CCWWTF Facility and Trunk Line Analysis

Capacity Study Review presented to council committee on June 13th, 2024 by Public Works Director, Michelle Boudreau, provided Council with information on the findings of the Capacity Studies for Brookfield Sewer System, Tatamagouche Sewer System, Tatamagouche Water System, Debert Water System, Bible Hill/Valley Sewer System and the Central Colchester Wastewater Treatment Facility/Trunk Line. *The first segment of this report dealt with Brookfield and was published on Page 18 in the August 2024 issue. Tatamagouche report outline is published in the January 2025 issue. This segment deals with situations involving the Central Colchester Wastewater Treatment Facility (CCWWTF) and Trunk Line)*

Central Colchester Wastewater Treatment Facility (CCWWTF) and Trunk Line

The CCWWTF is the main sewage treatment facility for the communities of Valley, Bible Hill, Lower Truro, Onslow, Salmon River, North River, Hilden, Truro Heights, as well as the Town of Truro and Millbrook. The plant was constructed in 1996 and underwent an upgrade in 2012.

The Trunk Sewer line, which is the backbone of the piping system for these communities, runs along the Salmon River from Murray Siding to Lower Truro, collecting sewage from various communities along the way. It measures 10.7 km in length and was constructed in four phases between 1986 and 1994. The Trunk also includes one pumping station, on Marshland Drive.

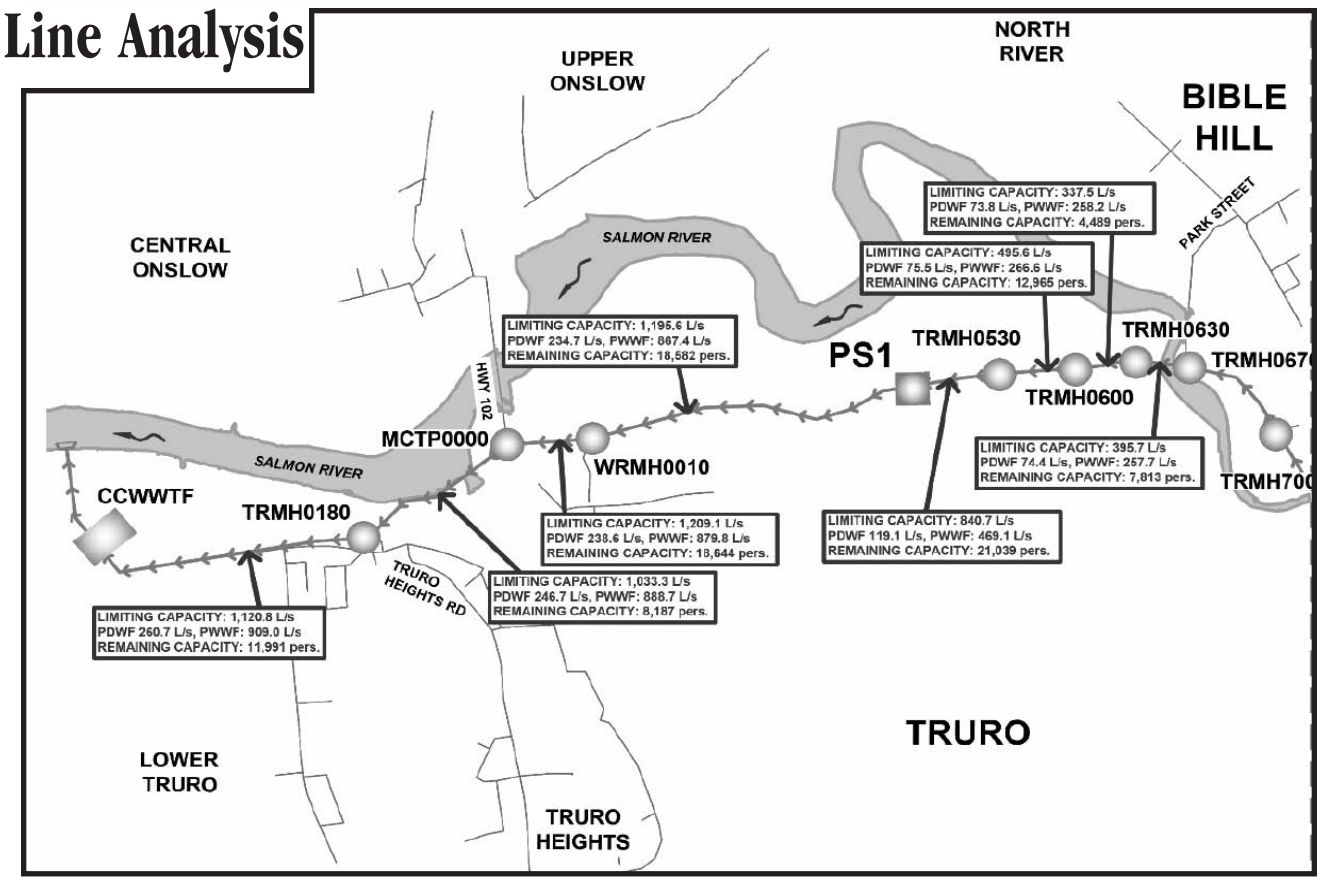
The CCWWTF was upgraded in 2012 for an ultimate population of 54,000 people.

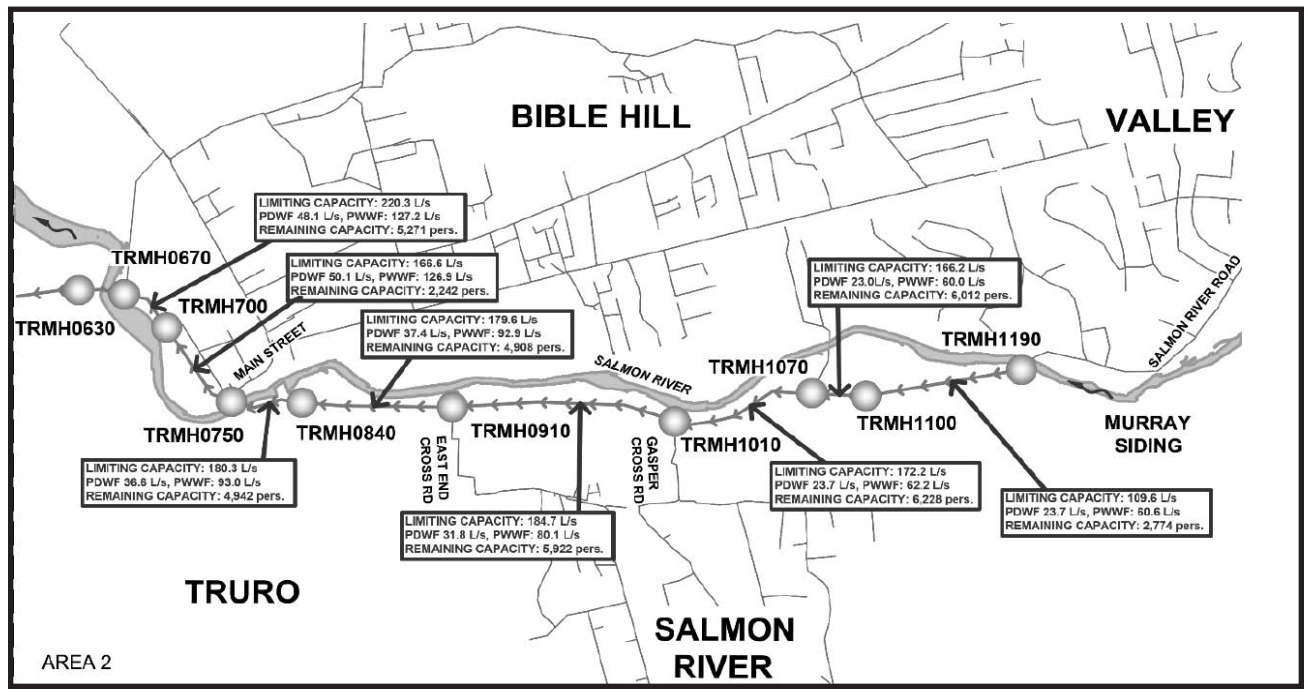
Much like all other sewer systems, the CCWWTF and Trunk line were subject to extreme high flows during wet weather, with the flows through the plant increasing by up to four times during rain and snow melt events. Remaining capacity in the Trunk line was modelled, with results shown in Figure 5 attached. The Trunk was found to have sufficient remaining capacity – up to the Marshland Pumping Station – to accommodate the future large development in Bible Hill (Five Corners).

While Marshland Drive has additional capacity for growth, it overwhelms the downstream Trunk line and the inlet screen at the CCWWTF when all three screw pumps are running. Currently we only run one to two of the pumps at any time. The CCWWTF has an overall remaining capacity of 23,800. Accommodating this growth will require running our sludge dewatering facility for longer hours or purchasing an additional centrifuge in the medium to long term.

Go Forward:

Recommended steps going forward include the following: Work to reduce I/I in the system to regain capacity and minimize impacts at the Marshland pumping station; Continue to investigate the impact of running all three screw pumps at Marshland if I/I cannot be reduced; Develop long term plan for upgrades to the Trunk Line downstream of Marshland pumping station as well as the influent screen at the CCWWTF if I/I cannot be reduced; Budget for 3rd centrifuge for sludge dewatering in the 5-10 year timeframe.





Valley/Bible Hill Sewage Collection System Study Results

Capacity Study Review presented to council committee on June 13th, 2024 by Public Works Director, Michelle Boudreau, provided Council with information on the findings of the Capacity Studies for Brookfield Sewer System, Tatamagouche Sewer System, Tatamagouche Water System, Debert Water System, Bible Hill/Valley Sewer System and the Central Colchester Wastewater Treatment Facility/Trunk Line. The first segment of this report dealt with Brookfield and was published on Page 18 in the August 2024 issue. *This segment deals with situations involving the Valley/Bible Hill Sewage Collection System.*

Valley/Bible Hill Sewage Collection System

- The Valley/Bible Hill Sewage Collection system includes 79.5 km of pipe, 970 manholes, eight sewage pumping stations and 3.1 km of pressure/forcemain pipe. The Village of Bible Hill owns all sewer infrastructure within its boundaries, with maintenance being provided by County crews.

The assessment of sewage collection system capacity in Valley and Bible Hill included a detailed review of all backbone and critical lines, including Pictou Road, College Road, the Farnham Trunk, Farnham Road and Park Street. Not all sewer lines were modelled due to the sheer size of the system.

Capacities were evaluated based on existing conditions. The ability to accommodate the five Corners Development (former Bates Property) was also evaluated. This proposed development would increase the population of Bible Hill by 150% and include 2,200 to 3,000 new units, which is substantial. As all other systems, the Valley/Bible Hill Sewage showed high volumes of flow in the system during wet weather events, in particular in the Park Street/Farnham Road area.

Based on existing development, a number of choke points were identified and require attention in the short term. A 160 metres section of sewer pipe on Main Street at Riverside Avenue requires upsizing, while the 870 metre connection between Main Street and the Trunk Sewer at Park Street also requires upsizing. With these proposed two upgrades, the existing system will be able to handle 1,200 additional people from future development. Any remaining growth will require additional improvements in the medium and long term.

The Guest Drive pumping station (PS2) will require upgrades in the short to medium term via either pump upgrades or forcemain upsizing, depending on which is most technically feasible and cost effective. This item requires further investigation on possible options. If I/I impacts are reduced, then the full development at Five Corners can be accommodated by upsizing a 135m section of the Farnham Trunk Sewer.

Without I/I improvements, larger sections of the sewer system will require replacement, specifically 2.3 km of upsized sewer on Farnham Road and the Farnham Trunk.

Go Forward

Recommended steps going forward include the following: Budget for the upsizing of 160 metres of gravity sewer on Main Street near Riverside at an estimated cost of $320K. Work to be completed in 1-3 years; Budget for upsizing of 870 metres of gravity sewer along Park Street, between Main Street and the Trunk line, at a estimated cost of $2.17M; Investigate options for upgrading the capacity of the Guest Drive Pumping Station, PS2, and budget for required changes in the next 2-5 years. Any upsizing of PS2 would also require upgrading of 811 metres downstream gravity sewer on College road at an estimated cost of $1.6M. Timeframe is 5+ years;

Develop a targeted I/I reduction program to create additional development capacity. If efforts are successful, capital upgrades in the system could be limited to upgrading one section of the Farnham Trunk sewer at an estimated cost of $216K. I/I program itself will likely require capital and operating funds for line improvements, at an estimated cost of $450K; If I/I improvements are not successful, larger capital expenditures will be required in the long term, 5+ years, for upgrading the Farnham Trunk sewer and associated lines. Costs could be in the range of $5M, however estimates will be finalized once I/I efforts have been exhausted.

Discussions should be held with the Village for long-term planning of system upgrades.