grant (CDBG)

One of the services provide by the CDBG program is to help finance water and sewer system improvements to meet community revitalization needs, particularly for communities of low and moderate income. The project must benefit predominantly low-to-moderate income (LMI) individuals, or those who are under 80% of the area MHI (Seabrook MHI $76,640). According to the LMI mapping tool used by the CDFA, the Seabrook population is 60% LMI individuals and appears to be eligible for funding at this time. The maximum funds provided per year are $500,000 per community (fiscal year is July to June).

Northern Borders Regional Commission (NBRC) Funding

The NBRC invests economic and infrastructure projects in Belknap, Carroll, Cheshire, Coos, Grafton, and Sullivan counties. Therefore, the town of Seabrook is not eligible for funding under this program.

NHDES – Drinking Water State Revolving Fund (DWSRF)

The purpose of the DWSRF offered by NHDES is to provide assistance in the form of low-interest loans to public water systems to finance the cost of drinking water infrastructure. The DWSRF Program solicits pre-applications annually in the spring of each year which are due in June. All pre-applications are ranked based upon the criteria outlined in the Intended Use Plan (IUP). A project priority list (PPL) is created according to the calculated project ranking and selection to receive DWSRF funding. The DWSRF Program publishes the draft PPL in July or August of each year and distributes for public comment each fall. Eligible applications selected for funding are required to submit a final application by spring of the following year.

NHDES – Drinking Water Groundwater Trust Fund (DWGTF)

The purpose of the DWGTF offered by NHDES is to provide funding assistance for drinking water infrastructure improvement projects. The DWGTF typically awards funding to projects that have established other funding sources for the remaining costs of the project. It is recommended that the town establish these other funding sources before the application deadline to be included in the application. The approximate deadline for applications is October (estimated based on 2022 application dates). All project applications will be reviewed for adherence to the DWGTF Award Plan. The project applications are then ranked based on criteria established in the Award Plan and presented to the Advisory Commission in November. Applicants will be notified of DWGTF funding decisions in November/December with final applications for funding (including local borrowing authority) to be submitted the following June.

Conclusion

Based on the cost comparison of the routing alternatives Option 3 is the recommended route for the raw water main from the Fogg Property/Pineo Wellfield and Weare Road wells to the WTF. Option 3 includes the installation of proposed raw water main from the proposed Fogg Property and Weare Road well sites south to the existing powerline corridor (owned by Eversource), in the powerline corridor to NH Route 107, on NH Route 107 to the NH Route 107 Crossing adjacent to the WTF easement, and in the WTF easement to the WTF. Although Option 3 will require water main installation within a powerline corridor easement and NHDOT ROW, it has the lowest cost and total length of proposed water main. Option 3 will require further correspondence with Eversource to determine what financial compensation or agreement is required for the easement. Further consideration will also have to be given to the wetland permitting required to install raw water main using this routing. If there is concern about the accessibility of the raw water main in the winter months and the town would like to avoid this alternative, Option 2 is recommended. Option 2 does not include water main installation within the powerline corridor easement or the NHDOT ROW (aside from the NH Route 107 Crossing) and has the second lowest cost and length of the proposed water main. To further reduce overall project costs, the use of HDPE or PVCO pipe is recommended over DI if acceptable to the town. Higher construction costs, headloss, and construction restrictions/requirements within NHDOT ROW make Option 1 the least preferred routes for installation of the proposed raw water main.

Thank you for the opportunity to assist the Town of Seabrook. Please let me know if you have any questions regarding the contents of this report.

Sincerely,

WESTON & SAMPSON ENGINEERS, INC.

Samuel H. Kenney, P.E.
Project Manager/Team Leader

Enclosures:

Appendix A: Raw Water Main Routing Options Map
Appendix B: Well Sites
Appendix C: NHDOT ROW Map
Appendix D: Environmental/Conservation Map
Appendix E: Supporting Infrastructure Cost Breakdown
Appendix F: Well Water Quality Data

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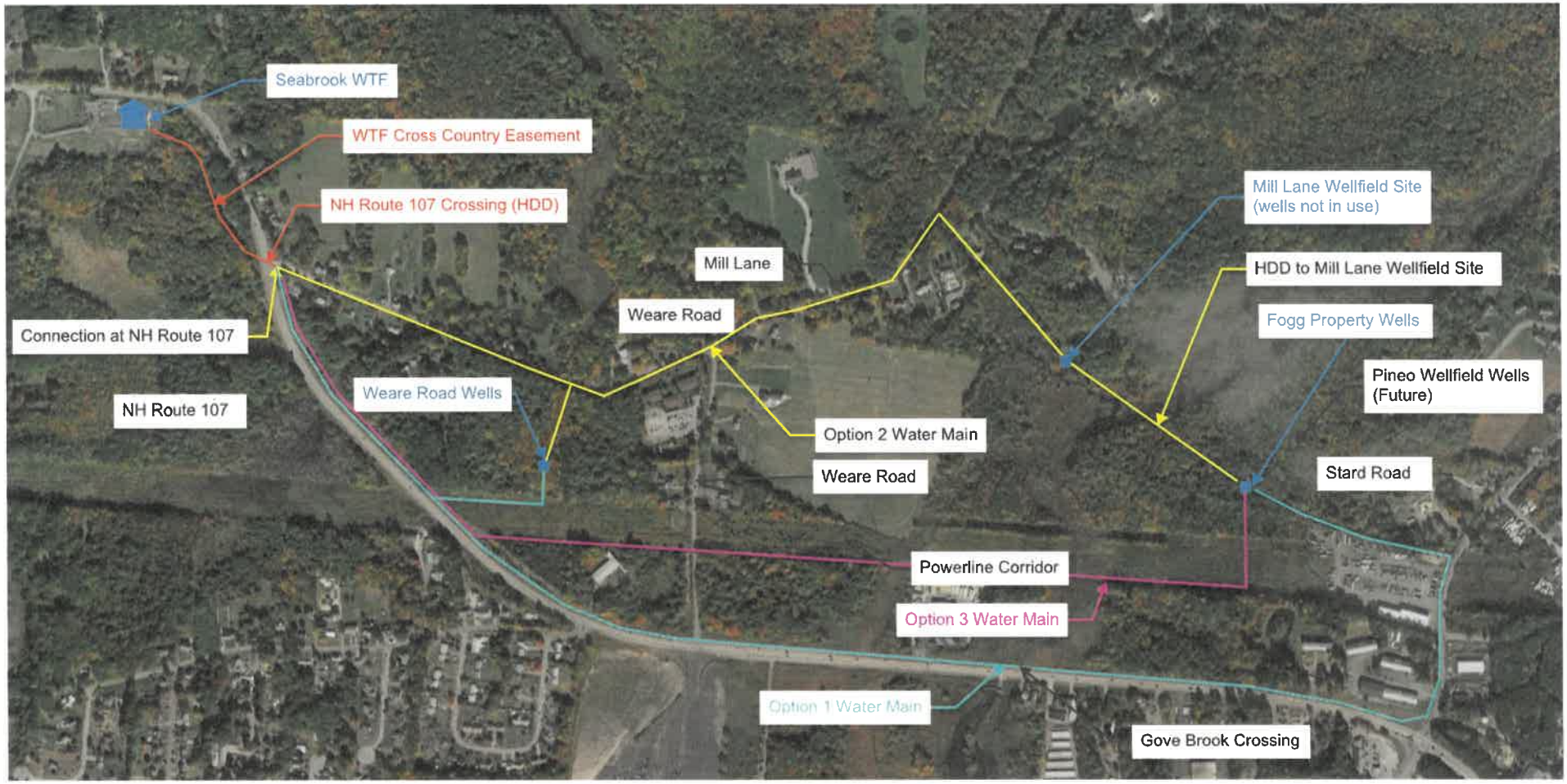
Appendix A:
Seabrook Source Integration and Water Main Routing Analysis -
Raw Water Main Routing Options Map



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Legend:	
Existing Water System Features	
Water Mains Common to all Alternatives	
Option 1: NH Route 107	
Option 2: HDD to Pineo Wellfield, Mill Lane, Weare Road	
Option 3: Powerline Corridor and NH Route 107	
Roads and Features	

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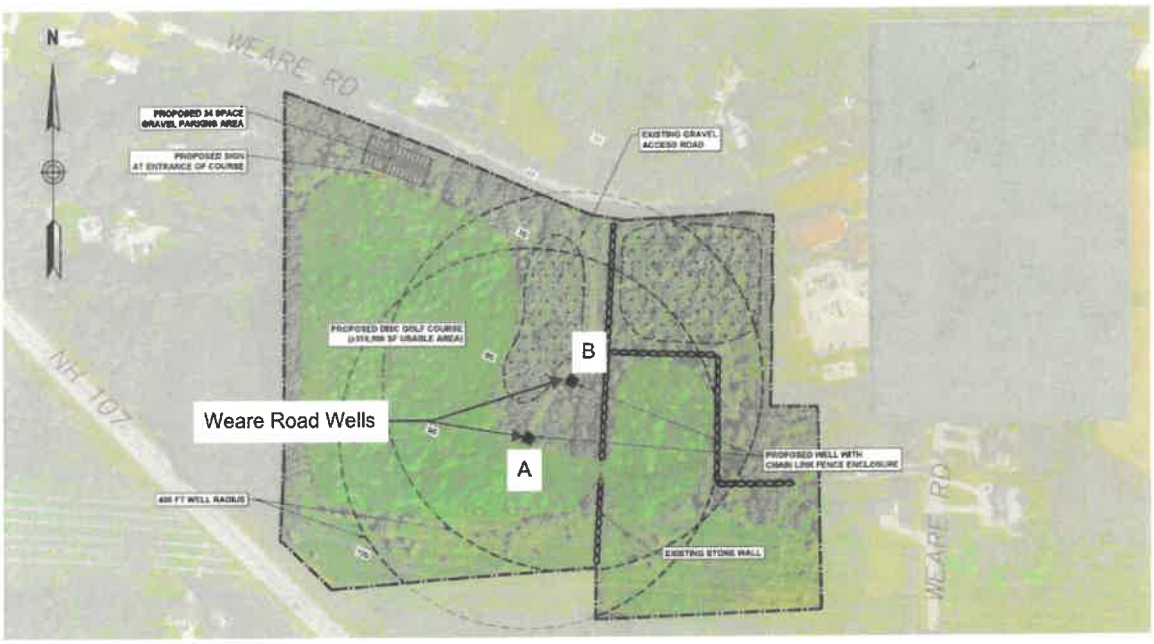
SCALE: 1"=850'

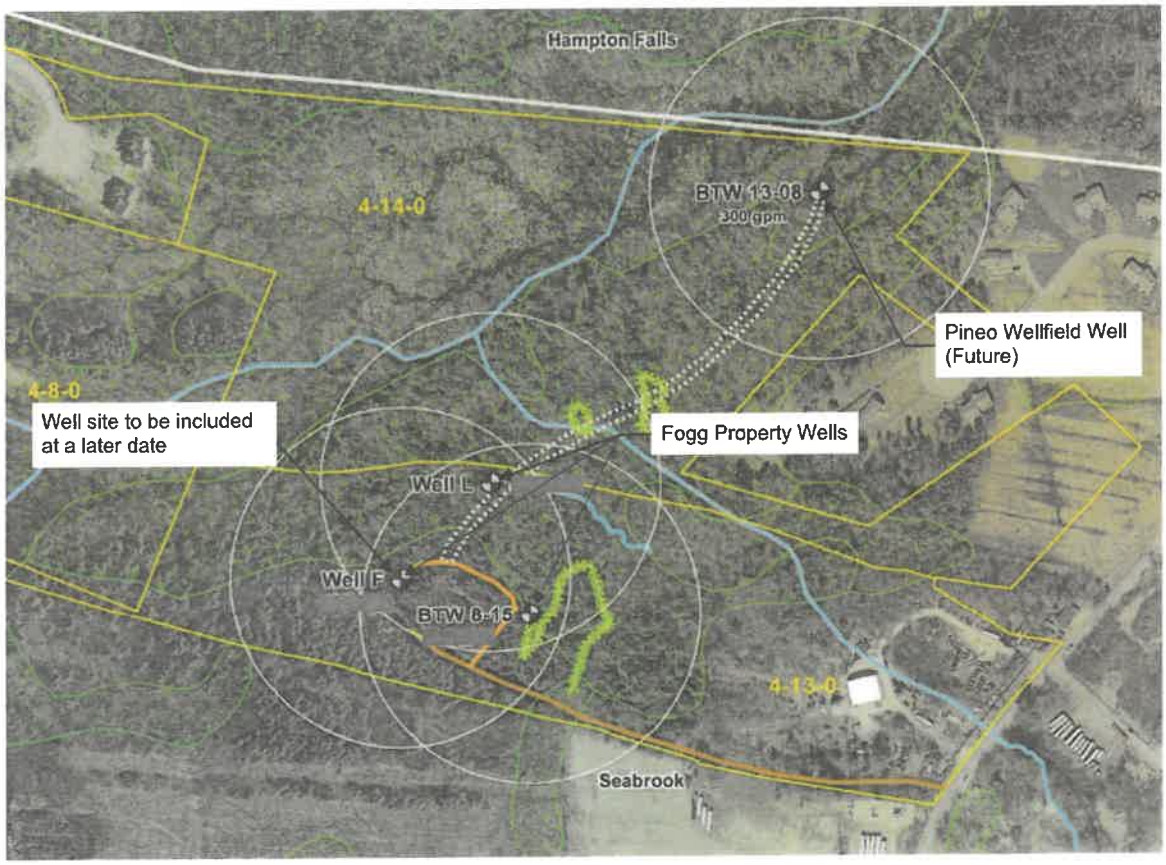
Weston & Sampson

Appendix B:
Seabrook Source Integration and Water Main Routing Analysis - Well Sites

Weare Road Wells:



Fogg Property and Pineo Wellfield Wells:



Appendix C:
Seabrook Source Integration and Water Main Routing Analysis - NHDOT ROW Map

Legend:

Standard Right of Way	
Controlled Access Right of Way	
Limited Access Right of Way	

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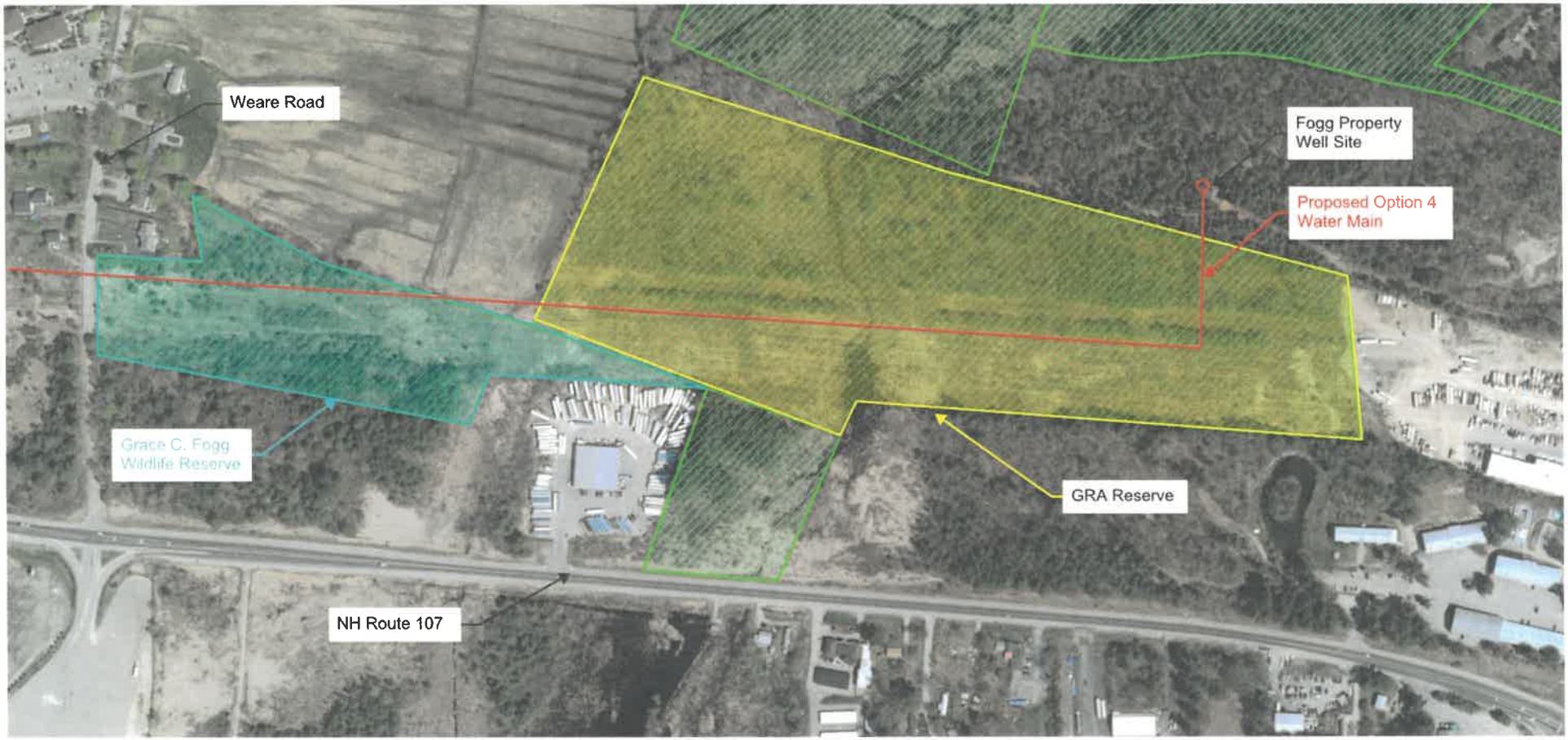
SCALE: 1"=850'

Weston & Sampson

Appendix D:
Seabrook Source Integration and Water Main Routing Analysis -
Environmental/Conservation Map



Appendix E:
Seabrook Source Integration and Water Main Routing Analysis - Supporting Infrastructure Cost Breakdown

Option 1 - NH Route 107 and Weare Road

Water Main Section	Length of Segment (ft)	Unit Cost NHDOT Markup (5%)	Unit Cost (w/ const.& NHDOT)	Section Total Cost
(Fogg) Well to Stard Road	2200	$ -	$ 325.26	$ 715,574
(Fogg) Stard Road	1000	$ -	$ 398.96	$ 398,957
(Fogg) Route 107 to Powerline Corridor	5950	$ 19.95	$ 418.90	$ 2,492,482
(Weare) Well to Powerline Corridor	235	$ -	$ 241.26	$ 56,696
(Weare) Powerline Corridor	700	$ -	$ 229.10	$ 160,370
(Both) Route 107 to Weare Road (EW)	1650	$ 24.75	$ 423.70	$ 699,112
(Both) Crossing Route 107 (HDD) (NHDOT)	200	Included in Lump Sum (S1C)	Lump Sum	$ 547,281
HDD Site Preparation	N/A	N/A	Lump Sum	$ 121,618
(Both) Cross Country from Route 107 to GWTF	975	$ -	$ 325.26	$ 317,129
WTP Connection Replacement	50	$ -	$ 494.96	$ 100,000
			Engineering	$ 704,352
			NHDOT ROW ENG	$ 25,000
			Contingency (30%)	$ 1,901,572
			Total Cost	$ 8,240,144

Option 2 - HDD Under Marsh (DI)

Water Main Section	Length of Segment (ft)	Unit Cost NHDOT Markup (5%)	Unit Cost (w/ const.)	Section Total Cost
(Fogg) HDD from Stard Well to Mill Lane Well Site	800	$ -	$ 290.16	$ 232,130.41
HDD Site Preparation	N/A	N/A	Lump Sum	$ 121,618.10
(Fogg) Connect Fogg Wells to HDD	1450	$ -	$ 325.26	$ 471,628.26
(Fogg) Mill Lane Wells to Mill Lane	900	$ -	$ 398.96	$ 359,060.87
(Fogg) Mill Lane/Weare Road to Weare Well Lateral	2500	$ -	$ 398.96	$ 997,391.30
(Weare) Well to Weare Road	450	$ -	$ 241.26	$ 108,567.39
(Weare) Weare Road	2000	$ -	$ 398.96	$ 797,913.04
(Both) Crossing Route 107 (HDD) (NHDOT)	200	Included in Lump Sum (S1C)	Lump Sum	$ 547,281.46
HDD Site Preparation	N/A	N/A	Lump Sum	$ 121,618.10
(Both) Cross Country from Route 107 to GWTF	975	$ -	$ 325.26	$ 317,129.35
WTP Connection Replacement	50	$ -	$ 494.96	$ 100,000
			Engineering	$ 590,940
			NHDOT ROW ENG	$ 10,000.00
			Contingency (30%)	$ 1,432,583.49
			Total Cost	$ 6,207,861.79

Option 3 - Powerline Corridor + NH Route 107 (DI)

Water Main Section	Length of Segment (ft)	NHDES/NHDOT Markup ($20 Per LF	Unit Cost (w/ const.& NHDOT)	Section Total Cost
(Stard) Well to Powerline Easement	500	$ 20.00	$ 345.26	$ 172,630.43
(Stard) Powerline Easement to Weare Road Wells	4300	$ 20.00	$ 264.38	$ 1,136,822.03
(Weare) Well to Powerline Easement	235	$ 20.00	$ 261.26	$ 61,396.30
(Both) Along Powerline to NH Route 107	700	$ 20.00	$ 264.38	$ 185,064.05
(Both) Power Lines to Weare Road (EW)	1900	$ 20.00	$ 418.96	$ 796,017.39
(Both) Crossing Route 107 (HDD) (NHDOT)	200	Included in Lump Sum (S1C)	Lump Sum	$ 547,281.46
HDD Site Preparation	N/A	N/A	Lump Sum	$ 121,618.10
(Both) Cross Country from Route 107 to GWTF	975	$ -	$ 325.26	$ 317,129.35
WTP Connection Replacement	50	$ -	$ 494.96	$ 100,000
			Engineering	$ 576,432
			NHDOT ROW ENG	$ 25,000.00
			Contingency (30%)	$ 1,211,817.34
			Total Cost	$ 5,251,208.47

Fogg Property				
Equipment/Item	Quantity	Unit	Unit Cost	Total Cost
Pitless Adapter and Well	2	each	$ 43,446	$ 86,892
Site Fencing	200	LF	$ 110	$ 22,086
Instruments and VFDs	3	each	$ 50,722	$ 152,166
Pump Station	1	each	$ 652,867	$ 652,867
Paved Driveway	450	Ton	$ 175	$ 78,750
			Total Cost:	$ 992,762

Weare Road				
Equipment/Item	Quantity	Unit	Unit Cost	Total Cost
Pitless Adapter and Well	2	each	$ 43,446	$ 86,892
Site Fencing	200	LF	$ 110	$ 22,086
Instruments and VFDs	2	each	$ 50,722	$ 101,444
Paved Driveway	200	CY	$ 175	$ 35,000
Electrical Utility Allowance	1	each	$ 25,000	$ 25,000
			Total Cost:	$ 245,423

Appendix F:
Seabrook Source Integration and Water Main Routing Analysis - Well Water Quality Data

Combined Raw Water Water Quality (Existing Wells)							
Date	Well Sources	Flow (gpm)	pH	As (ug/L)	Fe (mg/L)	Mn (mg/L)	Notes
11/1/2022	1, 2, 3, 4, 5, 5.1, 5.2, GP 2+4	1102	7.41	7	0.16	0.192	-
11/2/2022	1, 2, 3, 4, 5, 5.1, 5.2, GP 2+4	1117	7.24	5	0.18	0.186	-
11/3/2022	1, 2, 3, 4, 5, 5.1, 5.2, GP 2+4	1137	7.29	8	0.22	0.188	-
11/4/2022	1, 2, 3, 4, 5, 5.1, 5.2, GP 2+4	1117	7.29	9	0.24	0.192	-
11/5/2022	1, 2, 3, 4, 5, 5.1, 5.2, GP 2+4	1136	7.33	8	0.33	0.218	-
11/6/2022	1, 2, 3, 4, 5, 5.1, 5.2, GP 2+4	1163	7.35	3	0.40	0.225	-
11/7/2022	1, 2, 3, 4, 5, 5.1, 5.2, GP 2+4	1112	7.44	7	0.24	0.185	-
11/8/2022	1, 2, 3, 4, 5, 5.1, 5.2, GP 2+4	1130	7.33	5	0.23	0.201	-
11/9/2022	1, 2, 3, 4, 5, 5.1, 5.2, GP 2+4	1075	7.43	3	0.20	0.195	-
11/10/2022	1, 2, 3, 4, 5, 5.1, 5.2, GP 2+4	1123	7.43	7	0.33	0.196	-
11/11/2022	1, 2, 3, 4, 5, 5.1, 5.2, GP 2+4	1133	7.37	5	0.20	0.193	-
11/12/2022	1, 2, 3, 4, 5, 5.1, 5.2, GP 2+4	1145	7.30	3	0.10	0.197	-
11/13/2022	1, 2, 3, 4, 5, 5.1, 5.2, GP 2+4	1100	7.26	3	0.18	0.195	-
11/14/2022	1, 2, 3, 4, 5, 5.1, 5.2, GP 2+4	1090	7.35	3	0.16	0.186	-
11/15/2022	1, 2, 3, 4, 5, 5.1, 5.2, GP 2+4	1115	7.34	2	0.22	0.199	As - <2
11/16/2022	1, 2, 3, 5, 5.1, GP 2+4	943	7.51	3	0.15	0.191	-
11/17/2022	1, 2, 3, 5, 5.1, GP 2+4	935	7.35	5	0.10	0.182	-
11/18/2022	1, 2, 3, 5, 5.1, GP 2+4	920	7.40	5	0.06	0.173	-
11/19/2022	1, 2, 3, 5, 5.1, GP 2+4	930	7.34	3	0.14	0.184	-
11/20/2022	1, 2, 3, 5, 5.1, GP 2+4	961	7.36	2	0.17	0.192	As - <2
11/21/2022	1, 2, 3, 5, 5.1, GP 2+4	936	7.39	8	0.11	0.171	-
11/22/2022	1, 2, 3, 5, 5.1, GP 2+4	913	7.45	5	0.14	0.179	-
11/23/2022	1, 2, 3, 5, 5.1, GP 2+4	927	7.39	2	0.10	0.173	As - <2
11/24/2022	1, 2, 3, 5, 5.1, GP 2+4	956	7.33	3	0.15	0.181	-
11/25/2022	1, 2, 3, 5, 5.1, GP 2+4	966	7.35	8	0.13	0.173	-
11/26/2022	1, 2, 3, 5, 5.1, GP 2+4	962	7.39	2	0.15	0.168	As - <2
11/27/2022	1, 2, 3, 5, 5.1, GP 2+4	952	7.31	2	0.17	0.183	As - <2
11/28/2022	1, 2, 3, 5, 5.1, GP 2+4	944	7.45	8	0.11	0.183	-
11/29/2022	1, 2, 3, GP 2+4	770	7.31	3	0.13	0.186	-
	High	1163	7.51	9	0.40	0.225	
	Low	770	7.24	2	0.06	0.168	
	Average	1028	7.36	5	0.18	0.189	

1, 2, 3, 4, 5, 5.1, 5.2, GP 2+4					
High	1163	7.44	9	0.40	0.225
Low	1075	7.24	2	0.10	0.185
Average	1120	7.34	5	0.23	0.197

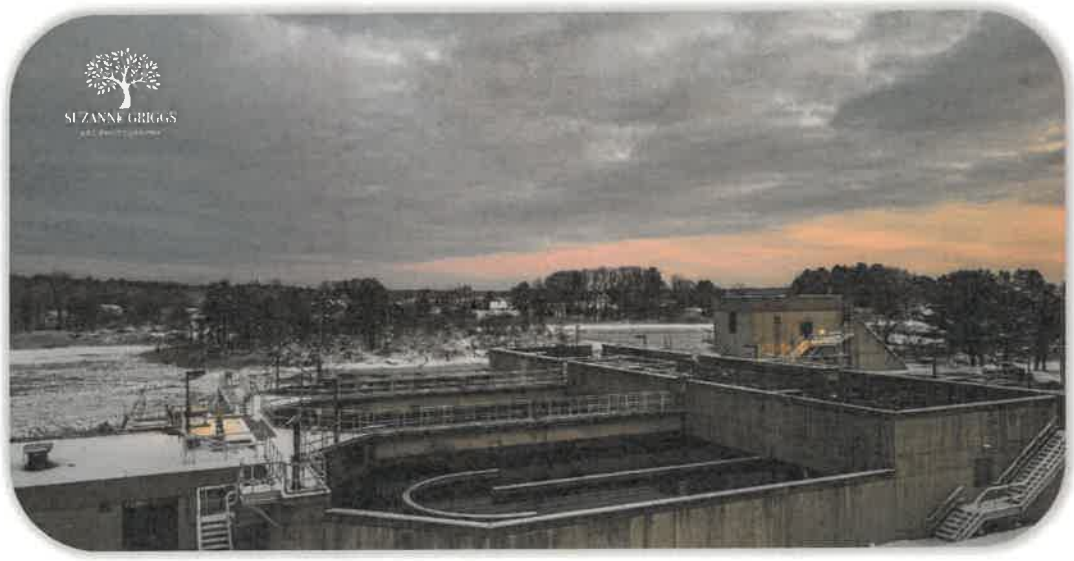
1, 2, 3, 5, 5.1, GP 2+4					
High	966	7.51	8	0.17	0.192
Low	913	7.31	2	0.06	0.168
Average	942	7.39	4	0.13	0.179

Combined Raw Water Water Quality (Proposed Wells, Fogg Property)							
Date	Well Sources	Flow Est. (gpm)	pH	As (ug/L)	Fe (mg/L)	Mn (mg/L)	Notes
7/13/2017	Well 8-15 (Fogg)	160*	7.5	5	0.18	0.085	-
7/13/2017	Well F (Fogg)	80*	7.7	12	0.33	0.037	-
1/15/2018	Well L (Fogg)	340*	7.9	14	0.17	N/A	-
4/28/2021	Well A (Weare)	150*	8.2	27	0.01	0.082	
5/19/2021	Well B (Weare)	50*	8.4	22	N/A	0.085	

*The flowrate during the pumping tests for the proposed wells was not consistent throughout. The provided valvues are estimates yields for the wells from the respective reports.

COLLECTION SYSTEM CAPACITY, MANAGEMENT, OPERATIONS & MAINTENANCE PROGRAM

2022 ANNUAL REPORT



NPDES PERMIT NO: NH0101303

MARCH 2023

THE TOWN OF SEABROOK,
NH WASTEWATER
DEPARTMENT
274 RTE 286 – WRIGHT'S ISLAND
SEABROOK NH 03874

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ATTACHMENTS

I Flow History & Solids Table

II Collection System Maintenance Maps

SECTION 1 : Seabrook CMOM Program

A. CMOM Program and Collection System Overview

This annual report provides a summary of completed and planned activities for implementation of the Seabrook Collection System Capacity, Management, Operation, and Maintenance (CMOM) Plan. The Town's CMOM program is an on-going continuous effort to properly maintain the Seabrook NH collection system.

The Town of Seabrook owns and maintains approximately 50-miles of sanitary sewer collection system serving most of the Town's population. Within the collection system network are 75 simplex pumping stations (maintained by the Sewer Department on private property), 2 custom pump stations (Route 286 & Centennial Street), 3 major wastewater pumping stations (Route 107, Rocks Road, Route 1A), 18 minor (duplex) pumping stations, and 2 storm water drain stations. There are no combined sewers in Seabrook.

B. Goals of the CMOM Program

The primary goals of Seabrook's CMOM program are as follows:

1) **Identification of Potential Overflow Sites**
   a) Using the annual sewer inspection and flushing program we will continue to search for suspected or potential overflow sites within the sewer system including gravity sewers, manholes, pump stations and force mains.
2) **Inflow/Infiltration (I/I) Prevention**
   a) Working with the Town's Planning Board, Building Department and through participation on the Technical Review Committee we will continue to monitor and inspect sewer construction activities in Town as new sewer extensions and building service connections are constructed.
   b) Disconnect and/or redirect illegal sump pumps and roof down spouts that are found to be connected to the collection system.
   c) Monitor pump station flow trends to identify acute or chronic (extended) periods of extraneous flows in excess of average daily/monthly/yearly flows for each pump station.
   d) Continue with the program of sending written notices to resident's whose services are found to be contributing extraneous flow to the sewer system as a result of sewer video inspections and routine maintenance of pump stations
3) **Public Outreach/Public Education**
   a) Provide town residents with information on the importance of wastewater treatment through our website and by increasing our social media presence. In 2023 we will continue our efforts to educate the public on the importance of capital improvements and funding through our asset management program
   b) Continue the practice of responding to all homeowner requests for assistance with sewer system problems even if problems are suspected to rest solely with the homeowner.
   c) Use all of our outreach methods to educate on the importance of restricting private

sources of extraneous inflow as well as providing guidance documentation on household flushing. In 2023 we will be working with the Water Dept. to distribute guidance documentation with the quarterly billing.

4) Emergency Management
   a) Maintain accurate records and expand on the current database of vendors, suppliers and contractors who provide parts, supplies and manpower to assist the Seabrook Sewer Department with responding to sanitary sewer system emergencies.

In the event of an emergency our on-call operator is notified automatically by our SCADA alarm system or by phone. All Public Safety departments are provided with an updated on call rotation schedule and contact list. There are several fail-safe notifications in place to ensure a timely response to all emergencies. Our operators have access to the GIS database and SCADA system remotely by handheld device.

A. Staffing

Staffing at the Seabrook Sewer Department includes: the Superintendent, Chief Operator, Collection System Foreman, Chief Mechanic, Lab Technician, IPP Coordinator, three (3) Operators, one (1) Mechanic, one (1) part time laborer, and a secretary.

Each member of the WWTF and collection systems staff performs multiple duties related to the operation and maintenance of both facilities. The collection system Foreman oversees the maintenance and repairs of collection system components. The Foreman has at his disposal laborers, and operators to carry out the operation, maintenance, repair, and testing functions required to ensure reliable operation of the collection system. Independent contractors are used as needed.

The following positions were vacant and/or filled in 2022:

- **Operator(s):** There was one operator vacancy during 2022. In June 2022 an operator from the water department filled the vacant wastewater operator position.
- **Part Time Laborer:** This position was filled in March 2022.

Training: All new staff members were provided with comprehensive in-house collection system training prior to being placed onto afterhours emergency response duty.

B. Information Management

Information management at the facility includes a full Supervisory Control and Data Acquisition (SCADA) system that captures and retains historic data on the collection system operation such as raw wastewater flow into the WWTF; pump station operations,

alarms, loss of power; emergency generator run time (weekly exercise and emergency operation) and pump run time. Preventive maintenance activities pertaining to the collections system have been recorded using the GIS system. Including but not limited to: PS maintenance and repairs, manhole inspections, and flushing logs. All of this information is stored in a web-based system and is easily accessible through the PeopleGISQuickAsset (QA) tool. This tool provides staff the ability to create, issue, and complete asset work orders in the field. Staff can also add missing or incomplete asset information in real-time.

Improvements in Information Management completed in 2022 and planned for 2023 include:

- Continued use of iPads for work order management through GIS and remote operation of the SCADA system
- Completed work with Hoyle Tanner on asset management in early 2022. The asset management program complete with vertical assets is now in full use and we are using it on a regular basis to do everything from track repairs to assign work orders.
- We transitioned to a new SCADA software in 2022, GE iFix is now doing the work of alarm monitoring/notification, data logging, and everything associated with it without any hiccups.
- Started work with Weston and Sampson on a pump station study with the intention of putting together a plan to start upgrading and updating pump stations in the future.

C. Annual Budget and Expenditures

The Sewer Department maintains an annual budget for operations and maintenance that is subject to approval at Town Meeting; with a default budget if the main budget is not approved. The annual budget is derived from a combination of sewer user fees and the overall tax base. Capital improvement projects (typically projects in excess of $25,000) are subject to special approval at annual Town Meeting through warrant article. The current funding levels are adequate to operate and maintain the current WWTF and sanitary sewer system.

The Town has begun to track expenditures for maintenance separately between the collection system and treatment plant facilities. A general breakdown of the collection system maintenance spending is presented in the table below.

Table I

Maintenance Activity	2022 Direct Cost
Preventative Maint. Program	$35,000
General Maint & Repairs Major PS	$11,500
Sewer Jetting	$12,500
Centennial Muffin Monster Replacement	$28,500
Annual Generator Service	$3,275
Centennial Generator Repairs	$12,700
Lower Collins Manholes Camera and Raising	$8,600
Manhole Frame & Cover Replacements	$1,650
Force Main Cleaning	$19,500
Broken Manhole Replacements	$3,000
TOTAL	*$136,225*

SECTION 2: Management Plan and Budget

Specific line items within the 2022 annual budget related to maintenance include the following. As indicated in Table 2, these budgets are for the department and may include costs for both the collection system and the treatment plant.

Table II

Budget Line Item	2022 Budget
New Equipment	70,000
Equipment Maintenance	95,000
Engineering	20,000
Equipment Rental	5,000
Total Sewer Department Budget	**$2,081,520**

D. Warrant Articles Presented in 2022

The following warrant articles were on the ballot for 2022 that are relevant to collection system maintenance activities:

ARTICLE 18

To see if the Town will vote to raise and appropriate the sum of One Hundred Twenty-Thousand Dollars ($120,000.00) for the purpose of upgrading the System Control and Data Acquisition (S.C.A.D.A.) system at the Town Wastewater Department. This would replace and upgrade the software that was initially installed in 1995 and is badly dated. This will be a non-lapsing appropriation per RSA 32:7, VI and will not lapse until the project is completed or in two (2) years (December 31, 2024), whichever occurs first. This is a special warrant article. (Majority vote required) (Recommended by the Board of Selectmen) (Recommended by the Budget Committee) (Estimated $0.037 impact per $1,000 on the tax rate).

VOTE FAILED 535-505

ARTICLE 19

To see if the Town will authorize the Board of Selectmen to enter into a five-year lease/purchase agreement in the amount of One Hundred Fifty-Thousand Dollars ($150,000.00) for the acquisition and equipping of a Septic Hauler for the Wastewater Department, and to raise and appropriate the sum of Thirty Thousand Dollars ($30,000.00) for the first year's payment for that purpose. This lease/purchase agreement contains an escape clause. (Majority vote required) (Recommended by the Board of Selectmen) (Recommended by the Budget Committee) (Estimated $0.009 impact per $1,000 on the tax rate.)

VOTE FAILED 599-439

SECTION 3: Annual Maintenance Program

A. Preventive Maintenance & Monitoring Program

Seabrook maintains an ongoing preventive maintenance program to reduce potential overflows and bypasses caused by malfunctions or failures of the sanitary sewer system. The Town has its own basic video inspection equipment with limited capabilities and jetting equipment. The current annual preventive maintenance program includes the following:

- Annual inspection and sewer main jetting with a goal of inspection and/or jetting an average of 5 miles per year of sanitary sewers.
- Use annual inspections to eliminate extraneous flows from sump pumps, pipe leaks, manhole leaks, etc.
- Manhole maintenance including reset rims and covers, repair brick work and repair leaking or damaged service connections.
- Major pump station maintenance including weekly inspections, complete and thorough cleaning (annually), and comprehensive alarm testing (annually).
- Weekly exercising of pump station generators.
- Repair or replace sewer pipe found to be leaking or damaged.

B. Collection System Activities

- 5.4 miles of gravity sewer cleaned and inspected.
- Annual wet well cleaning and inspection to all town owned pumping stations was completed.
- Repaired wet well isolation gate at 1A pump station to facilitate a first-time wet well cleaning.
- Three manhole covers and frames were replaced on Lakeshore Dr and one cover and frame was replaced on Allison Dr.
- New manhole covers and frames were installed on Woodstock St and Maple Ridge Rd to replace broken frames.
- Annual service and testing of generators were completed and documented by Scherbon Consolidated Inc.
- All water backflow prevention devices were inspected and serviced, if required.
- Force main cleaning of three pump stations totaling 6,762 ft of pipe.
- Gravity main at end of Lower Collins St was camera inspected, previously undocumented and unmarked stubs were identified and recorded for future planned development. Three buried manholes were raised.
- Centennial St pump station received a new Muffin Monster grinder.
- The new Blackwater Bridge outfall pipe was installed during 2022 and we have been using it since December 30th without any issues.

SECTION 3: Annual Maintenance Program

Table III

Flushing Log

Street Name	Pipe Length (ft)	Street Name	Pipe Length (ft)
Brooks Rd	1451	Meredith Dr	566
Butland Ave	859	Parkersville Ln	2174
Collins St	1392	Pickens Ave	1171
Elephant Rock Rd	436	Route 286	1169
Fowler Ct	729	South Main St	5766
Granddaughters Way	701	Viola Circle	2218
Janvrin Dr	667	Worthley Ave	1491
Laura Ln	233	Old Salt Dr	524
Lower Collins St	2717	Saltmarsh Ave	585
Marshview Circle	3501		

28350 ft (5.4 miles)

C. Industrial Pretreatment Activities

Our Industrial Pre-Treatment Department conducted a total of 23 physical inspections of the 50 hydro mechanical and gravity grease interceptors that discharge directly to the Seabrook sanitary sewer system.

Table IV

Permitting

PERMIT CLASS	JAN 2022	GAIN/LOSS	VIOLATION	JAN 2023
1	5	0/0	0	5
2	8	0/0	0	8
3	88	0/2	0	86
TOTAL	**101**	**0/2**	**0**	**99**

D. New Connections

The Seabrook Sewer Department approved 10 permit applications in 2022 for new connections to the system. Nine of these new connections were residential with only one commercial connection, all were reviewed and inspected by the collections system foreman.

E. 2023 Planned Collection System Maintenance Activities

For 2023 the Sewer Department has planned the following collection system maintenance andmonitoring activities:

- Regular preventive maintenance activities at main pump stations with corrective maintenance as needed.
- Continued cross training of all staff members to become proficient in all aspects of the various department operations.

SECTION 3: Annual Maintenance Program

- Continue to transfer paper-based collection system information to a digital GIS mapping system.
- Continue with the annual program of sewer main jetting.
- Continue to review current maintenance protocols and ordinance requirements for privately owned sewer collection systems
- Update pump station O&M Manuals and add to our GIS system
- Upgrade/replace the odor control system at the Centennial St pump station
- Routine sewer force main cleaning of three more pump stations.
- Replacement of a pump at Centennial St pump station
- Replacement of worn-out manhole covers and frames during street repaving
- Upgrade submersible pump bases at Autumn Way pump station
- The 2019 Coastal Resiliency grant is being used to harden the facility and its collections system against the impending coastal flooding expected to be more common in the future. We are currently in the planning process with the intention of starting work in 2024 at the latest.
- Replacement of at least one Gorman Rupp pump at pump stations
- Necessary pump replacements at one or more Gorman Rupp stations
- Preventative pump replacement at Centennial St pump station

SECTION 4: Overflow Response

The Town of Seabrook experienced only one reportable overflow event in 2022.

- 06/14/2022: Five Guys restaurant located at 380 Lafayette Rd had an overflowing grease interceptor. A downstream private manhole was found to have bricks blocking the invert restricting the passage of wastewater. We cleared the bricks out and restored proper flow as well as limed and cleaned up the affected area. The property owner was notified, and they followed up to repair and clean the effected manholes and lateral.

SECTION 5: System Capacity Evaluation

A. System Capacity

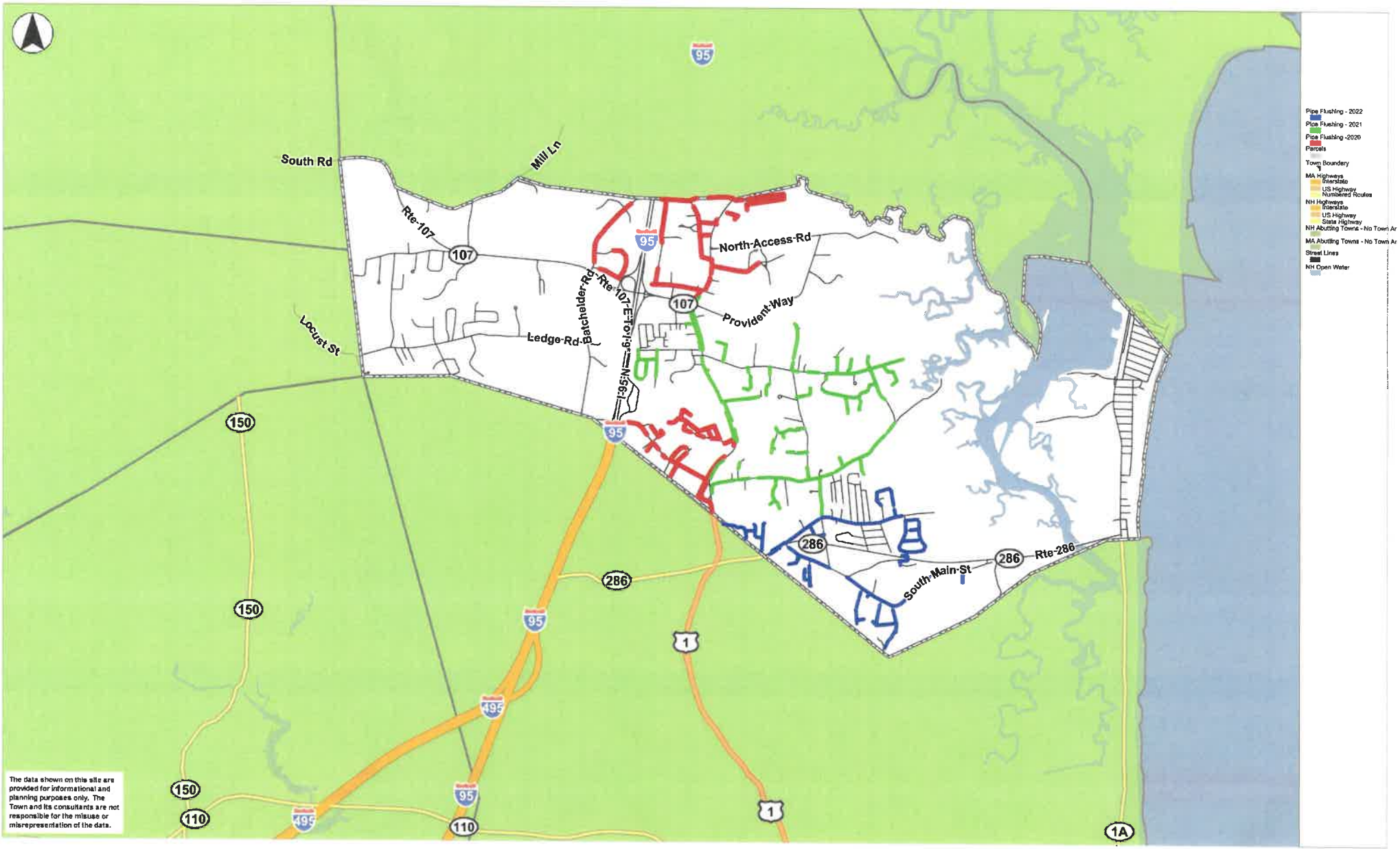
Sewage is conveyed through the sanitary sewer system to the wastewater treatment facility (WWTF). The WWTF was built in 1995 with a design average daily flow (ADF) of 1.8 MGD. Most of the collection system was built around the same time as the WWTF. There are no combined storm water sewers and no combined storm water sewer overflow (CSO) discharge locations in the collection system. There are no known areas within the collection system that have limitations on collections capacity. In 2022 the WWTF operated at an ADF of approximately 0.706 MGD, which is approximately 39% of design flow capacity. The plant was able to handle all peak flows in 2022. See Attachment 4 for a summary of flows for the past five years. Flows in 2022 have shown no significant increase or decrease from the previous years. There were no reported backups in the collection system due to capacity limits in 2022.

Attachment I
Flow History & Solids Table

Seabrook Wastewater Effluent Ocean Discharge Totals

	2018 Monthly Total MG	2018 Daily Avg MGD	2019 Monthly Total MG	2019 Daily Avg MGD	2020 Monthly Total MG	2020 Daily Avg MGD	2021 Monthly Total MG	2021 Daily Avg MGD	2022 Monthly Total MG	2022 Daily Avg MGD
January	21.69	0.70	19.57	0.63	21.12	0.68	17.53	0.57	21.90	0.71
February	19.03	0.68	18.41	0.66	19.27	0.66	15.30	0.55	21.58	0.77
March	22.61	0.73	21.07	0.68	20.79	0.67	17.02	0.55	22.24	0.72
April	21.30	0.71	20.08	0.67	21.23	0.71	15.38	0.51	21.84	0.73
May	21.58	0.70	20.08	0.65	20.07	0.65	16.39	0.53	20.98	0.67
June	20.55	0.69	18.46	0.62	18.82	0.63	15.52	0.52	20.96	0.70
July	22.52	0.73	22.03	0.71	20.49	0.66	19.23	0.62	20.38	0.66
August	22.86	0.74	21.32	0.96	20.29	0.66	21.69	0.70	23.14	0.75
September	20.35	0.68	17.65	0.59	16.87	0.56	21.82	0.73	20.52	0.68
October	19.98	0.64	17.80	0.57	17.71	0.57	20.93	0.68	21.32	0.69
November	22.40	0.75	16.64	0.55	17.05	0.57	22.73	0.76	20.33	0.68
December	21.48	0.69	21.83	0.70	17.93	0.58	21.18	0.68	22.45	0.72
Totals	256.35 MG		234.93 MG		231.64 MG		224.72 MG		257.64 MG	
Average per day	0.702 MG		0.644 MG		0.635 MG		0.616 MG		0.706 MG	
MG = million gallons										
% of design flow	39%		36%		35%		34%		39%	
Biosolids wet tons										
Totals	1827 Tons		1750 Tons		1685 Tons		1714 Tons		1747 Tons	
dry tons	256		226		207		226		230	

Attachment II
Collection System
Maintenance Map



Seabrook NH Flushing Map

The data shown on this site are provided for informational and planning purposes only. The Town and its consultants are not responsible for the misuse or misrepresentation of the data.

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Seabrook NH 2022 Flushing Map