January 20, 2021

Mr. Raymond Bahr
Maryland Department of the Environment
Water and Science Administration
1800 Washington Boulevard, Baltimore, Maryland, 21230
raymond.bahr@maryland.gov

Re: Blue Water Baltimore Comments on Baltimore City and Baltimore County 2020 Draft MS4 permits

Dear Mr. Bahr:

Please accept this letter from Blue Water Baltimore as part of the formal comment period for the 2020 Draft Municipal Separate Storm Sewer System (MS4) permits for Baltimore City and Baltimore County. Blue Water Baltimore is the regional watershed organization focused on restoring the health of Baltimore's rivers, streams, and harbor to the benefit of our environment and communities. We are home to the Baltimore Harbor Waterkeeper as well as a long-term water quality monitoring program throughout the Gwynns Falls, Jones Falls, and tidal Patapsco River. We advocate for strong policies and programs within our region, and statewide, that will foster greater protection of our urban waterways, and work with communities and stakeholders to implement on-the-ground solutions to reducing pollution in the face of changing climate. We offer these comments based on our experiences in Baltimore City and County, our rigorous water quality data, and on behalf of our thousands of members and supporters in the Baltimore region.

I. Water Quality is not improving as a result of our current MS4 permitting regime.

Blue Water Baltimore's long-term water quality monitoring project is the most robust and scientifically rigorous non-governmental monitoring program in the Chesapeake region. Our data is used by academic researchers, regulators, policymakers, and Baltimore-area residents for a variety of purposes ranging from pollution modelling to making informed decisions about recreating in our local waterways. The Baltimore Harbor Waterkeeper, a program of Blue Water Baltimore, began collecting bacteria data in the Inner Harbor in 2009 to support a 303(d) impairment listing for *Enterococcus* bacteria under the Clean Water Act. The Maryland Department of the Environment (MDE) has used this data to establish an impairment listing and is currently developing a Total Maximum Daily Load for *Enterococcus* bacteria in the Baltimore Harbor.

We expanded our monitoring program in 2013, and now routinely collect scientifically rigorous water quality data for a full suite of parameters at 49 stations throughout the Jones Falls and Gwynns Falls watersheds, as well as the tidal Patapsco River and the tributaries that feed into it. This means we have

7-10 years of high-quality data for each site we monitor. In 2018, key components of Blue Water Baltimore's tidal water quality monitoring program were certified as "Tier III" by the Chesapeake Monitoring Cooperative and U.S. EPA's Chesapeake Bay Program, enabling our data to be used to inform state, regional, and federal decision-making on water quality issues. Our tidal and non-tidal programs have robust Quality Assurance Project Plans and strict Standard Operating Procedures that we adhere to during data collection and processing. With instrumentation, we collect readings for water temperature, pH, salinity, conductivity, water clarity, and dissolved oxygen. All water chemistry analyses (i.e. bacteria, nutrients, and chlorophyll concentrations) are performed by an independent A2LA-certified laboratory.

Over the past ten years our monitoring program has allowed Blue Water Baltimore to build upon our baseline assessment of the health of Baltimore's waterways, and track progress towards improved water quality in our local streams and Harbor. We have successfully built the only long-term dataset in the Patapsco River watershed that has the potential to show measurable water quality outcomes related to the "green" and "gray" infrastructure projects on land that are designed to reduce the amounts of bacteria, nutrients, and other pollutants that enter our waterways. We make our data freely available to the public online at our Baltimore Water Watch website [www.BaltimoreWaterWatch.org].

At the end of each year, we analyze all the data we generate using scoring protocols developed by the Mid-Atlantic Tributary Assessment Coalition to help us communicate about water health to the general public by assigning "scores" to each parameter we track. In April 2020, for the first time ever, we were able to conduct a statistical trends analysis on our 7-10 years of data at each of our 49 water quality monitoring stations. While our annual report card gives the public a snapshot of water health at the end of each year, this trends analysis has helped us answer the question: is water quality in our local streams, rivers, and Harbor getting better or worse over time?

A simple linear regression analysis was performed on our full dataset for every water quality parameter at each of our monitoring sites. Data was parsed by "wet" and "dry" weather to account for any influence by precipitation. Wet weather is defined as the 48-hour period following rainfall of at least 0.5 inches, as recorded by the Maryland Science Center NWS station. Based upon this simple analysis, significant trends were identified where p-values were less than 0.05, and trends were categorized as "improving" or "worsening" over time based upon the coefficient variable of the resulting equation.

There were several key findings from our data analyses. First, we found significantly improving trends in *Enterococcus* bacteria at 34 of our 49 monitoring stations over a 7-10-year timeframe. While we cannot definitively say why bacteria levels are improving, these trends could indicate that sewer replacement and relining projects are working to reduce the amount of untreated sewage flowing into our waterways. Unfortunately, analyses of parameters more closely associated with polluted stormwater runoff showed some significantly worsening trends at many nontidal stream stations.

For example, 23 of our 27 nontidal stations (85%) showed a worsening trend for at least one of the following parameters: Total Nitrogen (mg/L), Total Phosphorus (mg/L), Specific Conductance (uS/cm), or Turbidity (NTU) across all weather types over a 7-year time period. Only 2 stations showed a statistically significant improvement for a single measurement of water health. The trends analysis output table and maps showing where we found statistically significant changes in water health over time are incorporated into our comments here as Appendix I.

The long-term trends for our 27 nontidal stations in the Gwynns and Jones Falls are summarized below:

	Worsening	Improving	No Change
Total Nitrogen	13	1	13
Total Phosphorus	6	1	20
Conductivity	11	0	16
Turbidity	7	0	20

Even at sites where key water quality metrics are not worsening over time, it is critical to note that they also are not improving. Specific trends for each pollutant vary by station across the watershed gradient, but overall, we see no real evidence that stormwater remediation efforts by Baltimore City or County is appreciably improving water quality in the Patapsco River watershed.

Interestingly, our 7-year nontidal dataset covers the previous MS4 permit term, suggesting to Blue Water Baltimore that the current approach to stormwater management in Baltimore City, namely street sweeping, is not improving water quality. We similarly question whether Baltimore County's approach is keeping pace with climate change, a growing suburban population, and increased development. We believe our data suggests that substantial changes, including greater reliance on stormwater interventions that reduce stormwater volumes, and treat stormwater before it enters our waterways, are necessary if we expect to see future water quality improvements.

II. We remain concerned with the over-reliance of alternative BMPs that offer little to no stormwater management or volume reduction.

Blue Water Baltimore is grateful that MDE reversed the impervious surface restoration (ISR) credit afforded street trees and urban canopy from the Accounting Guidance December 2019 Draft, reinstating the equivalence of 100 trees to 1 restored acre. Street trees provide myriad benefits within our urban areas, and unlike many of the alternative practices afforded ISR credit within the Guidance, trees can reduce stormwater volumes while also reducing nutrient and sediment pollution. They remain one of the few cost-effective practices funded under the State's Chesapeake and Coastal Bay Trust Fund and other nutrient-reduction-focused funding sources for urban municipalities. They are also increasingly associated with climate resiliency by reducing peak temperatures and helping to improve air quality in urban neighborhoods.

However, Blue Water Baltimore remains concerned that street sweeping continues to receive out-sized credit for pollution reductions under the state's Accounting Guidance, and that jurisdictions like Baltimore City are allowed to meet almost the entirety of their stormwater management burden from this single practice. Street sweeping is certainly an attractive practice for cash-strapped jurisdictions that also have trash-reduction goals to address, like Baltimore City. But allowing the City to substitute trash-reducing practices for BMPs that reduce stormwater is paradoxical.

If street sweeping, which made up most of Baltimore City's previous MS4 permit and is proposed to do so again under the new draft permit, works so well for reducing nitrogen, phosphorus, and sediment, why are we not seeing in-stream improvements in these water quality parameters?

Combining the goals of two different regulatory programs (the MS4 permit and Trash TMDL) is a laudable way to minimize short-term costs to local governments, and their taxpayers. But this narrow approach to our growing stormwater challenge only serves to significantly increase the costs associated with insurance claims, infrastructure repairs, property and natural resource losses, and clean up. And our waterways continue to be polluted. Street sweeping is largely targeted to the downtown business district and surrounding neighborhoods within the direct drainage to Baltimore Harbor, leaving many communities that have never seen a street sweeper in action.

Furthermore, it is critical to note that street sweeping is an annual practice - not a permanent solution, requiring the City to continue its prior commitment to street sweeping and add even more "lane miles swept" to achieve compliance with this new draft permit. During the COVID-19 pandemic in 2020, street sweeping in Baltimore City was one of the first services to be substantially curtailed when the Department of Public Works experienced staffing shortages. Equating street sweeping to impervious surface restoration could well yield a future scenario where all streets are swept, yet city residents and businesses see little to no change in the frequency or intensity of stormwater-induced flooding and its consequences. Baltimore City's residents, congregations, and businesses deserve more comprehensive approaches to the growing crisis of climate change-induced flooding, basement backups, and property damage caused from uncontrolled stormwater.

Finally, we are disappointed that MDE rejected other substantive concerns from the Choose Clean Water Coalition and other environmental groups that could have resulted in stronger draft MS4 permits in Baltimore City and County. It is worth noting that most permitted jurisdictions failed to meet expected pollutant load reductions under the previous permit, even while some met the "equivalent impervious acres restored" standard. As climate change-induced weather patterns continue to shift, Baltimore City and County are already experiencing heavier rains, flashier storms, and greater flooding. Many of the alternative BMPs approved for these jurisdictions' permits, such as street sweeping or septic system treatments, do nothing to address this critical stormwater challenge.

We continue to respectfully urge MDE to:

1) Require minimum implementation of green stormwater infrastructure, recognizing the numerous co-benefits, including urban heat reduction and improved air quality;
2) Require more stormwater BMPs that control volume while treating flows; and
3) Cap the amount of total ISR credit from a single practice, such as street sweeping, septic pump-outs, or stream restoration.

III. The inequity in Baltimore County's permit must be corrected.

While Baltimore County's permit includes a greater variety of stormwater and alternative BMPs to address pollution reductions, it remains problematic. MDE states in the permit fact sheet that the new draft MS4 permits are consistent with the Phase III Watershed Implementation Plans (WIP3) requirement that each MS4 Phase I jurisdiction restore or treat 2% of its impervious acres annually to meet the Bay TMDL. Unfortunately, Baltimore County's draft MS4 permit sets a restoration target considerably less than WIP3 target; in its fact sheet MDE asserts that "... the two percent goal can be met cumulatively by all Phase I Large MS4 permittees." This can only be interpreted as MDE allowing under-compliance with the WIP3 and TMDL without requiring the County to enter into trade agreements with other jurisdictions in order to benefit from their hoped-for overcompliance.

Viewed through an equity lens, MDE is approving inequitable accountability standards among jurisdictions. By allowing under-compliance with stormwater remediation requirements within the Patapsco or Back River watersheds in the County, MDE is allowing a more affluent, predominantly white, and populous jurisdiction to eschew pollution and volume reductions to the detriment of the less populous, predominantly Black, and less affluent downstream neighbor, Baltimore City. Under-compliance in Baltimore County will not necessarily impact County residents; but instead, will impact City residents, already suffering from unmitigated stormwater, poor water quality in receiving waterways, increased flood volumes, and associated public health impacts and property damage. Though pollutant trading is highlighted as a compliance option in all draft Phase I permits, there is no requirement by MDE that Baltimore County trade with Baltimore City (or another jurisdiction) to make up for their planned shortfall. It is sadly meaningless to read section IV.F.4 which suggests the County should communicate with "other jurisdictions or agencies holding stormwater WLAs in the same watersheds, regarding its TMDL stormwater implementation plans." Baltimore County must be held to the same WIP3 stormwater target as other Phase I jurisdictions, or it must be required to compensate another jurisdiction for overcompliance to make up for the planned County shortfall. Anything less is inequitable and inappropriate.

Blue Water Baltimore appreciates the opportunity to provide these comments. We also fully endorse and support additional comments provided by the Chesapeake Accountability Project (CAP), Waterkeepers Chesapeake (WKC), and the Choose Clean Water Coalition (CCWC) submitted to the Department. In the wake of continued degradation of our urban waterways and the increased annual rainfall we are experiencing due to climate change, we firmly believe the time is now to change the way Maryland's MS4 permits deal with local flooding, local water quality, and urban community resilience in the face of undeniable climate change.

Sincerely,

Jennifer Aiosa
Executive Director

Alice Volpitta
Baltimore Harbor Waterkeeper

Appendix I

Figure 1. Statistically significant trends in Specific Conductance (µS/cm) discerned from an analysis of Blue Water Baltimore's ambient water quality monitoring data at 27 nontidal stations in the Gwynns Falls and Jones Falls watershed from 2013-2019. Stations where Specific Conductance is improving over time are marked green; worsening trends are marked red; stations with no change are marked blue. For specific station information, refer to Table 1.

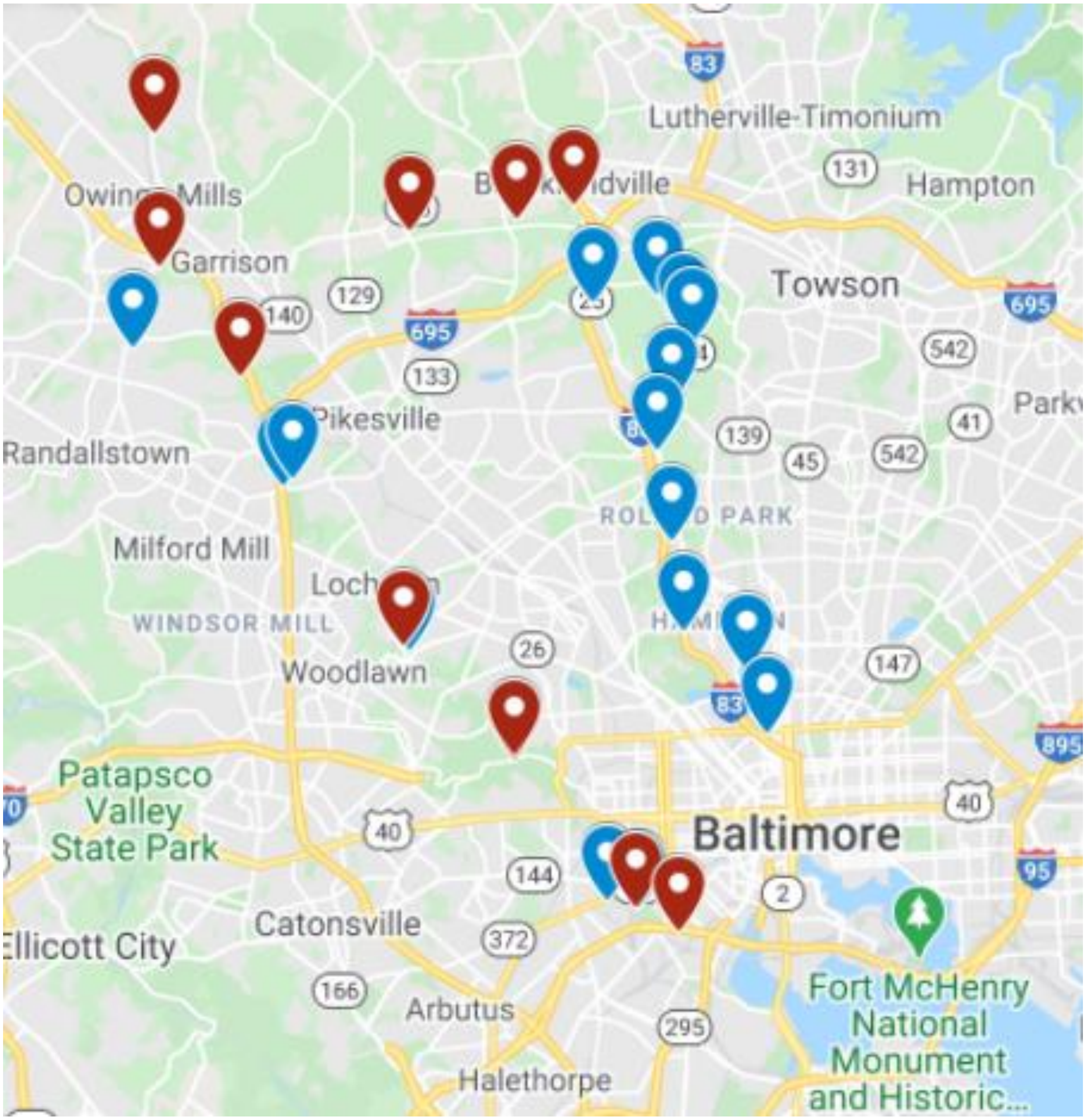

Figure 2. Statistically significant trends in Total Nitrogen (mg/L) discerned from an analysis of Blue Water Baltimore's ambient water quality monitoring data at 27 nontidal stations in the Gwynns Falls and Jones Falls watershed from 2013-2019. Stations where Total Nitrogen is improving over time are marked green; worsening trends are marked red; stations with no change are marked blue. For specific station information, refer to Table 1.

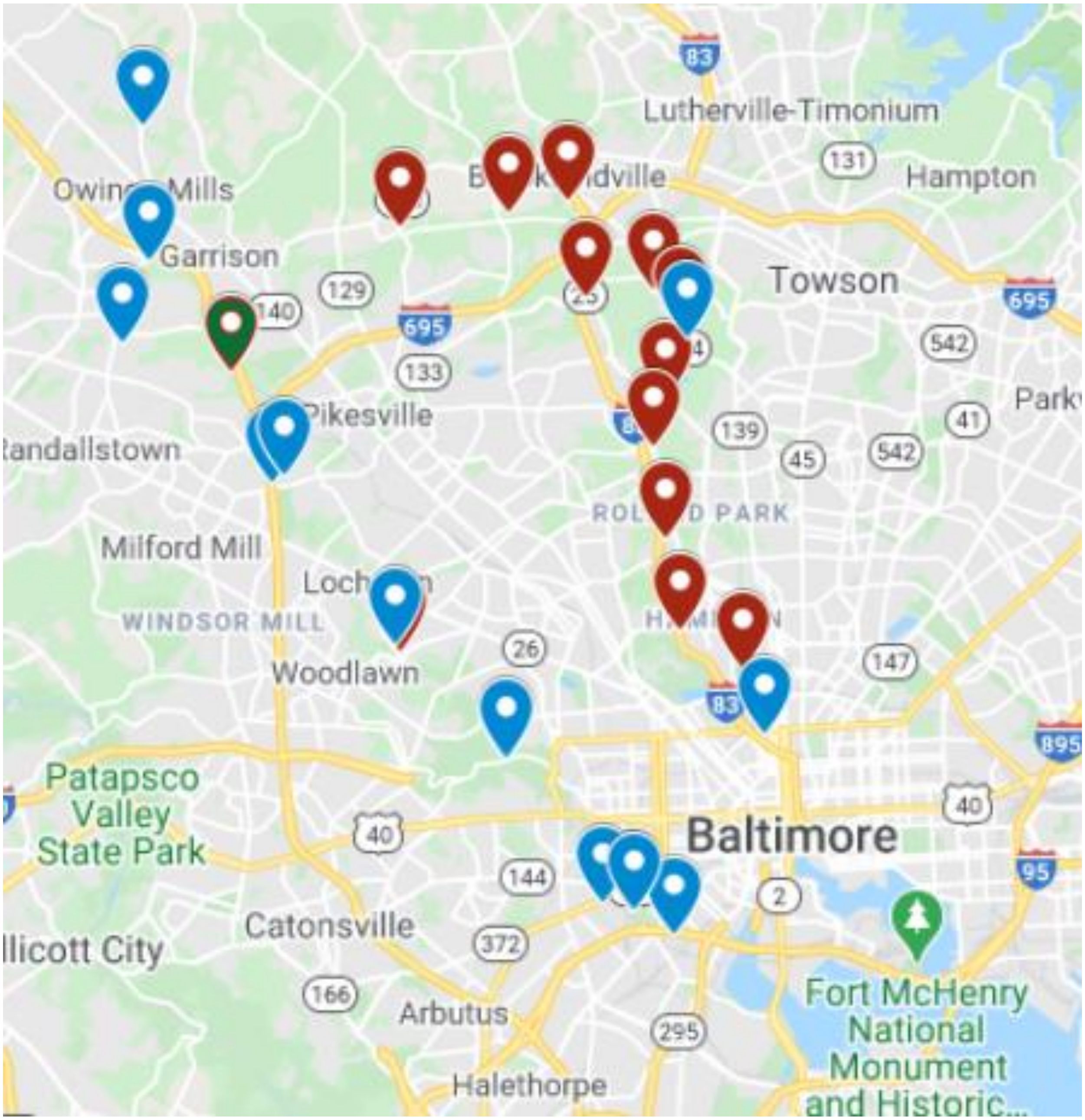

Figure 3. Statistically significant trends in Total Phosphorus (mg/L) discerned from an analysis of Blue Water Baltimore's ambient water quality monitoring data at 27 nontidal stations in the Gwynns Falls and Jones Falls watershed from 2013-2019. Stations where Total Phosphorus is improving over time are marked green; worsening trends are marked red; stations with no change are marked blue. For specific station information, refer to Table 1.

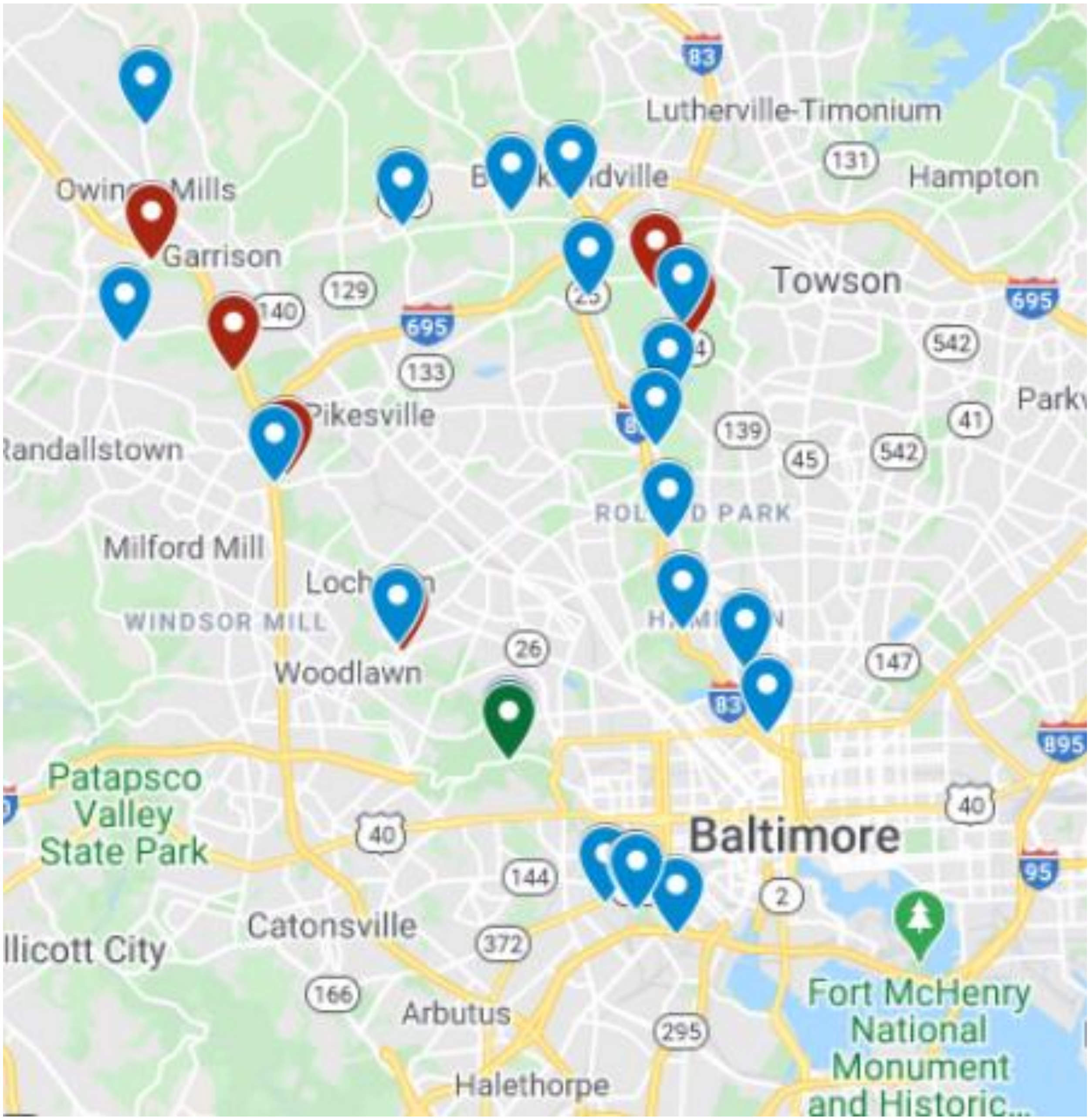

Figure 4. Statistically significant trends in Turbidity (NTU) discerned from an analysis of Blue Water Baltimore's ambient water quality monitoring data at 27 nontidal stations in the Gwynns Falls and Jones Falls watershed from 2013-2019. Stations where Turbidity is improving over time are marked green; worsening trends are marked red; stations with no change are marked blue. For specific station information, refer to Table 1.

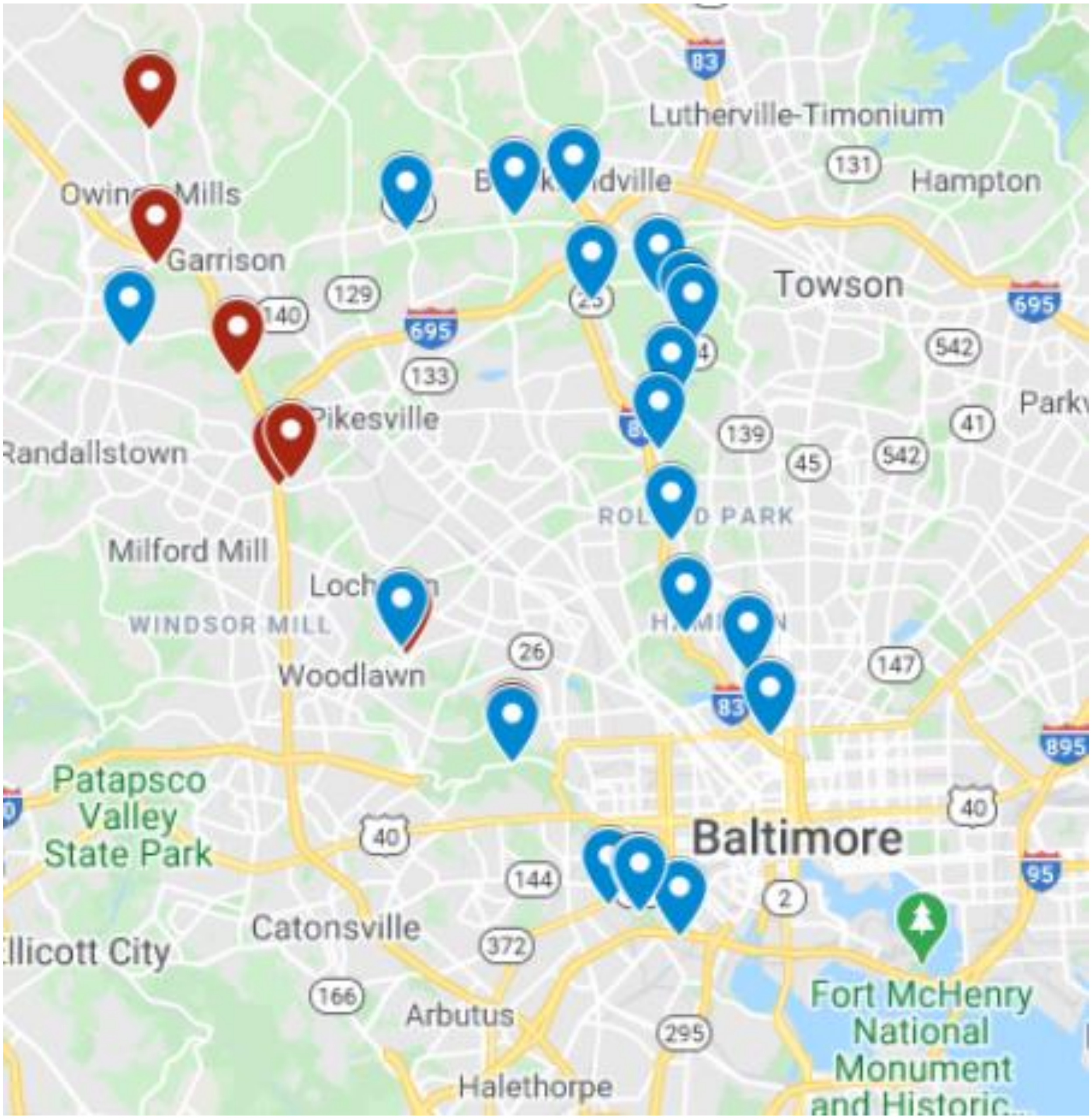

Figure 5. Statistically significant trends in *Enterococcus* bacteria (MPN/100mL) discerned from an analysis of Blue Water Baltimore's ambient water quality monitoring data at 49 tidal and nontidal stations in the Patapsco River and its tributaries, and streams within the Gwynns Falls and Jones Falls watershed from 2009-2019. Stations where *Enterococcus* bacteria is improving over time are marked green; worsening trends are marked red; stations with no change are marked blue. For specific station information, refer to Table 1.

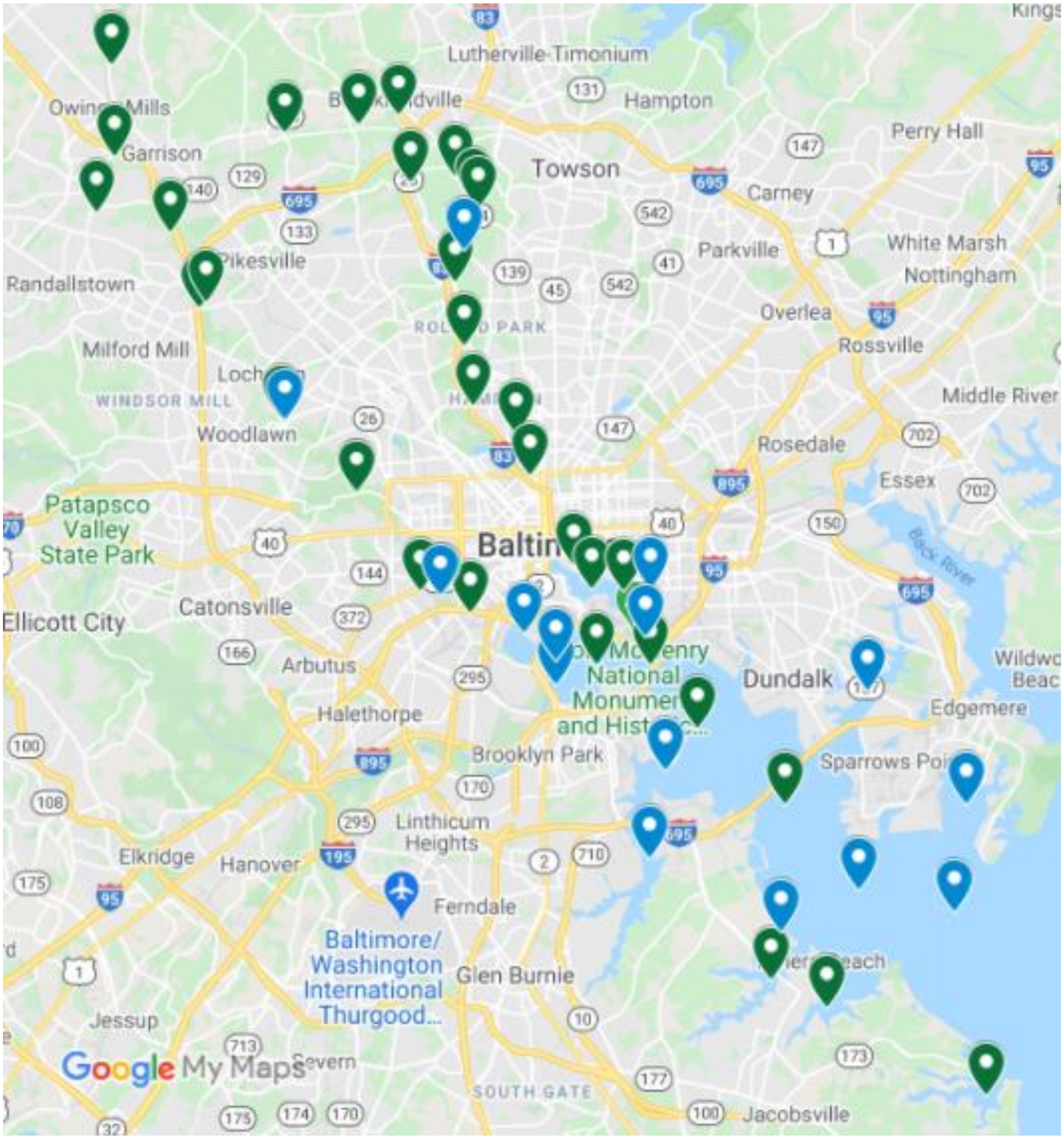

Table 1. Statistically significant p-values from a long-term trends analysis of data collected at Blue Water Baltimore's 27 nontidal water quality monitoring stations in the Jones Falls and Gwynns Falls watersheds. These p-values were generated by conducting a linear regression analysis of BWB's data from 2013-2019, and significant trends ($p < 0.05$) are marked as improving (green) or worsening (red) based upon the coefficient variable of the resulting equation. BWB's full dataset is available to download online at www.BaltimoreWaterWatch.org, and upon request.

Station	Station Location (GPS)	Nitrogen	Wet Nitrogen	Dry Nitrogen	Phosphorus	Wet Phosphorus	Dry Phosphorus	Turbidity	Wet Turbidity	Dry Turbidity	Conductivity	Wet Conductivity	Dry Conductivity
BWB-GWN-46	39.431952,-76.780615	0.915	0.804	0.821	0.274	0.590	0.988	0.040	0.262	0.573	0.550	0.283	0.028
BWB-GWN-48	39.404778,-76.779113	0.100	0.397	0.112	0.007	0.130	0.086	0.023	0.228	0.145	0.443	0.336	0.016
BWB-GWN-49	39.388219,-76.786521	0.091	0.519	0.101	0.065	0.135	0.885	0.216	0.599	0.535	0.277	0.581	0.073
BWB-GWN-50	39.360515,-76.747163	0.128	0.201	0.242	0.323	0.484	0.351	0.035	0.244	0.551	0.213	0.971	0.092
BWB-GWN-51	39.382851,-76.758001	0.307	0.037	0.782	0.032	0.113	0.965	0.044	0.297	0.289	0.487	0.357	0.049
BWB-GWN-52	39.361679,-76.744143	0.660	0.284	0.243	0.028	0.187	0.167	0.044	0.304	0.049	0.400	0.465	0.074
BWB-GWN-53	39.327719,-76.715773	0.524	0.097	0.435	0.224	0.136	0.225	0.115	0.284	0.104	0.231	0.494	0.023
BWB-GWN-54	39.326739,-76.713847	0.000	0.281	0.000	0.000	0.033	0.000	0.025	0.286	0.020	0.450	0.985	0.208
BWB-GWN-55	39.305226,-76.686705	0.166	0.442	0.151	0.377	0.647	0.026	0.872	0.465	0.964	0.113	0.927	0.027
BWB-GWN-56	39.276287,-76.661812	0.729	0.547	0.470	0.777	0.748	0.344	0.127	0.351	0.586	0.482	0.891	0.349
BWB-GWN-57	39.305516,-76.686663	0.575	0.682	0.291	0.227	0.436	0.793	0.285	0.879	0.019	0.048	0.826	0.003
BWB-GWN-58	39.275039,-76.654306	0.010	0.617	0.005	0.309	0.349	0.691	0.057	0.378	0.138	0.134	0.661	0.021
BWB-GWN-59	39.269954,-76.643608	0.296	0.721	0.294	0.072	0.399	0.203	0.313	0.911	0.120	0.160	0.972	0.027
BWB-GWN-60	39.274733,-76.653716	0.176	0.520	0.160	0.417	0.899	0.529	0.345	0.502	0.182	0.310	0.077	0.240
BWB-JON-32	39.414279,-76.685635	0.031	0.265	0.003	0.055	0.521	0.081	0.245	0.250	0.751	0.000	0.825	0.000
BWB-JON-33	39.416890,-76.671058	0.009	0.730	0.004	0.834	0.239	0.525	0.523	0.995	0.493	0.058	0.573	0.002
BWB-JON-34	39.399126,-76.649026	0.002	0.908	0.000	0.158	0.414	0.028	0.901	0.534	0.533	0.736	0.343	0.103
BWB-JON-35	39.411946,-76.714130	0.164	0.260	0.028	0.395	0.659	0.569	0.070	0.295	0.117	0.373	0.553	0.004
BWB-JON-36	39.397539,-76.665811	0.034	0.282	0.001	0.554	0.451	0.451	0.162	0.468	0.296	0.598	0.501	0.114
BWB-JON-38	39.392176,-76.641976	0.002	0.709	0.000	0.126	0.137	0.244	0.333	0.243	0.763	0.556	0.434	0.129
BWB-JON-39	39.389352,-76.639826	0.240	0.798	0.259	0.052	0.571	0.020	0.583	0.321	0.274	0.582	0.367	0.097
BWB-JON-40	39.349367, -76.645433	0.008	0.962	0.004	0.697	0.675	0.673	0.236	0.316	0.506	0.912	0.360	0.117
BWB-JON-41	39.377520,-76.645140	0.002	0.611	0.002	0.188	0.376	0.265	0.800	0.616	0.939	0.675	0.215	0.123
BWB-JON-42	39.367626,-76.648901	0.039	0.759	0.001	0.592	0.461	0.779	0.859	0.997	0.626	0.622	0.204	0.173
BWB-JON-43	39.323027,-76.625699	0.125	0.547	0.028	0.885	0.951	0.762	0.481	0.709	0.312	0.299	0.270	0.958
BWB-JON-44	39.331360,-76.641786	0.035	0.466	0.047	0.262	0.870	0.267	0.535	0.508	0.875	0.632	0.207	0.131
BWB-JON-45	39.310614,-76.620007	0.139	0.800	0.118	0.554	0.443	0.779	0.230	0.175	0.844	0.808	0.289	0.106