Town Run bacterial monitoring program

Greg Welter , Oct 3, 2025

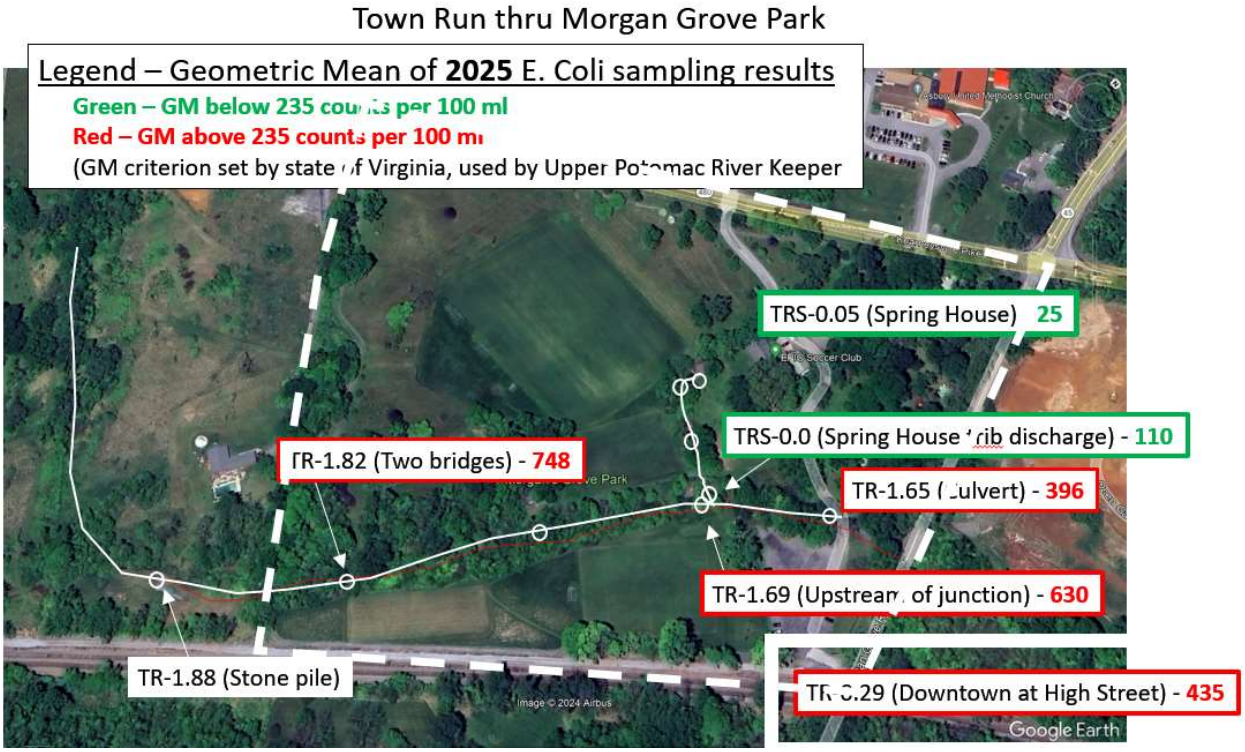
In 2024 and in 2025 the Town Run Watershed Group has been conducting a program of weekly sampling of Town Run for bacterial contamination, principally E. Coli and Total Coliform. (E. Coli and Total Coliform are considered to be public health "indicator organisms", and are indicative of contamination by human or warm-blooded animal waste.)

This program has been conducted in conjunction with the Upper Potomac River Keeper (UPRK) program for similar sampling of the Potomac River and Antietam Creek, with laboratory analytical support from Hood College. The UPRK program is directed at recreational water quality standards (specifically, E. Coli) and reports its results on an online website tracking bathing beach quality. There are no formal water recreational sites on Town Run; however, there is frequent water contact activity at two locations:

- in Morgan Grove Park (mostly children), and
- downstream, near the discharge to the Potomac River (mostly young adult)

The first few sampling events in 2024 consisted of two sampling stations: one at the lower end of Town Run at High Street, and the second well upstream as the Run leaves Morgan Grove Park. Quite unexpectedly, it was found that Town Run was significantly contaminated with high E. Coli concentrations. This caused us to revise the sampling program to concentrate the sampling stations on the Run within Morgan Grove Park (both the main stem, and the tributary that originates from the spring house in the Park), and a sampling station on the main stem upstream of the Park's southern boundary.

The strategy for current sampling at this time in 2025 is to attempt to identify the specific reach of the stream that is receiving contamination. It has been fairly well established that the water originating at the spring house in the Park has remarkably low bacterial concentrations. Summary results for the 2024 and 2025 sampling seasons (May thru September) are depicted as geometric mean values in two figures below.



Note: the criterion listed (235 mpn/100 ml) in the graphics above is for a geometric mean of a specified number of samples over a specified period of time. Our sampling frequency did not exactly correspond specifics of the regulatory criterion, but it is the closest standard available. The single sample criterion is 410 mpn/100 ml.

One further method of analysis that has been undertaken in 2025 was sampling for characterization of the bacterial DNA, assess the true public health significance (that is, whether the bacteria are of human origin, mammalian or avian.) This sampling was done on four samples taken on May 30, 2025. The samples were analyzed at Johns Hopkins University School of Public Health, using qPCR techniques (quantitative polymerase chain reaction). In qPCR method the sample's DNA material is analyzed using a luminescent dye while replicated multiple times, with the analytical result quantified as the number of cycle times before the luminescence is detected above background levels. In the method for source characterization, the analysis targets DNA of particular bacteria that are specific to the potential animal sources of concern. In the case of the Town Run analysis the targets used were:

- Human (HF183)
- Ruminant (BacR)
- Cow (Cow_M2), a subset of Ruminant
- Avian (Av4143)
- Swine (P2B)
- Poultry (LA35), and
- Chicken (CytB), a subset of Poultry

The results of the analysis are depicted in the map below. Note that there were no detects for Cow, Swine, Poultry or Chicken. There were detects for Ruminant (presumably deer) and Avian (presumably water fowl). Note that the Spring House tributary sample shows a detect for Human; however, also note that this source has been consistently low E. Coli.