

Briar Chapel Wastewater Treatment System

Status—January 2021

1. Background

Description of the System

The Briar Chapel wastewater treatment system was built by Newland in 2005 and sold to Old North State Water Company (ONSWC) in 2014. Envirolink, a wastewater treatment system operator, which is owned by ONSWC, operated the system from 2014 until September 30, 2020. The system consists of a 250,000 gallon per day (gpd) extended aeration, biological nutrient removal, activated sludge wastewater treatment plant (WWTP), which includes flow equalization, oxic and anoxic biological reactors, tertiary filtration, ultraviolet (UV) disinfection and chlorination. Treated effluent is stored in on-site ponds and irrigated throughout the development. The Briar Chapel wastewater collection system includes approximately 7 miles of forcemain, 19 miles of gravity main and 12 pump stations. The complex recycled water irrigation consists of piping ranging from 2 to 18 inches in diameter, 48 irrigation zones (each with headers, laterals, valves, etc.) and over 7,500 spray heads.

Problems with the System

During the past several years the wastewater treatment system has experienced many problems including numerous pipeline breakages and sewage spills as well as offensive odors emanating from the recycled water irrigation system and from the WWTP. While the odors from the irrigation system adversely affected the whole community, residents in neighborhoods near the WWTP have filed many odor complaints associated with their proximity to the plant.

Odor Issues

While the Briar Chapel Covenants, Conditions, and Restrictions (CC&R's) disclose the possibility of odors from the wastewater treatment system, they also absolve Newland, builders, and BCCA from any responsibility for the odors. However, BCCA has worked with ONSWC to help abate the odors. Early in 2020, BCCA and ONSWC agreed that ONSWC would, for the first time, flush the irrigation lines prior to the start of the irrigation season. ONSWC also agreed to implement chlorination in the irrigation lines to prevent bacterial growth within the system. The result was the virtual elimination of odor complaints from the irrigation for the 2020 season.

The odors from the WWTP present a more complex problem, because of the number of potential sources and the difficulty of eliminating and containing the odors while operating the system. However, WWTP odors were specifically addressed in the Tri-Party Agreement signed on October 19, 2020 by Newland, ONSWC, and BCCA. The agreement established a Tri-Party Council to communicate and collaborate on issues important to BCCA and the community. Odors were highlighted as one such issue. Since the agreement was signed, BCCA President, Tom Speer and BCCA consultant Vic D'Amato have been given full access to the WWTP and have engaged in productive discussions with ONSWC on means of improving the efficiency and odor mitigation of the WWTP.

2. Plans for the Wastewater Treatment System

Withdrawal of Fearington interconnection Request and Regionalization Plans

Plans for the Briar Chapel wastewater treatment system changed dramatically during 2020. ONSWC had requested that the NC Utilities Commission approve connecting the Fearington Village wastewater system to the Briar Chapel system with all the wastewater from both communities to be treated at the Briar Chapel facility. This would have required the quadrupling of the Briar Chapel plant to 1 million gpd and installing new wastewater treatment technology. The increased capacity would have allowed other nearby communities and new developments to have their wastewater treated in Briar Chapel, essentially making Briar Chapel a regional wastewater treatment facility. Early in 2020, The BCCA Board of Directors and StopChathamNorth—a group of Briar Chapel residents—undertook efforts to oppose the interconnection citing, among other issues, the poor performance of ONSWC and the location of the WWTP so close to several Briar Chapel neighborhoods. These efforts were successful in delaying NC Utilities Commission approval of the interconnection and came to an end when ONSWC withdrew its request for the interconnection with Fearington Village as required by the Tri-Party Agreement. Now, instead of regionalization, the focus of ONSWC is to provide sufficient capacity to treat wastewater from the remaining homes to be built in Briar Chapel and the wastewater to be generated by the Briar Chapel commercial area located on the east side of highways 15 and 501.

Increasing WTP Capacity for Briar Chapel

Plans now call for doubling the capacity of the existing facility to 500,000 gpd by the end of 2021. This expansion had already been planned for the Briar Chapel facility as the number of new homes has grown and the commercial section has been developed. There is a need for additional spray fields to handle the additional recycled water to be generated by the increased capacity of the WWTP. Permits for these new spray fields have been submitted to NC DEQ and are expected to be approved.

By-pass to New Forcemain

More immediate plans call for the elimination of the existing forcemain from Lift Station A, near the dog park on Great Ridge Parkway to the WWTP. This forcemain had been the source of multiple breakages and sewage spills during the last few years. This will be accomplished by installing a “by-pass” from Lift Station A to a new forcemain that had been installed in 2018 but has not yet been put into service. This new forcemain was installed to carry wastewater from the new commercial section to the WTP and would have connected to Fearington Village had the interconnection request not been withdrawn. The by-pass will allow the failing, existing forcemain from Lift Station A to the WWTP to be abandoned. Necessary permits from NCDEQ have been obtained for the by-pass and construction permits for the project have been requested of Chatham County and should be issued very soon.

3. Ongoing Improvements

As noted above, ONSWC ended its agreement with Envirolink as system operator on September 30, 2020. ONSWC subsequently hired Greener EHS Solutions to operate the Briar Chapel wastewater system. Greener EHS Solutions is owned and operated by Amanda Grenier, who has over 18 years' experience in the wastewater industry and conducts training courses in wastewater system operation. Since taking over the Briar Chapel system, Amanda Grenier and her 4-person team have concentrated on cleaning the WWTP and getting the plant back into proper operation. Inadequate maintenance and failure to repair important operating systems by Envirolink had left the plant in a serious state of disrepair. Amanda Grenier and BCCA consultant Vic D'Amato of TetraTech presented a review of the current state of the Briar Chapel wastewater treatment system to the Briar Chapel Board of Directors on December 8, 2020. It is anticipated that they will be able to participate in a Town Hall for Briar Chapel residents early in 2021.

So far, nearly all maintenance has been completed to improve operational efficiency and a new baseline of operation has been established for the operator to track odor control effectiveness. Following are the steps taken so far to improve the efficiency of the system and to mitigate odors at the WWTP:

- Lift Stations
 - Appointment of a dedicated operator of the collection system.
 - Generator maintenance and testing
 - Addition of chemicals to address the problems caused by fats, oils, and grease
 - Updated control panels
 - Replaced pumps
 - Installed "Mission Control" remote monitoring system.
- Static Screens
 - Spray bars added to aid in cleaning and odor control
 - More frequent cleanings
 - More frequent disposal of screenings
- Equalization Basin
 - Cleaning of the basin and pumps
 - New electric panel has been ordered
 - New pumps installed to better control the flow
 - Install "Mission Control" system to better monitor and pumps
- Tertiary treatment—disinfection and sand filters
 - Obtaining quote to rebuild UV light bank
 - Cleaned chlorine contact chamber
 - All new media in sand filters

In addition, the frequency of solids removal was increased to weekly rather than every two weeks, cutting down on the opportunity for spills and resultant odors. Also, alternate routing for tanker trucks is being explored. The use of tight covers to contain odors inside the WTP is also being explored.

4. Next Steps

While 2020 was a year of argument, advocacy, and legal maneuvering, we hope that these tactics are now behind us and that efforts to expand and improve our Briar Chapel wastewater treatment system will be successful. The elements are in place to make that happen. With the Tri-Party Agreement signed and the Tri-Party Council established, collaborative efforts can make the planned expansion and improvements move forward to completion during the upcoming year. There must be a continuing commitment by the Tri-Party signatories to continue the spirit of collaboration that marked the end of the major disputes. Obviously, vigilance will be necessary to assure compliance with agreements and schedules. The residents can also do their part to help the operation of the WWTP. Avoid putting these items down the drain:

- Wipes, rags, mop strings, etc.
- Feminine hygiene products
- Fats, oil, and grease
- Excess food in garbage disposers

An efficient, trouble-free wastewater treatment system will help reduce offensive odors and is in the best interests of the utility, the developer, BCCA, and, most importantly, the residents of Briar Chapel.