Tennessee Department of Environment and Conservation
Division of Water Resources
William R. Snodgrass Tennessee Tower,
312 Rosa L. Parks Avenue, 11th Floor, Nashville, Tennessee 37243
1-888-891-8332 (TDEC)

Phase II Small Municipal Separate Storm Sewer System (MS4) Annual Report

1. MS4 Information

Name of MS4: Hamilton County including the Cities/Towns of Collegedale, East Ridge, Lakesite, Lookout Mountain, Ridgeside, Red Bank, Soddy-Daisy, and the Town of Walden		MS4 Permit Number: TNS075566
Contact Person: Autumn Friday, P.E.		Email Address: autumnf@hamiltontn.gov
Telephone: (423) 209-7821		MS4 Program Web Address: www.hamiltontn.gov
Mailing Address: 1250 Market Street, Suite 3044		
City: Chattanooga	State: TN	ZIP code: 37402

What is the current population of your MS4? 176,256 (according to the 2020 Census Bureau Data, Hamilton County minus Chattanooga and Signal Mountain)

What is the reporting period for this annual report? July1 2021 to June 30 2022

2. Discharges to Waterbodies with Unavailable Parameters or Exceptional Tennessee Waters (Section 3.1)

A. Does your MS4 discharge into waters with unavailable parameters (previously referred to as impaired) for pathogens, nutrients, siltation or other parameters related to stormwater runoff from urbanized areas as listed on TN's most current 303(d) list and/or according to the on-line state GIS mapping tool (tdeconline.tn.gov/dwr/)? If yes, attach a list. ☒ Yes ☐ No

B. Are there established and approved TMDLs (http://www.tn.gov/environment/article/wr-ws-tennessees-total-maximum-daily-load-tmdl-program) with waste load allocations for MS4 discharges in your jurisdiction? If yes, attach a list. ☒ Yes ☐ No

C. Does your MS4 discharge to any Exceptional Tennessee Waters (ETWs - http://environment-online.tn.gov:8080/pls/enf_reports/f?p=9034:34304:4880790061142)? If yes, attach a list. ☒ Yes ☐ No

D. Are you implementing specific Best Management Practices (BMPs) to control pollutant discharges to waterbodies with unavailable parameters or ETWs? If yes, describe the specific practices: Yes, addition protection as prescribed in the MS4 permit such as EPSC design criteria and greater water quality buffer widths. ☒ Yes ☐ No

3. Public Education/Outreach and Involvement/Participation (Sections 4.2.1 and 4.2.2)

A. Have you developed a Public Information and Education plan (PIE)? ☒ Yes ☐ No

B. Is your public education program targeting specific pollutants and sources, such as Hot Spots? If yes, describe the specific pollutants and/or sources targeted by your public education program: NPS Pollution from urbanized and municipal areas; sediment discharge from construction activity, illicit discharge, monitoring ☒ Yes ☐ No

C. Do you have a webpage dedicated to your stormwater program? If yes, provide a link/URL: https://www.hamiltontn.gov/Department_WaterQuality.aspx (We are creating a new webpage which should be out in the next couple of months) ☒ Yes ☐ No

D. Summarize how you advertise and publicize your public education, outreach, involvement and participation opportunities: TNSA, Website, Media Releases, Flyers, Waterways, Social Media.

E. Summarize the public education, outreach, involvement and participation activities you completed during this reporting period: See Attachment.

F. Summarize any specific successful outcome(s) (e.g., citizen involvement, pollutant reduction, water quality improvement, etc.) fully or partially attributable to your public education and participation program during this reporting period: See Attached

4. Illicit Discharge Detection and Elimination (Section 4.2.3)

A.	Have you developed and do you continue to update a storm sewer system map that shows the location of system outfalls where the municipal storm sewer system discharges into waters of the state or conveyances owned or operated by another MS4?	☒ Yes	☐ No
B.	If yes, does the map include inputs into the storm sewer collection system, such as the inlets, catch basins, drop structures or other defined contributing points to the sewershed of that outfall, and general direction of stormwater flow?	☒Yes	☐ No
C.	How many outfalls have you identified in your storm sewer system? 945		
D.	Do you have an ordinance, or other regulatory mechanism, that prohibits non-stormwater discharges into your storm sewer system?	☒Yes	☐ No
E.	Have you implemented a plan to detect, identify and eliminate non-stormwater discharges, including illegal disposal, throughout the storm sewer system? If yes, provide a summary: _____	☒ Yes	☐ No

F. How many illicit discharge related complaints were received this reporting period? 21

G. How many illicit discharge investigations were performed this reporting period? 21

H. Of those investigations performed, how many resulted in valid illicit discharges that were addressed and/or eliminated? 21

5. Construction Site Stormwater Runoff Pollutant Control (Section 4.2.4)

A.	Do you have an ordinance or other regulatory mechanism requiring:		
	Construction site operators to implement appropriate erosion prevention and sediment control BMPs consistent with those described in the TDEC EPSC Handbook?	☒ Yes	☐ No
	Construction site operators to control wastes such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste?	☒ Yes	☐ No
	Design storm and special conditions for unavailable parameters waters or Exceptional Tennessee Waters consistent with those of the current Tennessee Construction General Permit (TNR100000)?	☒ Yes	☐ No
B.	Do you have specific procedures for construction site plan (including erosion prevention and sediment BMPs) review and approval?	☒ Yes	☐ No
C.	Do you have sanctions to enforce compliance?	☒ Yes	☐ No
D.	Do you hold pre-construction meetings with operators of priority construction activities and inspect priority construction sites at least monthly?	☒ Yes	☐ No

E. How many construction sites disturbing at least one acre or greater were active in your jurisdiction this reporting period? 67

F. How many active priority and non-priority construction sites were inspected this reporting period? 67

G. How many construction related complaints were received this reporting period? 22

6. Permanent Stormwater Management at New Development and Redevelopment Projects (Section 4.2.5)

A. Do you have a regulatory mechanism (e.g. ordinance) requiring permanent stormwater pollutant removal for development and redevelopment projects? If no, have you submitted an Implementation Plan to the Division? ☒ Yes ☐ No / ☐ Yes ☐ No

B. Do you have an ordinance or other regulatory mechanism requiring:

Site plan review and approval of new and re-development projects?	☒ Yes	☐ No
A process to ensure stormwater control measures (SCMs) are properly installed and maintained?	☒ Yes	☐ No
Permanent water quality riparian buffers? If yes, specify requirements: Per the MSA permit - 30 feet for drainage area under 1 square mile, 60 ft for drainage area equal to or greater than 1 square mile	☒ Yes	☐ No

C. What is the threshold for development and redevelopment project plans plan review (e.g., all projects, projects disturbing greater than one acre, etc.)? All projects within the Water Quality Program Boundary that disturb one acre or greater.

D. How many development and redevelopment project plans were reviewed for this reporting period? 28

E. How many development and redevelopment project plans were approved? 22

F. How many permanent stormwater related complaints were received this reporting period? 0

G. How many enforcement actions were taken to address improper installation or maintenance? 0

H. Do you have a system to inventory and track the status of all public and private SCMs installed on development and redevelopment projects?	☒ Yes	☐ No
I. Does your program include an off-site stormwater mitigation or payment into public stormwater fund? If yes, specify. _____	☐ Yes	☒ No

7. Stormwater Management for Municipal Operations (Section 4.2.6)

A. As applicable, have stormwater related operation and maintenance plans that include information related to maintenance activities, schedules and the proper disposal of waste from structural and non-structural stormwater controls been developed and implemented at the following municipal operations:

Streets, roads, highways?	☐ Yes	☐ No
Municipal parking lots?	☐ Yes	☐ No
Maintenance and storage yards?	☒ Yes	☐ No
Fleet or maintenance shops with outdoor storage areas?	☒ Yes	☐ No
Salt and storage locations?	☒ Yes	☐ No
Snow disposal areas?	☒ Yes	☐ No
Waste disposal, storage, and transfer stations?	☒ Yes	☐ No

B. Do you have a training program for employees responsible for municipal operations at facilities within the jurisdiction that handle, generate and/or store materials which constitute a potential pollutant of concern for MS4s? ☒ Yes ☐ No

If yes, are new applicable employees trained within six months, and existing applicable employees trained and/or retrained within the permit term? ☐ Yes ☒ No

8. Reviewing and Updating Stormwater Management Programs (Section 4.4)

A. Describe any revisions to your program implemented during this reporting period including but not limited to:

Modifications or replacement of an ineffective activity/control measure. _____

Changes to the program as required by the division to satisfy permit requirements. _____

Information (e.g. additional acreage, outfalls, BMPs) on newly annexed areas and any resulting updates to your program. _____

B. In preparation for this annual report, have you performed an overall assessment of your stormwater management program effectiveness? If yes, summarize the assessment results, and any modifications and improvements scheduled to be implemented in the next reporting period. _____ ☐ Yes ☐ No

9. Enforcement Response Plan (Section 4.5)

A. Have you implemented an enforcement response plan that includes progressive enforcement actions to address non-compliance, and allows the maximum penalties specified in TCA 68-221-1106? If no, explain. _____ ☒ Yes ☐ No

B. As applicable, identify which of the following types of enforcement actions (or their equivalent) were used during this reporting period; indicate the number of actions, the minimum measure (e.g., construction, illicit discharge, permanent stormwater management), and note those for which you do not have authority:

Action	Construction	Permanent Stormwater	Illicit Discharge	In Your ERP?	
Verbal warnings	#0	#0	#2	☒ Yes	☐ No
Written notices	#18	#0	#1	☒ Yes	☐ No
Citations with administrative penalties	#6	#0	#0	☒ Yes	☐ No
Stop work orders	#2	#0	#0	☒ Yes	☐ No
Withholding of plan approvals or other authorizations	#0	#0	#0	☐ Yes	☐ No
Additional Measures	#0	#0	#0	Describe: _____	

C. Do you track instances of non-compliance and related enforcement documentation? ☒ Yes ☐ No

D. What were the most common types of non-compliance instances documented during this reporting period? Track out, lack of inlet protection, poorly installed erosion control, twice weekly reports not kept onsite, and stream buffer encroachments.

10. Monitoring, Recordkeeping and reporting (Section 5)

A. Summarize any analytical monitoring activities (e.g., planning, collection, evaluation of results) performed during this reporting period. Hamilton County monitors 9 physicochemical and biological characteristics within the local watersheds. These include: benthic macroinvertebrates, bacteria, dissolved oxygen, pH, conductivity, water temperature, nutrients (i.e. Nitrogen and Phosphorous), stage/flow, and sediment. For more about contimuous monitoring, see the attached Monitoring Strategy document.

B. Summarize any non-analytical monitoring activities (e.g., planning, collection, evaluation of results) performed during this reporting period. Qualitative habitat assessments were conducted on all stream segments where macroinvertebrates were collected.

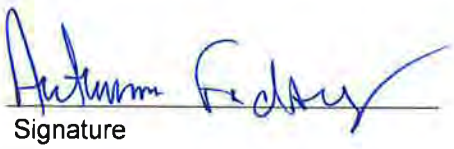
C. If applicable, are monitoring records for activities performed during this reporting period submitted with this report. ☒ Yes ☐ No

11. Certification

This report must be signed by a ranking elected official or by a duly authorized representative of that person. See signatory requirements in sub-part 6.7.2 of the permit.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Autumn Friday, P.E.
Engineering & WQ Manager
Printed Name and Title


Signature

09/28/2022
Date

Annual reports must be submitted by September 30 of each calendar year (Section 5.4) to the appropriate Environmental Field Office (EFO), identified in the table below:

EFO	Street Address	City	Zip Code	Telephone
Chattanooga	1301 Riverfront Pkwy, Suite 206	Chattanooga	37402	(423) 634-5745
Columbia	1421 Hampshire Pike	Columbia	38401	(931) 380-3371
Cookeville	1221 South Willow Ave.	Cookeville	38506	(931) 520-6688
Jackson	1625 Hollywood Drive	Jackson	38305	(731) 512-1300
Johnson City	2305 Silverdale Road	Johnson City	37601	(423) 854-5400
Knoxville	3711 Middlebrook Pike	Knoxville	37921	(865) 594-6035
Memphis	8383 Wolf Lake Drive	Bartlett	38133	(901) 371-3000
Nashville	711 R S Gass Boulevard	Nashville	37216	(615) 687-7000

City of Chattanooga / Hamilton County

Monitoring Strategy

February 2022

WOOLPERT

Hamilton County

Water Quality Program

CITY OF CHATTANOOGA CORPORATION SEAL TENNESSEE

Contents

City of Chattanooga/Hamilton County - Monitoring Strategy

Background

The City of Chattanooga and Hamilton County have collected samples and macroinvertebrates to assess water quality within their respective communities for approximately 20 years. More recently, the partners have used multi-parameter sondes and automatic samplers to improve their ability to characterize water quality in local receiving waters. In addition to these efforts to evaluate water quality, the City has implemented stream gauge stations for flood alert notifications. The partners' historical water quality and quantity data collection has been wide-ranging and used to support a variety of temporary and long-term goals.

In August 2019, the City and County executed a Memorandum of Understanding (MOU) between the partners titled "Participation in a Joint Watershed Data Sharing Program". The MOU acknowledged the benefits of working in tandem with clearly identified goals and objectives for a long-term continuous monitoring program to enhance both data collection programs. The MOU served as the catalyst for the development of this monitoring strategy, which will help the partners prioritize implementation of a county-wide monitoring network and on-going sampling by watershed.

1.0 Program Objective/Drivers

The purpose of the MOU between the partners includes several objectives to be achieved with the joint monitoring program as follows:

- To comply with State and Federal Clean Water laws
- To enhance regional emergency management preparedness and response
- To ensure consistent water quality monitoring

As evidenced by these objectives and as stated in the MOU, the data will be used to monitor streamflow and water quality across jurisdictional boundaries. Although the MOU provides a foundation for the continuous monitoring program, it is important that the purpose and objectives also align with broader City of Chattanooga and Hamilton County council and departmental goals.

1.1 City of Chattanooga - Department of Public Works (DPW)

1.1.1 Mission Statement

Several of the City of Chattanooga's departments have developed vision and/or mission statements to summarize the primary directive/goal for its departments' services. The Mission Statement for the City DPW is included on the Public Works home page as follows:

"*Serve people with integrity and improve the infrastructure and environment through excellence*."

The City of Chattanooga has implemented and maintains many programs to improve the environment through water quality initiatives. Although the long-standing sampling program already helps the City of Chattanooga assess progress towards improved water quality, the proposed monitoring program will provide an uninterrupted and enhanced perspective of local conditions. The City of Chattanooga will obtain high-frequency data during dry and

wet conditions, day and night, weekdays, and weekends. The high-frequency data should serve as a springboard to identifying appropriate Best Management Practices (BMPs) to improve the environment.

1.1.2 Stormwater and Flood Management Policy

As part of the American Public Works accreditation process, the DPW has developed a Stormwater and Flood Management Policy (Policy) numbered DPW 27. The Policy defines the purpose of the document, target levels of service for public stormwater infrastructure, and those responsible for implementing City of Chattanooga services related to stormwater and flood management.

The proposed monitoring program will provide data to assist the City of Chattanooga with many of the 19 duties and goals listed in the Policy. The program will particularly assist with Section 27.4.e "Determining Effectiveness – Sampling and Monitoring" of its Water Quality Goals. The City of Chattanooga is likely to realize direct benefits from the monitoring program as it relates to the following sections of the Policy:

Table 1: Monitoring Benefits Related to the Stormwater and Flood Management Policy

Section	Practice	Benefit
27.3	Floodplain and Floodway Management	Post-storm recurrence interval calculation, flood map verification/improvement
27.4	Water Quality Goals	Pollutant assessment, determining effectiveness, assess impairments
27.5	System In-Flow of Polluted Runoff	Short- and long-term pollutant trends
27.6	Allowable Non-Stormwater Discharges into System	Illicit discharge detection
27.7	Watershed Stormwater Drainage Master Plan	Model calibration data
27.11	Stormwater System Improvement	General system capacity assessment, high watermarks
27.12	Sediment and Erosion Control	Monitoring real-time turbidity
27.13	Stormwater Flood Warning Systems	Flood alert notifications
27.19	Public Education	Provide public dashboard to real-time data and educational programs for schools

The monitoring program should help the City of Chattanooga meet and exceed the standards set in the City of Chattanooga's Stormwater and Flood Management Policy.

1.2 Thrive Regional Partnership

The Thrive Regional Partnership (Thrive) is a visionary planning organization encompassing a 16-county region including northeast Alabama, northwest Georgia, and southeast Tennessee (see Figure 1). Both the City of Chattanooga and Hamilton County provide financial support to allow Thrive to function as an independent organization. The mission of the Thrive Regional Partnership is to address the complexities of regional growth and is stated on their website (www.thriveregionalpartnership.org) as follows:

> "*The Thrive Regional Partnership inspires responsible growth through conversation, connection, and collaboration in the tri-state Chattanooga region.*"

Thrive has identified five (5) core values to guide the implementation of the program. Within the explanation of the core values are descriptions that can be easily be connected to the resourcefulness and benefits of the monitoring program (www.thriveregionalpartnership.org/core-values).

The following are four (4) of the five (5) core values with excerpts that align with the monitoring program:

Stewardship – "*We are trusted stewards of… the region's natural and cultural resources.*" – Continuous water quality data provides unrivaled environmental awareness and the ability for real-time oversight of critical natural resources.

Relationship Building – "*We recognize that progress moves at the speed of trust, and trust is built when collaborative solutions are designed around the voices of the people we serve.*" – This strategy is based upon collaboration between the City of Chattanooga and Hamilton County. The intended integration of remote telemetry with continuous monitoring will provide the means to share real-time data with the public. Transparency builds trust.

Figure 1: Thrive 55 Regional Partners

Results Oriented – "*Our focus is on achieving measurable outcomes based on clear, strategic goals that align with our mission and purpose, rather than the appearance of results.*" – The description of this core value could easily serve as the overarching objective of this joint monitoring program. Every aspect of this strategy development process and the resulting quantitative results (>200,000 data points/station/year) align with this core value.

Quality – "*The quality of our work reflects the quality of our organization and the region's aspirations.*" – The monitoring approach selected by the partners uses cutting-edge sensor technology. With the planned development of SOPs and third-party QC, the quality of the dataset will be second to none. The data will allow public works staff to provide regional leaders with watershed assessments that can be relied upon.

The rollout of the Thrive program has been characterized and cleverly themed as a "Watershed Moment," a play on words regarding opportunity and the surrounding landscape which defines the tri-state region (www.thriveregionalpartnership.org/projects/watershed-moment-vision). The opening paragraph describing the Watershed Moment vision states the following:

> "*The tri-state Chattanooga region is defined by a portion of the Tennessee River watershed and its tributaries. For thousands of years, these waters have been the lifeblood of the natural and human communities that inhabit this special and beautiful landscape of hills, hollows, towns, and farms*."

The Vision further includes references to Conservation, Protection, Restoration, Biodiversity, and Habitat within these tributaries that make up the watershed. The ability to measure the potential achievement of these goals is greatly facilitated by the data that will be generated by the joint monitoring program.

The proposed monitoring program appears vital and almost inseparable to achieving the realization of the Thrive Vision. With the footprint of the program in the most populated and central portion of the tri-state region, it is particularly more impactful than it might be elsewhere. If the City of Chattanooga and Hamilton County leadership truly aspire to support the goals within the Thrive initiative, it is clear that the joint monitoring program is unknowingly an essential component to the organization's success.

1.3 MS4 Permit Requirements

Most urban communities are subject to municipal separate storm sewer system (MS4) permit requirements, and the City of Chattanooga and Hamilton County are no exception. These permits typically require some degree of sampling or monitoring that is dependent upon the community's size (Phase 1 or Phase 2 MS4) and whether the community includes Total Maximum Daily Loads (TMDLs) within its political boundaries that include load allocations associated with stormwater runoff. The City of Chattanooga and Hamilton County are permitted MS4s through TDEC, although both are operating their MS4s under permits that have passed their expiration dates. Pending further progress and draft new permits from TDEC, the partners continue to adhere to these permits as listed below:

Table 2: MS4 Permit Information

Entity	MS4 Designation	Permit Number	Original Expiration Date
City of Chattanooga	Phase 1 – Individual Permit	TNS068063	Nov 30, 2015
Hamilton County	Phase 2 – General Permit	TNS000000	Sept 30, 2021

Both of these permits include requirements for sampling or monitoring, which has been the primary historical reason for the development of the on-going monitoring programs for each community.

1.3.1 City of Chattanooga

The City of Chattanooga Phase 1 permit includes four sections that explain the sampling or monitoring requirements as follows:

> **Section 2.2, Discharges into Waterbodies with EPA-Approved or Established TMDLs**
>
> *"A monitoring component to assess the effectiveness of the BMPs in achieving the wasteload allocations must also be included in the plan. Monitoring can entail a number of activities, including but not limited to: outfall monitoring, in-stream monitoring or modeling. Monitoring requirements are further described in part 4 of this permit."*

Section 2.3, Discharges to Impaired Waterbodies without EPA-Approved TMDLs

"… the permittee… must demonstrate (through outfall monitoring, in-stream monitoring and/or modeling) that the discharge will not further the impairment. A monitoring component to assess the effectiveness of the BMPs in controlling the discharge of pollutants of concern must also be included in the plan. Monitoring can entail a number of activities, including but not limited to: outfall monitoring, in-stream monitoring or modeling. Monitoring requirements are further described in part 4 of this permit."

In addition to these requirements, **Section 3.3, Stormwater Monitoring Program**, includes monitoring requirements that are unique to the City of Chattanooga. These wide-ranging requirements are particular regarding locations for data collection, parameters for collection, and frequency of the assessments. The City of Chattanooga is required to conduct the following:

- Wet weather monitoring for three (3) storms/year at five (5) select locations for over 30 different parameters
- Ambient annual monitoring at five (5) locations for the same parameters included for wet weather
- Biological monitoring at two (2) urban streams, twice/year
- Sampling for watershed characterization of Friar Branch for *E. coli* and TSS, twice/year
- Field sampling using the grid method to identify illicit discharges and track illicit discharges by landuse, twice/permit term
- Sampling at four (4) NPDES permitted industries and four (4) municipal waste management facilities once/year for a variety of parameters
- Collecting two (2) samples for PHFs during the summer once during the permit term
- Collection of samples from a sub-watershed without establishing MS4 maintenance procedures

Section 4, Monitoring, Recordkeeping, and Reporting, of the permit, provides two options for meeting the requirements under Section 2.2 and 2.3. The City of Chattanooga can conduct "Analytical" or "Non-analytical monitoring," and the permit provides details regarding compliance with each of these options.

1.3.2 Hamilton County

The TN NPDES general permit for discharges from small MS4s includes two sections in Section 3, Special Conditions, which require sampling or monitoring. Both sections include very similar language to that included in the City of Chattanooga individual permit. The following are excerpts from those sections of the permit:

Section 3.1.1, Discharges into Waterbodies with EPA-Approved or Established TMDLs

"The SWMP must also contain a monitoring and/or evaluation component to assess the effectiveness of the BMPs in achieving the reductions, and overall compliance with the standard of the Maximum Extent Practicable (MEP). Monitoring can entail a number of activities, including but not limited to: outfall monitoring, instream monitoring or modeling. Monitoring requirements are further described in part 5 of this permit."

Section 3.1.2, Discharges into Waterbodies with Unavailable Parameters without TMDLs

"Compliance with this section shall be demonstrated through a monitoring component to assess the effectiveness of the BMPs in controlling the discharge of these pollutants. This component must also be included in the SWMP. Monitoring can entail a number of activities, including but not limited to: outfall monitoring, instream monitoring or modeling. Monitoring requirements are further described in part 5 of this permit."

In **Section 5, Monitoring, Recordkeeping, and Reporting**, the permit provides two options for meeting the requirements under Section 3. Hamilton County must conduct "Analytical" and "Non-analytical monitoring," and may follow the details provided in the permit or submit an alternative monitoring plan for approval by the State.

1.4 TMDLs

As highlighted above, both the City of Chattanooga and Hamilton County MS4 permits require monitoring to be incorporated into the respective community's SWMP to evaluate the effectiveness of BMPs to meet TMDLs. The vast majority of Hamilton County drains within the Lower Tennessee River (HUC 06020001) watershed. Currently, there are nine (9) EPA-approved TMDLs for two (2) different watersheds that include portions of Hamilton County (Lower Tennessee River and Hiwassee). Of the nine (9) TMDLs, only six (6) are included within waterbodies in this monitoring strategy, all of which were developed for the Lower Tennessee River. The Lower Tennessee River watershed includes many of the watersheds that are characterized for potential monitoring throughout this strategy document. Table 3 below includes a list of the affected waterbodies and the respective TMDL parameter:

Table 3: TMDL Pollutant Parameter by Listed Waterbody

Listed Waterbody	TMDL Pollutant Parameter						
	pH	*E. coli*	Siltation, habitat alteration	pH, iron	Dioxins, PCBs	*E. coli*	PCBs, dioxin
Year	2005	2006	2006	2006	2009	2010	2010
North Market Street Branch	X	X				X	
Friar Branch	X					X	
Unnamed Trib to Citico Creek	X	X	X			X	
Spring Creek	X					X	
South Chickamauga Creek	X					X	
Lewis Branch	X					X	
Citico Creek	X	X	X				
Dobbs Branch	X	X	X				
Unnamed Trib to Chattanooga Creek	X	X	X				
McFarland Springs Branch	X	X				X	
Gillespie Springs Branch	X		X			X	
Chattanooga Creek	X	X	X		X	X	
Stringers Branch	X	X	X				
Lewis Branch		X	X				
Spring Creek		X					
Friar Branch		X	X				
South Chickamauga Creek		X	X				
South Suck Creek			X	X			
North Suck Creek				X			
Ninemile Branch			X				
N. Chickamauga Creek			X				
Unnamed Trib to Chattanooga Creek			X				
Mountain Creek			X			X	
Unnamed Trib to South Chickamauga Creek						X	
Macky Branch						X	
Wolfe Branch						X	

Listed Waterbody	TMDL Pollutant Parameter						
	pH	*E. coli*	Siltation, habitat alteration	pH, iron	Dioxins, PCBs	*E. coli*	PCBs, dioxin
Long Savannah Creek (incl. unnamed trib to Long Savannah Creek)						X	
Bivens Branch						X	
Shoal Creek						X	
Short Creek						X	
Stanley Branch						X	
Bee Branch						X	
Stringers Branch						X	
Rogers Branch						X	
Little Wolftever Creek						X	
Chestnut Creek						X	
Wilkerson Branch						X	
Unnamed Trib to Wolftever Creek						X	
Wolftever Creek						X	
Nickajack Reservoir							X

Although a comprehensive monitoring program is ***recommended*** to support the City of Chattanooga's mission statement, the City of Chattanooga's Storm Water and Flood Management Policy, and the Thrive Regional Partnership, the partners' MS4 permits ***require*** both entities to conduct monitoring for regulatory compliance.

2.0 Watershed Grouping

The partners provided 19 major watersheds of interest to consider for the monitoring strategy. In addition to and within the 19 major watersheds, the partners provided 49 subwatersheds that were delineated using ArcHydro software (note that these boundaries were not further edited/refined by Woolpert). After ultimately combining the major watersheds and subwatersheds to obtain an appropriate watershed scale for the evaluation, Woolpert and the partners identified a total of 31 subwatersheds for consideration, ranging from 1 to 26 square miles.

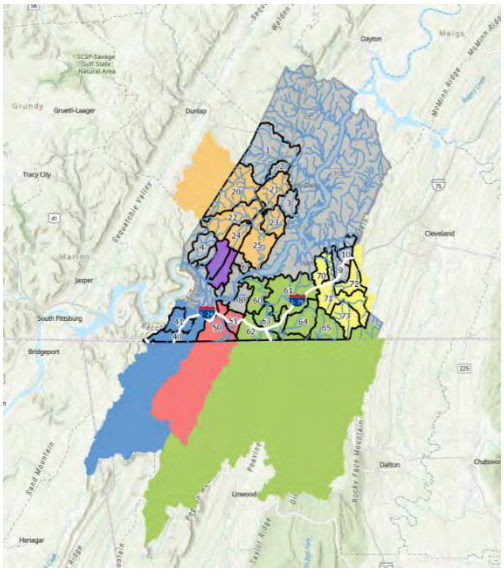


Figure 2: Watershed Grouping Inside Hamilton County

Collecting data from too large of a watershed would yield inconclusive information for BMP assessments or other targeted improvements. Conversely, equipment frequently becomes buried or unsubmerged when the upstream watershed is too small to produce consistent flow. In an effort to bring all subwatersheds to similar sizing, subwatersheds were merged, removed, and divided as follows:

- Drainage outside of Hamilton County was noted in several subwatersheds before clipping each to the study area.
- Subwatersheds under 5 square miles were merged with one another where USGS streams and hydro coverage indicated merging was appropriate.

- Subwatersheds under 5 square miles with no notable characteristics pertaining to water quality and quantity monitoring and discharging directly to the Tennessee River or out of Hamilton County were removed from the analysis.
- Subwatersheds over 30 square miles were divided into upstream and downstream portions.

To better understand how different areas are related spatially and how they influence one another, subwatersheds were grouped by major watersheds in Hamilton County as follows: Chattanooga Creek, Lookout Creek, North Chickamauga Creek, South Chickamauga Creek, Stringers Branch, Wolftever Creek, and several individual watersheds discharging to the Tennessee River, Chickamauga Lake, or Harrison Bay.

3.0 Data Sources and Analysis

3.1 Water Quality

Analysis of historical monitoring data was performed for 31 subwatersheds in order to characterize water quality parameters that might direct the partners' future water quality data collection efforts. As previously mentioned, for analysis purposes, the grouping into six major watersheds, provides a macro level insight as a whole. The grouping of watersheds, titled "Other" in Appendix A, that drain directly to the Tennessee River should be considered individually and not as a group. Data were collected between 2009-2021 (herein referred to as historical data) from three different agencies for this effort: City of Chattanooga, Hamilton County, and TDEC. These data were combined within each subwatershed with minor adjustments where required to account for issues with units and other abnormalities. The sampling parameters that were reviewed for inter-watershed comparisons were total nitrogen (TN), total phosphorus (TP), total suspended solids (TSS), *E. coli*, dissolved oxygen (DO), and conductivity. Additional data for pH, lead, copper, and iron were sporadically available and included for reference in Appendix A.

Table 4: Summary of Sites Reviewed by Data Source and Watershed

Major Watershed	Reference Number	Subwatershed	Total Unique Sites	Total Number of Stations by Source		
				City of Chattanooga	Hamilton County	TDEC
Other	1	Soddy Creek	9		1	8
	2	Little Soddy Creek	2		1	1
	3	Daisy Dallas Tributary	1			1
	4	Middle Creek	8			8
	5	Shoal Creek	3		1	2
	7	North Market St Branch	12	12		1
	8	Citico Creek	18	17		4
	9	Rogers Branch	4		3	1
	11	Ison Springs Branch	1			1
North Chickamauga Creek	20	US North Chickamauga Creek	12			12
	21	Poe Branch	3		2	1
	22	Falling Water Creek	4		2	2
	23	Lick Branch	3		1	2
	24	Pitts Branch	8	2	3	5
	25	DS North Chickamauga Creek	13	10	1	3
Stringers Branch	30	Mountain Creek	11	7	3	4
	31	Stringers Branch	5	1	4	3
Lookout Creek	40	Lookout Creek	3	1		3
	41	Black Creek	6	1		6
Chattanooga Creek	50	Chattanooga Creek	28	20	1	10
	51	Dobbs Branch	10	10		1
South Chickamauga Creek	60	Downstream SDS South Chickamauga Creek	3	1		3
	61	Friar Branch	15	11		7
	62	Spring Creek	4	1	3	2

Major Watershed	Reference Number	Subwatershed	Total Unique Sites	Total Number of Stations by Source		
				City of Chattanooga	Hamilton County	TDEC
	63	Upstream SUS South Chickamauga Creek	8	1	3	6
	64	Mackey Branch	5	1	1	4
	65	Hurricane Creek	2			2
Wolftever Creek	70	Hunter Branch	1			1
	71	Wolftever Creek	7		4	5
	72	Little Wolftever Creek	4		3	2
	73	Chestnut Creek	5		2	4

As shown in Table 4, major watersheds considered in this effort were North Chickamauga Creek, Stringers Branch, Lookout Creek, Chattanooga Creek, South Chickamauga Creek, Wolftever Creek, and a category containing individual watersheds that were not grouped with any other subwatershed. The other category should be viewed as each watershed being separate and not considered as an overall watershed. Interpretation of the historical data is based on the assumption that samples were collected under both dry and wet weather conditions to provide an overall picture of average conditions in each watershed.

This section highlights key observations of the results of these analyses for the six major watershed groups as well as the individual subwatersheds in the "Other" category, organized by measured parameter. All tabular and graphical summaries of the historical data by each parameter are summarized and included in Appendix A. Subwatersheds with low sample counts for each parameter were included in these summaries for completeness, but the lack of data in certain locations should be cautiously considered when comparing these to other subwatersheds.

Total Nitrogen

Nitrogen is a key nutrient that stimulates the growth of aquatic plants and algae. Excess levels of nitrogen can lead to the overgrowth of these organisms, possibly resulting in oxygen depletion and unpleasing aesthetics. TDEC does not assign statewide numerical criteria to total nitrogen; therefore, the subwatersheds were compared only to one another. The average and median TN for the overall dataset are 0.86 mg/L and 0.61 mg/L, respectively. Ten of the considered subwatersheds (3, 7, 8, 23, 31, 40, 50, 51, 62, 70) have an average or median TN of over 1 mg/L. Three of these ten subwatersheds (3, 23, 70) have very limited datasets and should be interpreted with caution. Of particular note are the subwatersheds associated with the Chattanooga Creek major watershed. Chattanooga Creek (50) has a median of 0.6 mg/L and an average of 1.3 mg/L. This is due to a large number of outliers above the median, indicating possible local influences elevating total nitrogen at that location. Dobbs Branch (51) has the highest median and average TN of any considered subwatershed of 2.7 mg/L and 2.9 mg/L, respectively.

Total Phosphorus

Similarly to nitrogen, phosphorus is another key nutrient that can lead to the excess growth of aquatic plants and algae groups. Likewise, TDEC does not assign total phosphorus numeric criteria for surface waters; therefore, the inter-watershed comparisons will be used to note observations of interest. The overall average and median TP for the dataset are 0.05 mg/L and 0.02 mg/L, respectively. Eight of the observed subwatersheds (7, 8, 23, 30, 40, 50, 51, 63) have an average or median TP of over 0.05 mg/L. Lick Branch (23) has a limited dataset and should be interpreted with caution. Chattanooga Creek (50) has the highest average of all subwatersheds with a value of 0.12 mg/L; however, the median is 0.04 mg/L. This is again due to the large number of outliers at this location, eight of which are above 0.60 mg/L. Citico Creek (4) has the highest median of 0.09 mg/L and an average of 0.10 mg/L. Stringers Branch (30) is also of particular note, with six outliers greater than 0.60 mg/L.

Total Suspended Solids

Elevated TSS levels have a negative effect on macroinvertebrates/fish, stream aesthetics, water treatment costs (where applicable), and overall water quality. Excess TSS can also be an indicator of streak bank erosion or sediment

runoff from construction. TDEC again has not developed statewide numerical criteria, so comparisons will be made between subwatersheds and not a water quality standard. The overall dataset average and median are 14 mg/L and 5 mg/L, respectively. Of note, here are the seven subwatersheds (7, 8, 25, 30, 50, 51, 61) that have a large number of outliers greater than 50 mg/L. The periods of increased TSS during the time these samples were collected potentially indicates large amounts of sediment runoff or channel/stream bank erosion at these locations.

E. coli

The significant presence of *E. coli* in a waterway is a strong indicator of human or animal waste contamination. Potential sources are sanitary sewer overflows, leaks in septic or sanitary sewer systems, human waste from homeless communities, and runoff from domestic or wild animal waste. TDEC's single sample criteria for recreation is 487 CFU/100ml for exceptional waters and 941 CFU/100ml for other waters. The overall dataset average and median are 1,274 CFU/100mL and 270 CFU/100mL, respectively. Soddy Creek (1), Daisy Dallas Trib (3), Lick Branch (23), and Hurricane Creek (65) all have maximum sample concentrations less than the recreational bacteria standard for exceptional waters. Collectively, there were 167 samples out of the dataset that exceeded 5,000 CFU/100ml. North Market St Branch (7), Citico Creek (8), and Dobbs Branch (51) recorded 9%, 7.5%, and 10.5% of their total samples, respectively, at a value over 5,000 CFU/100mL. Dobb's Branch had the highest average out of the subwatersheds (3,559 CFU/100ml) followed by North Market St Branch (2,815 CFU/100ml), Citico Creek (2,495 CFU/100ml), Friar Branch (1,220 CFU/100ml) and DS North Chickamauga Creek (1,218 CFU/100ml).

Dissolved Oxygen

Dissolved oxygen is a measure of how much oxygen in the water is available to living aquatic organisms, making it a very important component of stream health. Although dissolved oxygen in a waterway typically fluctuates in any given year due to seasonal temperature differences, the concentration can produce adverse impacts if it falls below the TDEC daily average standard of 5mg/L with a minimum DO level of 4 mg/L for a single measurement. Low DO can be the result of high levels of biological and/or chemical oxygen-depleting substances or stagnant water during dry periods. No subwatershed has an overall average less than 5 mg/L. Sixteen subwatersheds have had at least one measurement resulting in less than 4 mg/L of DO. Of particular note are North Market St Branch (7), Citico Creek (8), Downstream North Chickamauga Creek (25), Chattanooga Creek (50), and Dobbs Branch (51), which have had 10%, 7%, 8%, 8%, and 9% of their samples measure below 4 mg/L of DO, respectively.

pH

High and low pH values can be an indicator of multiple factors contributing to anthropogenic effects on a stream. These conditions can also be exacerbated by acidic rainfall. TDEC standards state that pH should be between 6.0 – 9.0 for wadeable streams and 6.5 – 9.0 for larger waterbodies. North Chickamauga Creek (20) is the only subwatershed to have an average or median pH outside of these ranges with a value of 5.4 and 5.9, respectively. In total, eight subwatersheds have at least one measurement above a pH of 9, and fifteen subwatersheds have at least one measurement less than a pH of 6. Subwatersheds with a large number of outliers, indicating potential influencing factors, are Mountain Creek (30), Chattanooga Creek (50), and Friar Branch (61).

Conductivity

Abrupt changes in concentrations and the fluctuation of conductivity within a watershed often indicates a discharge or source of pollution in the waterbody. A decrease in conductivity indicates dilution of the waterbody, which is usually the result of a storm event. Particular attention was given to outliers for this parameter to gain an understanding of how often a waterbody exceeds the normal range of conductivity values in that subwatershed. Nineteen subwatersheds show at least one outlier above the normal value. Citico Creek (8), Chattanooga Creek (50), Dobbs Branch (51), Downstream South Chickamauga Creek (61), and Friar Branch (62) show a large number of outliers, indicating potential discharge or runoff of pollutants into these waterbodies. Upstream North Chickamauga Creek (20) also displays a large range of conductivity values, potentially indicating regular water quality changes in that subwatershed.

3.2 Stage/Flow

The United States Geological Survey currently has 12 stream gauge stations within the major watersheds. Nine (9) stream gauge stations are within Hamilton County and seven (7) of these are within watersheds prioritized by this monitoring strategy (Table 5). The number of stream gauge stations or flood alert stations vary based on watershed.

Table 5: Number of Active USGS Stations by Watershed within Hamilton County

Watershed Name	Number of USGS Stations
South Chickamauga Creek	2
Chattanooga Creek Watershed	0
Wolftever Creek	1
Lookout Creek	1
Stingers Branch and Mountain Creek	2
North Chickamauga Creek	1
Citico Creek	0
Access Tributary to the Tennessee River	0

The City of Chattanooga and Hamilton County use stream stage, rainfall, and flow data from the USGS stations to calibrate local flood models. Additionally, data from some locations are used by the National Weather Service's Advanced Hydrologic Prediction Service for the predictive National Water Model. Outside of water quantity, each USGS monitoring location includes a rain gauge that has been used to assist with the partners' stormwater programs. With a large network of rain gauges, stage and flow already being collected in the major watersheds, the partners will leverage any current or historical data collection to avoid redundancy with any proposed monitoring stations.

4.0 Criticality Analysis

One approach for evaluating and prioritizing stations and data collection is through the coupled evaluation of water quality and quantity risks and consequences. The identification of possible threats to water quality and sources of flooding are important to consider in the protection of human and environmental health and safety. Although the management of several of these risks to water quality and quantity is not necessarily the partners' responsibility, these variables could be detrimental to water quality and quantity. They could also negate any incremental gains in water quality and quantity enhancement from BMPs implemented by the partners and should be monitored closely. The sections below list water quality and quantity risks and consequences considered while developing this monitoring strategy based upon available geospatial information (see Monitoring Strategy Matrix in Appendix B). Additional information is provided below regarding the source of the data and the date of the data source if known.

4.1 Water Quality and Quantity Risks

Impervious Area

A county-wide impervious area coverage was provided that included land coverage of airports, buildings, driveways, structures, parking, roads, sidewalks, and other miscellaneous impervious surfaces. While the Hamilton County land coverage dataset was created in 2012, information is routinely maintained and updated. Large areas of imperviousness and development correspond to high peak runoff rates and pollutant potential from non-point source runoff.

Reported Sanitary Sewer Overflow (SSO)

Reported SSOs account for all Hamilton County Waste and Wastewater Treatment Authority (WWTA) and City of Chattanooga Moccasin Bend Wastewater system five (5)-year totals (2016-2020) observed in each subwatershed. Total SSOs observed in 2020 alone were also quantified in each subwatershed. The five (5)-year total is indicative of the risk of future SSOs due to failing sanitary sewer infrastructure and the 2020 total of the current state of this infrastructure.

Remediation Sites
Remediation Sites refers to sites that are or have been under the Tennessee Division of Remediation (DOR) supervision. Data were obtained from the DOR website in November 2021. The Division of Remediation identifies and investigates hazardous substance sites. Stormwater runoff from a remediation site poses threats to public and environmental health.

Permitted Industrial Facilities
Tennessee's industrial stormwater discharge permit is known as the Tennessee Multi-Sector Permit (TMSP). TDEC provided county-wide TMSP coverage updated in 2021.The TMSP covers facilities with significant industrial materials exposed to rainfall and therefore maintains the potential for stormwater contamination.

Visual Stream Assessment Score
Hamilton County and City of Chattanooga staff performed visual stream assessment at many stream segments throughout the study area. Hamilton County's stream assessment was conducted from 2010 to 2014, and the City of Chattanooga's stream assessment was performed from 2011 to 2015. Factors considered in the resulting score assigned to stream segments are canopy/vegetation, construction, alteration, blockage, outfalls/pipe crossings, and erosion. The total score was averaged in each subwatershed and designated to a category of low, medium, or high accordingly.

4.2 Water Quality and Quantity Consequences

Structures in the 500-Year Floodplain
Hamilton County provided all existing structures within the 500-year FEMA floodplain in Hamilton County boundaries. These structures are susceptible to flooding.

Vulnerable Parks
Vulnerable Parks refer to City of Chattanooga and Hamilton County parks and recreational facilities that fall within 100-ft of a stream. The City of Chattanooga and Hamilton County invite the public to enjoy these areas and should monitor them closely. Water quality and quantity issues in subwatersheds with vulnerable parks may pose a threat to public health and safety.

Managed Natural Areas
Managed Natural Areas are state or federally managed properties within Hamilton County (2004). These areas are managed to protect Native American culture, wildlife habitat, or natural resources and include reservations, state parks, state forests, state wildlife refuges, habitat protection areas, wildlife sanctuaries, and other managed areas.

Impaired Waters and TMDLs
While not depicted spatially, Impaired Waters from TDEC's 2020 303(d) list and TMDL Watersheds (October 2021) are included in the analysis. Subwatersheds with existing pollutants of concern that have resulted in the development of a TMDL or have the potential to become a TMDL are indicated with each pollutant of concern.

Each of the water quality and quantity risks and consequences included above have been identified on mapping by subwatershed and depicted in Figure 4 – Figure 8 and Appendix C. A tabular summary of each subwatershed is included in the Monitoring Strategy Matrix (Appendix B).

5.0 Watershed Priorities

The following section provides tiered watershed monitoring recommendations based on those factors highlighted earlier within this report. The recommendations range from the implementation of continuous water quality monitoring, to focused manual grab sampling during specific dry/storm conditions, to maintaining the sampling conducted by the partners. The following sub-sections define considerations used to categorize each subwatershed:

High Priority
For those subwatersheds included within various TMDLs and subject to 303(d) impairments, demonstrated poor water quality trends (see Section 4.0) that maintain notable flood risk and considerable risks/consequences, high-frequency data collection using a combination of continuous monitoring and discrete sampling during dry and storm conditions is recommended. These subwatersheds were generally highly developed and located in the vicinity of the downtown Chattanooga area. They have been denoted as "High Priority," and detailed watershed summaries have been provided for each subwatershed.

Priority
For subwatersheds with more moderate threats of adverse water quality, data trends that less frequently demonstrate concern, and fewer structures at risk of flooding, these subwatersheds have been grouped into a "Priority" subwatershed category. In some cases, these subwatersheds exhibited factors that indicated high priorities, but the watershed boundaries extended well beyond the City of Chattanooga or Hamilton County political boundaries. This implied potential reduced influence from the partners to make watershed-scale improvements and the need for multiple sample locations to assess influent to Hamilton County and effluent into the Tennessee River. These subwatersheds were prioritized lower for the onset of the continuous monitoring program. A two-tiered grab sampling approach is recommended for these watersheds.

Long Term Priority
The remaining subwatersheds have been grouped into a category referred to as "Long Term Priorities," indicating reduced or lack of immediate threats to water quality and flooding relative to the other two categories. These subwatersheds were commonly located outside of city limits and were less developed. These subwatersheds may or may not currently include locations that are sampled by the partners but may include TDEC sample locations. It is recommended that current sampling in these watersheds is maintained.

A tabular summary of all of the factors considered for prioritizing subwatersheds is included in the Monitoring Strategy Matrix in Appendix B.

5.1 High Priority Subwatersheds

The summaries below provide an overarching review of conditions in each high priority subwatershed to help the partners identify watershed monitoring priorities. Area maps are included for each high-priority subwatershed. Figure 3 provides a legend for each area map to follow (Figure 4– Figure 8). It is recommended to reference the map in Appendix C to further clarify each subwatershed location relative to other subwatersheds. These subwatersheds below (listed in no particular order) should be considered immediately for continuous monitoring to improve watershed characterization capabilities and to manage risks from flooding:

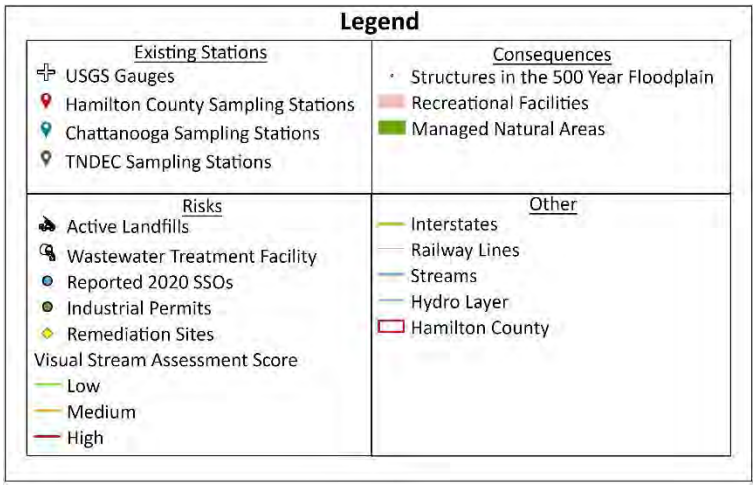


Figure 3: Area Maps Legend

Citico Creek (Subwatershed 8)

Located in the northeastern portion of downtown Chattanooga, the Citico Creek subwatershed is one of the subwatersheds that drains directly to the Tennessee River. Although draining only approximately six (6) square miles, the subwatershed is heavily regulated due to historical and well-documented water quality conditions. It includes 17 TDEC sample locations (the most of any subwatershed) and 16 City of Chattanooga sample locations that have been used for the identification/development of numerous existing impairments and TMDLs. As shown with the bullets below, the subwatershed is highly developed with many sources of concern related to water quality and flooding. With the extents of the subwatershed entirely contained within City of Chattanooga limits, continuous monitoring is recommended to further assess and characterize potential pollutant sources and BMPs to mitigate them.

- 100% within City of Chattanooga limits
- 34 existing sampling locations, tied for the subwatershed with most sample locations
- 61% impervious, 2nd most impervious subwatershed
- Moderate numbers of remediation sites and permitted industrial dischargers
- Includes 775 structures within the 500-year floodplain, 4th highest among all subwatersheds
- Includes six (6) impairment categories, most of all subwatersheds, and four (4) TMDL parameters
- Predominantly poor water quality over the last decade, highest median for TP among all subwatersheds, frequently elevated bacteria concentrations and low DO

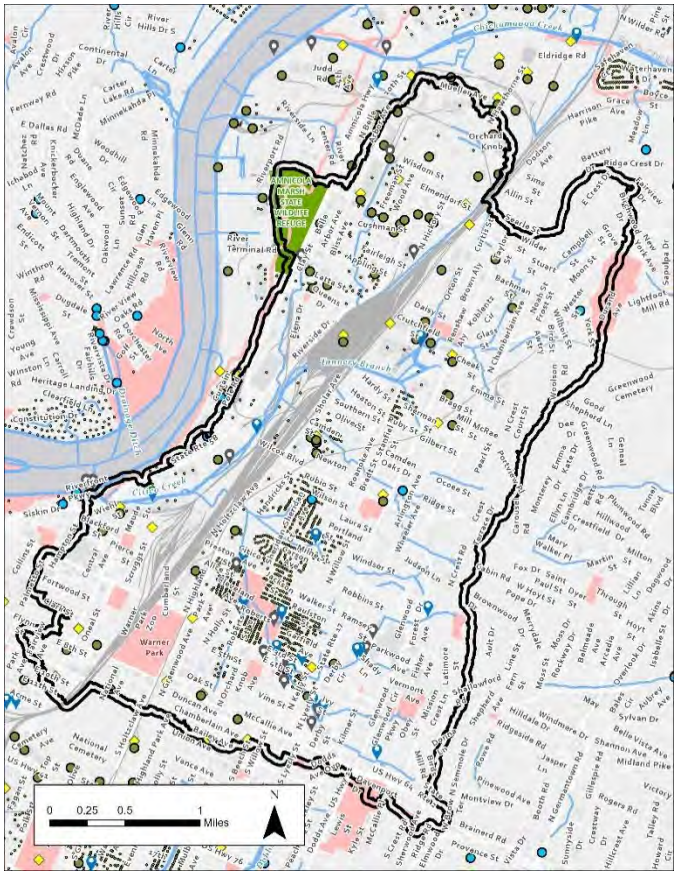


Figure 4. Citico Creek Area Map

Downstream North Chickamauga (Subwatershed 25)

The Downstream North Chickamauga subwatershed (as named/delineated) includes 17 square miles, but unlike the Citico Creek subwatershed, this tributary conveys drainage from 5 other subwatersheds within unincorporated Hamilton County and neighboring Sequatchie County that make up the North Chickamauga subwatershed. Although draining a portion of Sequatchie County, it includes much less drainage area outside of Hamilton County than those subwatersheds located along the southern TN border such as Lookout Creek, Chattanooga Creek, and South Chickamauga Creek. The subwatershed does not include the highest numbers in any particular category yet has a broad range of notable concerns across virtually every category included in the Monitoring Strategy Matrix located in Appendix B. The bullets below include only those metrics from subwatershed 25, but efforts to improve water quality here would likely require similar improvements across other contributing subwatersheds.

- Located within the North Chickamauga subwatershed
- One of the more highly sampled subwatersheds
- Includes a moderate number of SSOs with 30 just in 2020
- Includes a moderate number of permitting industries and a medium visual stream assessment score
- Contains the 4th highest number of structures at risk of flooding, with 683
- Anticipate much higher flows in this subwatershed due to the contributing drainage area upstream and would require a robust monitoring station to withstand these conditions
- Graded poor for *E. coli* and DO over last decade with frequent outliers for conductivity, yet currently includes no 303d impairments and one TMDL

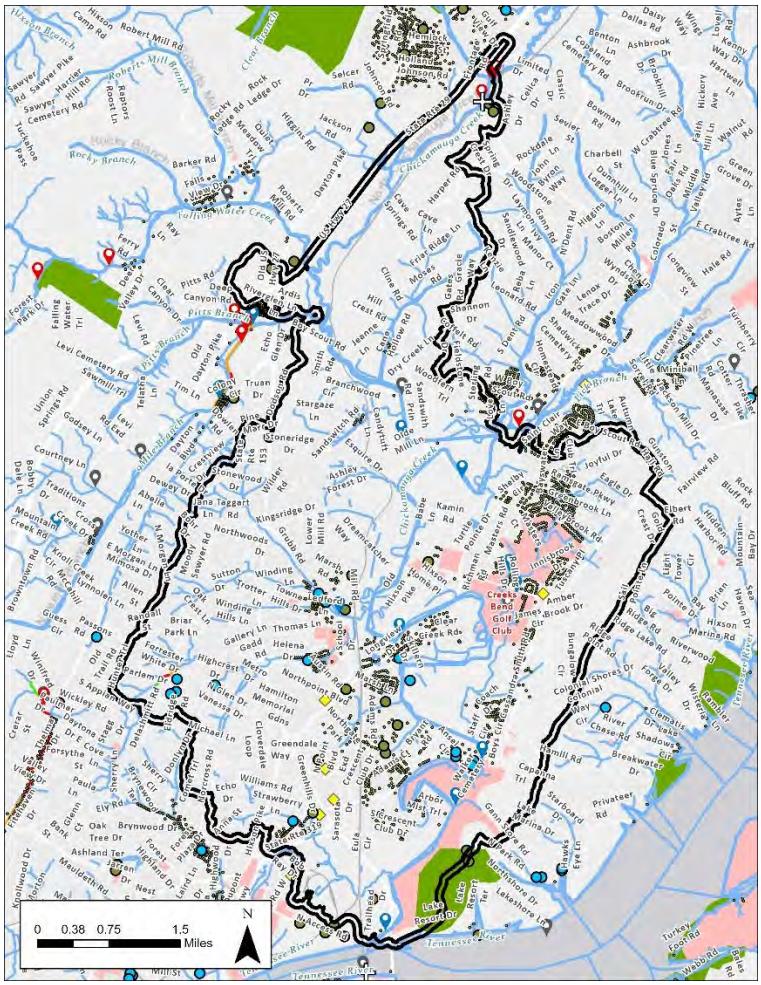


Figure 5. Downstream North Chickamauga Creek Area Map

Stringers Branch (Subwatershed 31)

Stringers Branch subwatershed is located on the west side of the Tennessee River adjacent to the Mountain Creek subwatershed, both draining into Baylor Lake before discharging into the River. Most of the Stringers Branch subwatershed is contained within the City of Red Bank, with minor overlap from City of Chattanooga limits at the outlet of the subwatershed. The combination of only 12 structures at risk of flooding and one (1) USGS gauge station along the main stem of the creek indicate notable flood risk management efforts in the subwatershed. However, this subwatershed includes all of the evaluated water quality risks with a high visual stream assessment score and is under considerable regulatory scrutiny by TDEC via 303 impairments and TMDLs.

- Only 18% of the subwatershed is within City of Chattanooga limits
- Includes a moderate number of sampling stations with nine (9) and one (1) USGS gauge station
- One of only two (2) subwatersheds with a high average visual stream assessment score
- Contains the 4th highest number of SSOs since 2015 with 140 and 34 just in 2020
- Includes very few structures at risk of flooding and only one (1) vulnerable park/manage area
- Demonstrated fair water quality over the last ten (10) years with frequent TP outliers
- Heavily regulated for water quality four (4) 303(d) impairments and 4 TMDLs

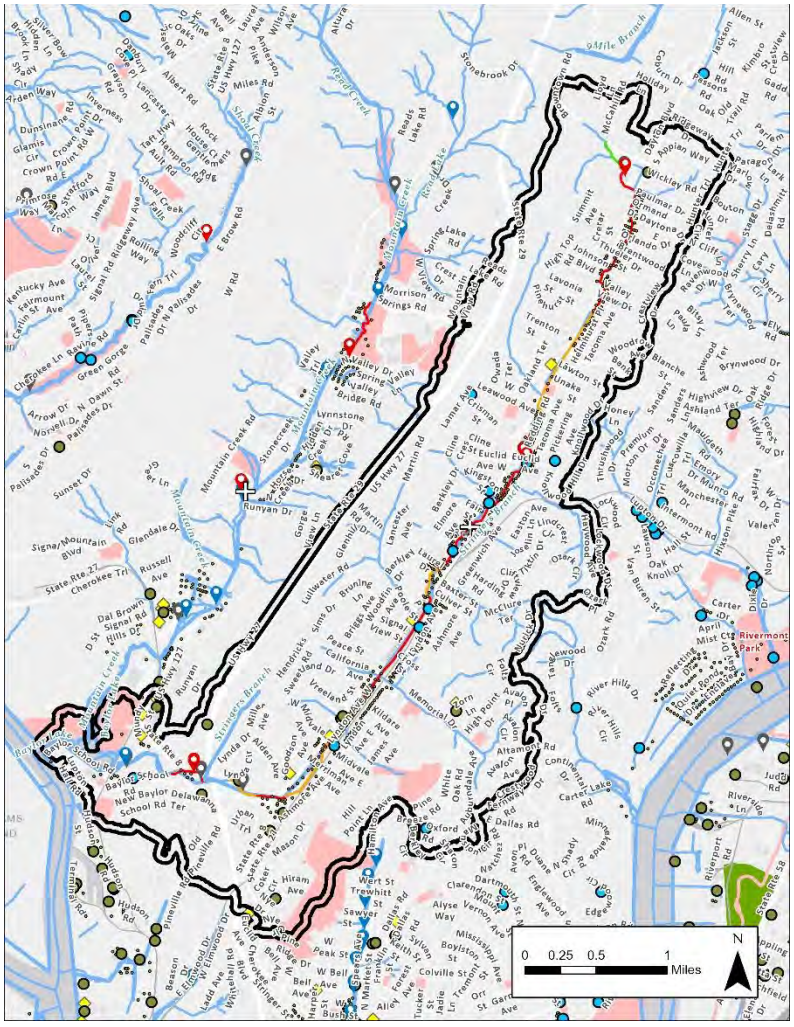


Figure 6. Stringers Branch Area Map

Dobbs Branch (Subwatershed 51)

Dobbs Branch is a tributary to Chattanooga Creek in the southern portion of Hamilton County. These two subwatersheds are the most impervious subwatersheds within Hamilton County, with over 1000 structures at risk of flooding in each of the two (2) subwatersheds. Both subwatersheds exhibit poor water quality, evidenced by the analysis of the last decade of water quality data and the considerable number of 303(d) impairments and TMDLs. Dobbs Branch is recommended for continuous monitoring because the subwatershed is contained entirely within Hamilton County (and City of Chattanooga limits), in addition to being subject to water quality regulations for parameters that can be measured/approximated with commercially available sensors.

- Located within Chattanooga Creek subwatershed and 100% within City of Chattanooga limits
- Third highest number of City of Chattanooga sample locations with 12
- The subwatershed is 72% impervious, with 1377 structures at risk of flooding, both the highest of any other subwatersheds
- Third highest number of reported SSOs in 2020 with 43
- One (1) of only two (2) subwatersheds with a high average visual stream assessment score
- Third highest numbers of remediation sites and industrial permittees
- Includes four (4) vulnerable parks
- Poor to fair water quality data over the last decade, with highest average total nitrogen and *E. coli* among all subwatersheds, frequently low DO, and outliers for conductivity
- Tied with Chattanooga Creek for the most impairments with six (6) and four (4) TMDLs

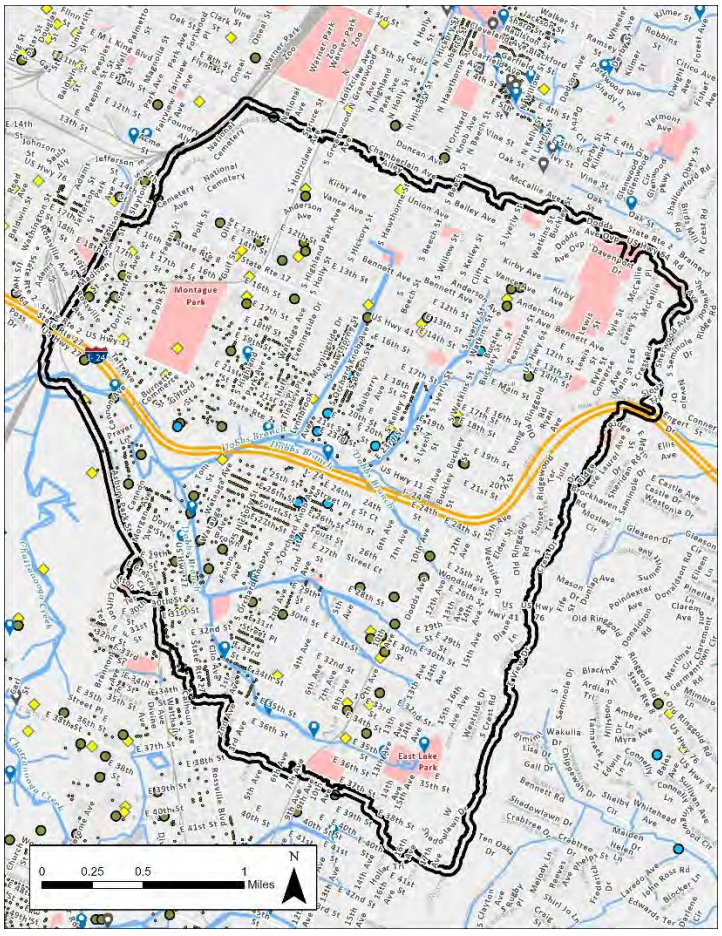


Figure 7. Dobbs Branch Area Map

Friar Branch (Subwatershed 61)

The Friar Branch subwatershed is the largest of the subwatersheds within the overall South Chickamauga subwatershed at 23 square miles. The subwatershed includes high numbers of risk factors across all categories for water quality and quantity, but with the extents of the subwatershed contained entirely within the City of Chattanooga and Hamilton County, there is greater opportunity for possible improvements. There are many sampling and gauge stations across the subwatershed, but continuous monitoring can likely assist with source characterization of some of these issues.

- 72% within City of Chattanooga limits, the remainder of the subwatershed is within Hamilton County
- Second largest subwatershed at 23 square miles
- Heavily assessed with 11 TDEC, 11 City of Chattanooga sample stations, and one (1) USGS station
- Includes the 3rd highest imperviousness at 49% and 3rd highest number of structures at risk of 985
- Contains 2nd highest numbers of permitted industries and remediation sites
- Varied water quality results over the last decade, frequently low pH, and conductivity outliers
- Subject to four (4) 303(d) impairments and four (4) TMDLs

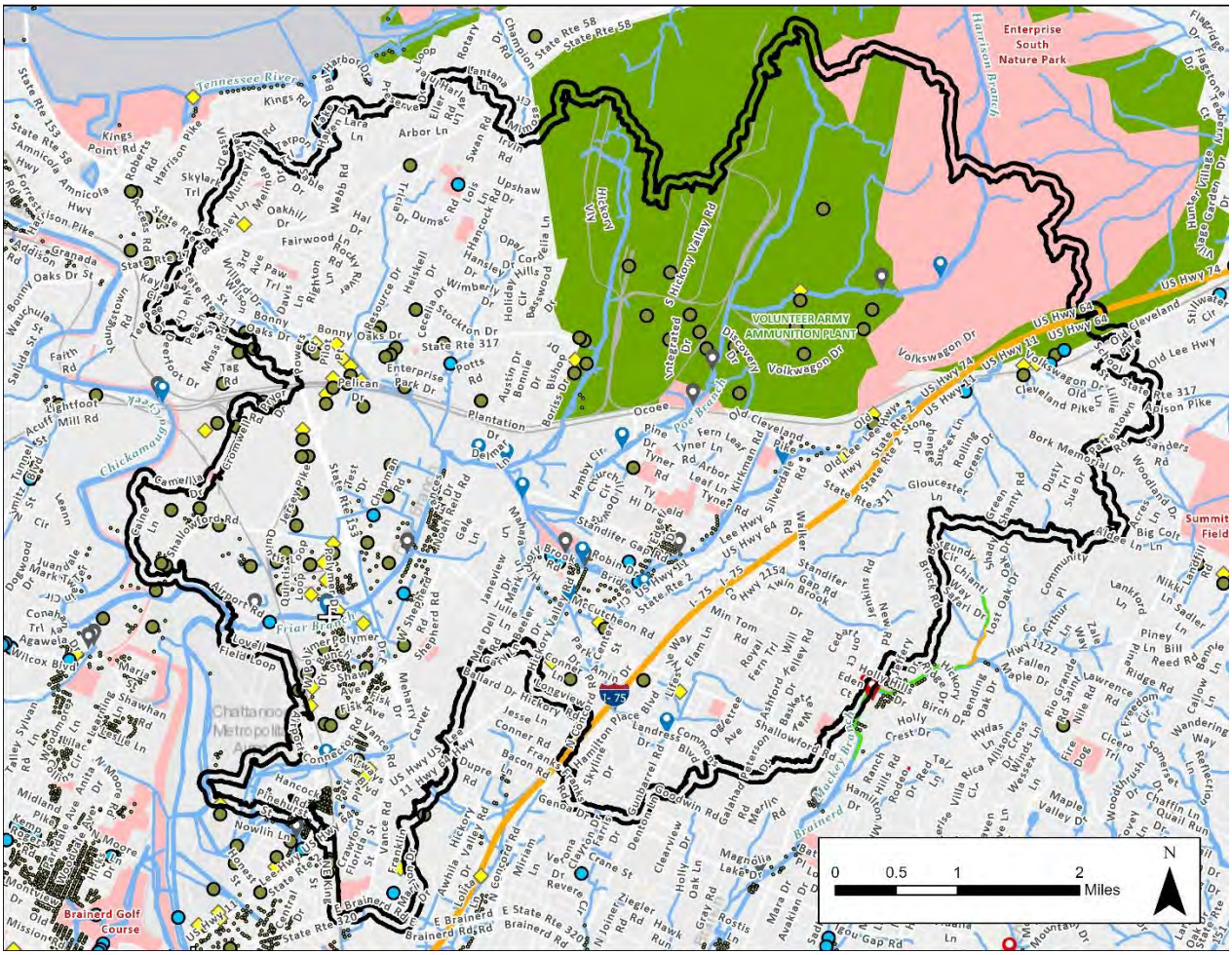


Figure 8: Friar Branch Area Map

5.2 Priority Subwatersheds

The Priority Subwatersheds are subject to a variety of water quality risks and consequences (see Monitoring Strategy Matrix in Appendix B), but do not presently contain consistent concerns across these categories (with one exception discussed further below). The Priority Subwatersheds should be regularly assessed through the partners' manual grab sampling programs and considered for continuous monitoring in the near future.

The Chattanooga Creek subwatershed includes substantial risks and consequences across each category that was included in this evaluation. The issues in the subwatershed are well-documented based upon the number of impairments and TMDLs. Along with Citico Creek, this subwatershed is tied for the most sampled subwatershed in Hamilton County and exhibited poor water quality for all six (6) parameters included in the historical data review. However, the distinction between this subwatershed and many of those listed in Section 5.1 is the considerable portion of the overall watershed located in northern Georgia (see Figure 2). Approximately 20% of the Chattanooga Creek overall watershed is located within Hamilton County, thereby limiting the degree of impact that the City of Chattanooga and Hamilton County could hope to achieve. In addition, continuous monitoring to assess the partners' contributions would require monitoring stations at the entry point of each creek/tributary into the subwatershed along the GA/TN border. For the start-up of the continuous monitoring program, the effort involved to assess this subwatershed is not commensurate with the benefits in water quality or flooding that the partners could hope to achieve. As referenced in Section 5.1, it is recommended that the Dobbs Branch tributary to Chattanooga Creek receive priority within the overall Chattanooga Creek subwatershed.

In addition to Chattanooga Creek, the following subwatersheds include some noteworthy risks and consequences to be aware of moving forward. Included with the list of subwatersheds (with subwatershed number in parentheses) below are some key items that stood out:

- Middle Creek (4) - SSOs
- Shoal Creek (5) - SSOs
- Access Road Tributary (6) – imperviousness, SSOs, flood risk
- North Market Street Branch (7) – imperviousness, impairments, poor water quality
- Rogers Branch (9)- SSOs
- North Chickamauga Creek (20) – flood risk, TMDLs
- Pitts Branch (24) – flood risk
- Mountain Creek (30) – vulnerable parks, impairments, TMDLs, poor/fair water quality
- Black Creek (41)– imperviousness, permitted industries
- Chattanooga Creek (50) – see paragraph above
- Downstream South Chickagmauga Creek (63) – permitted industries, impairments, TMDLs
- Spring Creek (62) – imperviousness, SSOs
- Upstream South Chickamauga Creek (60) – imperviousness, SSOs, vulnerable parks, TMDLs
- Mackey Branch (64)– vulnerable parks, impairments
- Wolftever Creek (17)– vulnerable parks

5.3 Long-Term Priority Subwatersheds

The intent of the sub-sections in Section 5 of the report was to categorize priorities and to split up the subwatersheds somewhat evenly across each category. The Long-Term Priority subwatersheds rank lower in this evaluation relative to those subwatersheds discussed in Sections 5.1 and 5.2. However, some of these subwatersheds are subject to TMDLs (up to 1 TMDL if included in this section), so those respective requirements are still present.

Many of these subwatersheds are quite small or undeveloped but may be subject to development in the near future. The Long-Term Priorities include the following subwatersheds:

- Soddy Creek (1)
- Little Soddy Creek (2)
- Daisy Dallas Tributary (3)
- Varnell Creek (10)
- Ison Springs Branch (11)
- Poe Branch (21)

- Falling Water Creek (22)
- Lick Branch (23)
- Lookout Creek (40)
- Hurricane Creek (65)
- Hunter Branch (70)
- Little Wolftever (72)
- Chestnut Creek (73)

It should also be noted that there are other subwatersheds within Hamilton County, some of which include portions within City of Chattanooga limits, that were not included in this study due to highly undeveloped conditions or subwatershed size. Those subwatersheds would be categorized here as well.

6.0 Program Recommendations

The following sections highlight monitoring and sampling recommendations for each of the watershed categories in Section 5.0.

6.1 High Priority Watersheds

In order to manage monitoring program implementation costs and ensure that initial efforts are meeting the partners' stated goals, it is recommended that the partners take incremental steps towards continuous monitoring program implementation. Woolpert recommends selection of four (4) of the five (5) High Priority subwatersheds listed below for the initial installation of continuous monitoring stations:

- Citico Creek (8)
- Downstream North Chickamauga (25)
- Stringers Branch (31)
- Dobbs Branch (51)
- Friar Branch (61)

Woolpert recommends the partners continued use of YSI EXO multi-parameter sondes outfitted with water quality sensors to include, at a minimum, dissolved oxygen, turbidity, specific conductivity, pH, and temperature. With approval from the partners, Woolpert staff will perform field inspections of these subwatersheds above and identify physical locations within each subwatershed to potentially install permanent water quality stations. Areas near the outlet of each subwatershed on publicly accessible property will be the primary focus of the investigation.

In addition to the implementation of continuous monitoring in these watersheds, dry weather and storm event sampling is recommended to supplement the water quality sensor data. This is important due to the lack of sensor technology for several of the water quality parameters having adverse impacts on these watersheds (e.g., bacteria). Woolpert recommends the collection of single dry weather samples on two separate days each quarter. Storm event samples are also recommended twice/quarter, with a target of 3-4 samples/storm with a minimum of 10 minutes between samples. Dry and storm event samples should be collected adjacent to the monitoring station water quality sensors for the analysis at a minimum of sediment, nutrients, and bacteria. The collection of samples during varied streamflow conditions (dry and wet) will greatly improve the partners' ability to interpret the results and identify potential pollutant sources. Consistent sampling at each location within close proximity to the sensors will allow the partners to evaluate correlation over time between continuous and grab sample parameters. If a strong correlation is observed, some parameters typically measured via grab samples may be approximated at the same frequency as the continuous sensor data.

6.2 Priority Subwatersheds

For the Priority subwatersheds, it is recommended that the partners continue their water quality sampling programs with various changes to ensure consistency between the City of Chattanooga and Hamilton County programs. These changes will provide comparable results across the programs and enable further identification of County-wide priorities, pollutant sources, and watersheds that justify future continuous monitoring. In the absence of budget restrictions and limitations on staff resources, more frequent sampling across all watersheds would provide more

detailed watershed characterization capabilities. Since such factors are unavoidable, the following recommendations are based upon the overall Monitoring Strategy Matrix in Appendix B.

Table 6 below contains only the Priority Subwatersheds, with an aggregate risk and consequence rating based on the overall matrix. The Parameter of Concern category represents a combination of pollutant-specific needs based upon impairments/TMDLs and parameters that were identified as either "poor" or "fair" based upon the historical data review. Varied parameter analysis by watershed will require detailed coordination with the laboratory but can reduce analytical costs and maintain focus on those parameters that need further attention:

Table 6 Priority Subwatersheds and Sampling Recommendations

	Sub-Watershed Name	Reference Number	Risks	Consequences	Parameters of Concern						Grab Sampling Recommendations		
			Overall Rating	Overall Rating	TN	TP	TSS	*E. coli*	DO	pH	Twice/Quarter		Quarterly
			H/M/L	H/M/L							Dry	Storm	Ambient
Other	Middle Creek	4	Low	Low				x		x			o
	Shoal Creek	5	Medium	Low				x					o
	Access Rd Trib	6	High	Low							o	o	
	North Market St Branch	7	High	High	x	x	x	x	x	x	o	o	
	Rogers Branch	9	Medium	Low				x					o
North Chickamau	Upstream North Chickamauga Creek	20	Low	High			x			x	o	o	
	Pitts Branch	24	Low	Medium						x			o
Stringers Branch	Mountain Creek	30	Low	High		x	x	x	x	x	o	o	
Lookout Creek	Black Creek	41	Medium	Medium					x				o
Chattanooga Creek	Chattanooga Creek	50	High	High	x	x	x	x	x	x	o	o	
South Chickamauga Creek	Downstream South Chickamauga Creek	60	High	High		x	x	x	x		o	o	
	Spring Creek	62	High	Medium	x		x	x	x		o	o	
	Upstream South Chickamauga Creek	63	High	Hlgh	x	x	x	x	x		o	o	
	Mackey Branch	64	Medium	Medium			x	x	x				o
Wolftever	Wolftever Creek	71	Medium	Low				x	x				o

Variable grab sampling approaches by subwatershed can be difficult to manage for field personnel, so two different sampling strategies are recommended, as noted above. For those subwatersheds with either a high risk or high consequence aggregate rating, dry weather and storm sampling are recommended, following the same protocol recommended for the High Priority watersheds in Section 6.1. This should greatly enhance the partners' abilities to characterize sample results. For the remaining subwatersheds, Woolpert recommends ambient quarterly sampling

at a minimum. However, the partners should always note the stream stage during the collection of these samples to help with data interpretation.

The collection of samples within all of these subwatersheds is recommended at the downstream end of the subwatershed to characterize the entire contributing drainage area. Although TDEC has historically collected ambient grab samples across many of these subwatersheds, samples have only been collected by the state in the Chattanooga Creek and Downstream South Chickamauga Creek subwatersheds over the last 18 months. The partners should not rely upon TDEC for sample data within the Priority subwatersheds.

6.3 Long Term Priority Subwatersheds

For Long-Term Priority subwatersheds, the City of Chattanooga, Hamilton County, and/or TDEC should continue to collect water quality samples as resources allow. One of these subwatersheds may also be considered in the future for more frequent sampling to better understand baseline conditions prior to development. It is recommended that the partners periodically obtain any available TDEC data to supplement and track general water quality trends in these subwatersheds. It is also Recommended that flood mapping in these subwatersheds be maintained prior to development, and appropriate ordinances are in place to prevent future development in areas of risk.

Appendix A

Historical Data Analysis

Total Nitrogen (mg/L)

*Whiskers equal the max/min value within 1.5x the interquartile range.

Outliers above 10 mg/L

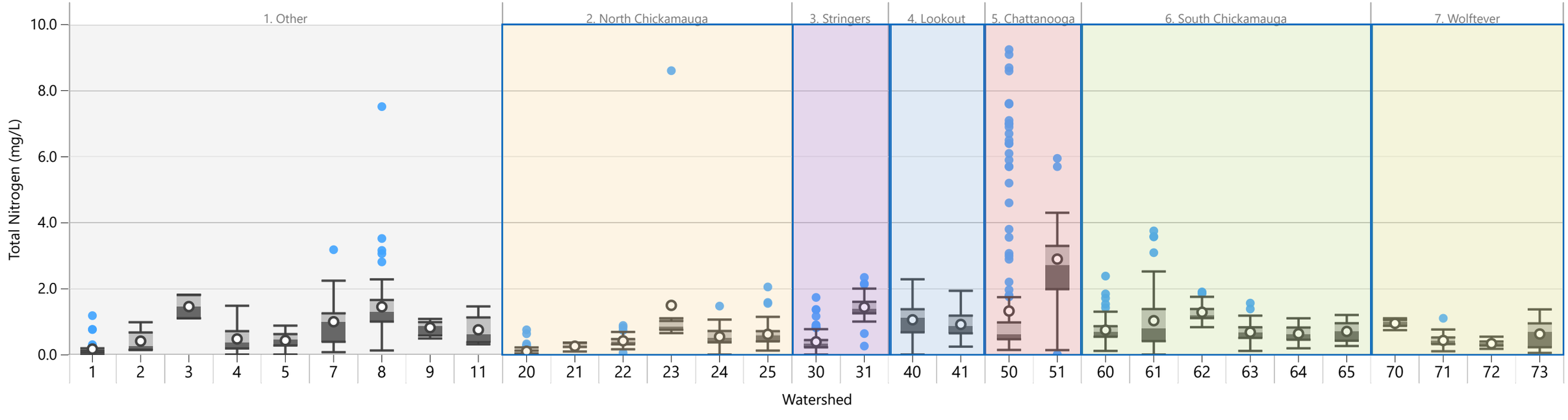
50: One (1)

51: One (1)

○ = Mean ● = Outlier

Ref #	Watershed	Count	Avg	Med	Min	Max	Std Dev
1	Soddy Creek	35	0.2	0.1	0.0	1.2	0.2
2	Little Soddy Creek	4	0.4	0.3	0.1	1.0	0.3
3	Daisy Dallas Trib	2	1.5	1.5	1.1	1.8	0.4
4	Middle Creek	148	0.5	0.4	0.0	1.5	0.4
5	Shoal Creek	32	0.4	0.5	0.0	0.9	0.2
7	North Market St Branch	31	1.0	1.0	0.1	3.2	0.7
8	Citico Creek	71	1.4	1.3	0.1	7.5	1.0
9	Rogers Branch	16	0.8	0.9	0.5	1.1	0.2
11	Ison Springs Branch	4	0.8	0.6	0.3	1.5	0.4
20	US North Chickamauga Creek	68	0.1	0.1	0.0	0.8	0.1
21	Poe Branch	5	0.3	0.2	0.1	0.4	0.1
22	Falling Water Creek	41	0.4	0.4	0.1	0.9	0.2
23	Lick Branch	13	1.5	0.9	0.7	8.6	2.1
24	Pitts Branch	56	0.5	0.5	0.0	1.5	0.3
25	DS North Chickamauga Creek	74	0.6	0.6	0.1	2.1	0.3

Ref #	Watershed	Count	Avg	Med	Min	Max	Std Dev
30	Mountain Creek	108	0.4	0.3	0.0	1.7	0.3
31	Stringers Branch	43	1.4	1.4	0.3	2.3	0.4
40	Lookout Creek	27	1.1	1.1	0.0	2.3	0.5
41	Black Creek	36	0.9	0.9	0.2	1.9	0.4
50	Chattanooga Creek	236	1.3	0.6	0.1	10.2	2.0
51	Dobbs Branch	47	2.9	2.7	0.0	19.7	2.8
60	DS South Chickamauga Creek	101	0.7	0.7	0.1	2.4	0.3
61	Friar Branch	82	1.0	0.8	0.0	3.8	0.8
62	Spring Creek	35	1.3	1.2	0.8	1.9	0.3
63	US South Chickamauga Creek	79	0.7	0.7	0.1	1.6	0.3
64	Mackey Branch	57	0.6	0.6	0.2	1.1	0.2
65	Hurricane Creek	24	0.7	0.7	0.3	1.2	0.3
70	Hunter Branch	3	0.9	1.0	0.7	1.1	0.2
71	Wolftever Creek	20	0.4	0.4	0.1	1.1	0.2
72	Little Wolftever Creek	20	0.3	0.3	0.2	0.5	0.1
73	Chestnut Creek	28	0.6	0.7	0.0	1.4	0.4



*Data were compiled between 2009-2021 from TDEC, City of Chattanooga, and Hamilton County

Total Phosphorus (mg/L)

*Whiskers equal the max/min value within 1.5x the interquartile range.

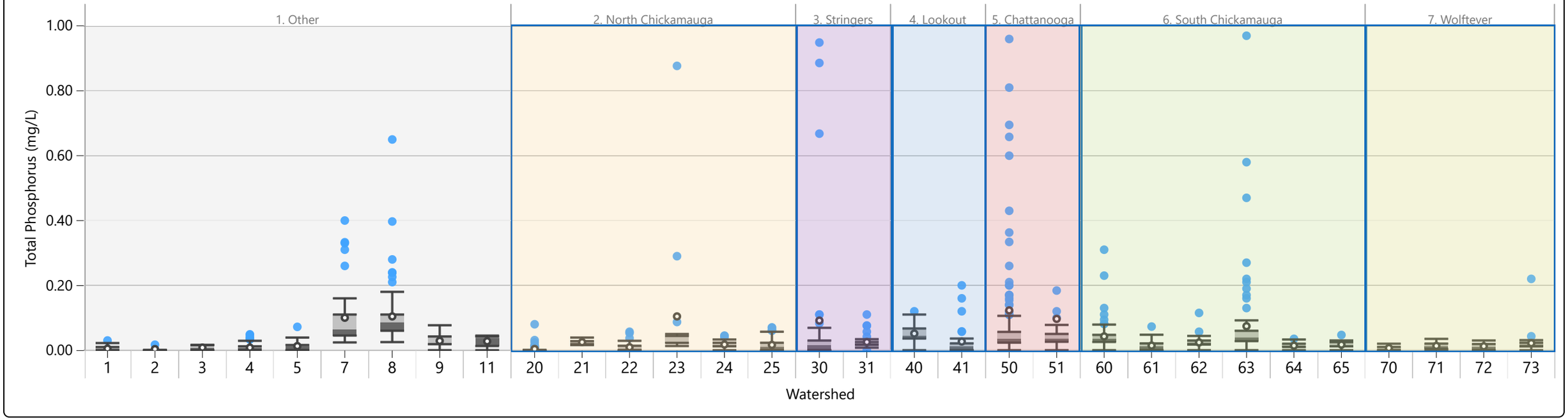
Outliers above 1 mg/L

30: Three (3)
50: Three (3)
51: Two (2)

○ = Mean ● = Outlier

Ref #	Watershed	Count	Avg	Med	Min	Max	Std Dev
1	Soddy Creek	40	0.01	0.00	0.00	0.03	0.01
2	Little Soddy Creek	5	0.00	0.00	0.00	0.02	0.01
3	Daisy Dallas Trib	2	0.01	0.01	0.00	0.02	0.01
4	Middle Creek	153	0.01	0.01	0.00	0.05	0.01
5	Shoal Creek	38	0.01	0.01	0.00	0.07	0.01
7	North Market St Branch	40	0.10	0.06	0.02	0.40	0.09
8	Citico Creek	74	0.10	0.09	0.03	0.65	0.09
9	Rogers Branch	23	0.03	0.02	0.00	0.08	0.02
11	Ison Springs Branch	5	0.03	0.04	0.00	0.05	0.02
20	US North Chickamauga Creek	71	0.00	0.00	0.00	0.08	0.01
21	Poe Branch	5	0.02	0.02	0.02	0.04	0.01
22	Falling Water Creek	44	0.01	0.00	0.00	0.06	0.01
23	Lick Branch	15	0.10	0.03	0.01	0.88	0.22
24	Pitts Branch	57	0.02	0.02	0.00	0.05	0.01
25	DS North Chickamauga Creek	76	0.02	0.01	0.00	0.07	0.02

Ref #	Watershed	Count	Avg	Med	Min	Max	Std Dev
30	Mountain Creek	115	0.09	0.02	0.00	2.44	0.34
31	Stringers Branch	48	0.03	0.02	0.00	0.11	0.02
40	Lookout Creek	33	0.05	0.05	0.00	0.12	0.03
41	Black Creek	34	0.03	0.01	0.00	0.20	0.04
50	Chattanooga Creek	243	0.12	0.04	0.00	9.30	0.65
51	Dobbs Branch	46	0.10	0.04	0.00	1.54	0.27
60	DS South Chickamauga Creek	103	0.04	0.04	0.00	0.31	0.04
61	Friar Branch	86	0.01	0.01	0.00	0.07	0.01
62	Spring Creek	47	0.02	0.02	0.00	0.12	0.02
63	US South Chickamauga Creek	86	0.07	0.04	0.00	0.97	0.13
64	Mackey Branch	59	0.01	0.01	0.00	0.04	0.01
65	Hurricane Creek	22	0.02	0.02	0.00	0.05	0.01
70	Hunter Branch	3	0.01	0.00	0.00	0.02	0.01
71	Wolftever Creek	28	0.01	0.01	0.00	0.04	0.01
72	Little Wolftever Creek	26	0.01	0.01	0.00	0.03	0.01
73	Chestnut Creek	38	0.02	0.02	0.00	0.22	0.03



*Data were compiled between 2009-2021 from TDEC, City of Chattanooga, and Hamilton County

Total Suspended Solids (mg/L)

*Whiskers equal the max/min value within 1.5x the interquartile range.

Outliers above 300 mg/L

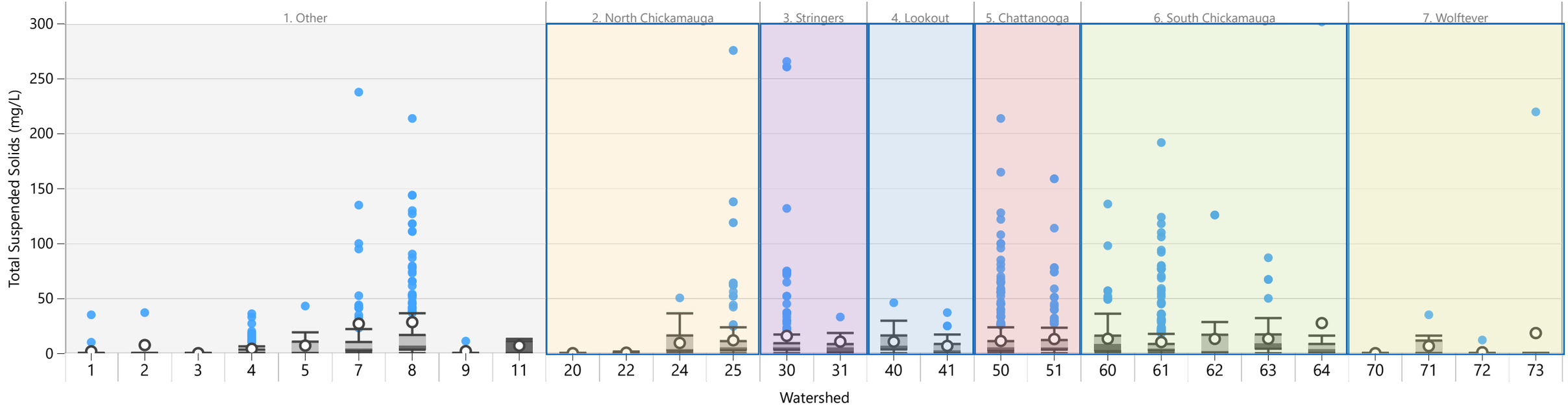
8: Three (3)

30: Two (2)

64: One (1)

○ = Mean ● = Outlier

Ref #	Watershed	Count	Avg	Med	Min	Max	Std Dev
1	Soddy Creek	27	2	0	0	35	7
2	Little Soddy Creek	5	7	0	0	37	15
3	Daisy Dallas Trib	1	0	0	0	0	0
4	Middle Creek	69	4	0	0	36	8
5	Shoal Creek	12	7	0	0	43	12
7	North Market St Branch	170	27	4	0	1,430	133
8	Citico Creek	388	28	7	0	1,100	108
9	Rogers Branch	6	2	0	0	11	4
11	Ison Springs Branch	5	7	10	0	13	6
20	US North Chickamauga Creek	43	0	0	0	0	0
22	Falling Water Creek	6	0	0	0	2	1
24	Pitts Branch	55	9	4	0	50	11
25	DS North Chickamauga Creek	294	12	6	0	276	28
30	Mountain Creek	258	16	6	0	319	42
31	Stringers Branch	65	11	5	0	345	42
40	Lookout Creek	28	11	7	0	46	11
41	Black Creek	30	7	3	0	37	9
50	Chattanooga Creek	472	11	6	0	214	21
51	Dobbs Branch	185	13	5	0	159	22
60	DS South Chickamauga Creek	133	13	9	0	136	18
61	Friar Branch	506	10	4	0	473	27
62	Spring Creek	34	13	2	0	126	30
63	US South Chickamauga Creek	84	13	9	0	87	15
64	Mackey Branch	49	27	4	0	414	90
70	Hunter Branch	3	0	0	0	0	0
71	Wolftever Creek	15	6	0	0	35	10
72	Little Wolftever Creek	14	1	0	0	12	3
73	Chestnut Creek	12	18	0	0	220	61



*Data were compiled between 2009-2021 from TDEC, City of Chattanooga, and Hamilton County

E. coli (MPN/100mL)

*Whiskers equal the max/min value within 1.5x the interquartile range.

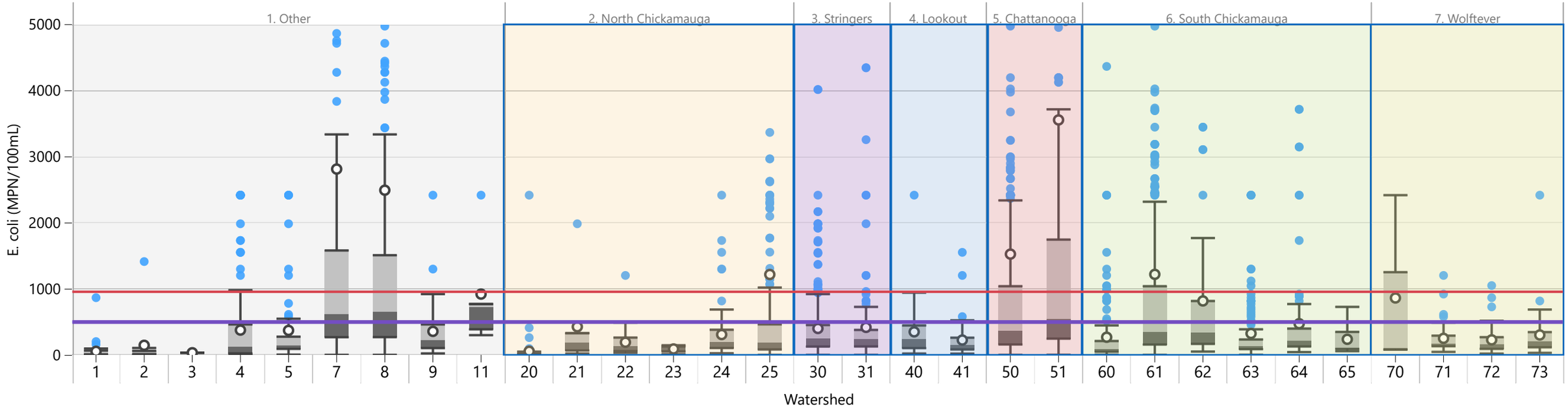
Outliers above 5,000 cfu/100mL

7: Twenty-one (21) **8:** Thirty-seven (37)
25: Fourteen (14) **50:** Forty (40)
51: Twenty-four (24) **61:** Twenty-four (24)
62: One (1) **63:** One (1)

= TDEC Std - Rec, Exceptional/ONRWs
= TDEC Std - Rec, All Other Waters
= Mean = Outlier

Ref #	Watershed	Count	Avg	Med	Min	Max	Std Dev
1	Soddy Creek	44	54	18	1	866	131
2	Little Soddy Creek	13	145	31	1	1,414	368
3	Daisy Dallas Trib	1	32	32	32	32	0
4	Middle Creek	161	375	126	1	2,420	581
5	Shoal Creek	57	371	148	3	2,420	591
7	North Market St Branch	224	2,815	618	0	48,400	7,851
8	Citico Creek	483	2,495	654	0	48,401	7,200
9	Rogers Branch	36	356	227	22	2,420	446
11	Ison Springs Branch	5	921	727	299	2,420	772
20	US North Chickamauga Creek	72	55	5	1	2,420	286
21	Poe Branch	7	426	185	20	1,986	648
22	Falling Water Creek	32	191	129	31	1,203	218
23	Lick Branch	7	90	112	11	146	50
24	Pitts Branch	111	308	196	24	2,420	352
25	DS North Chickamauga Creek	340	1,218	188	0	48,400	5,229

Ref #	Watershed	Count	Avg	Med	Min	Max	Std Dev
30	Mountain Creek	305	400	248	0	4,020	510
31	Stringers Branch	130	416	238	0	4,350	668
40	Lookout Creek	47	349	240	20	2,420	405
41	Black Creek	57	225	150	19	1,553	260
50	Chattanooga Creek	641	1,527	362	0	48,400	4,074
51	Dobbs Branch	227	3,559	544	1	48,400	10,066
60	DS South Chickamauga Creek	150	267	87	1	4,370	534
61	Friar Branch	521	1,220	346	0	48,401	3,359
62	Spring Creek	91	817	336	50	17,300	1,885
63	US South Chickamauga Creek	140	324	133	1	5,700	637
64	Mackey Branch	93	472	218	42	3,720	747
65	Hurricane Creek	11	236	96	56	727	224
70	Hunter Branch	3	862	86	80	2,420	1,101
71	Wolftever Creek	41	250	172	46	1,203	225
72	Little Wolftever Creek	43	227	166	19	1,050	219
73	Chestnut Creek	44	302	210	30	2,420	368



*Data were compiled between 2009-2021 from TDEC, City of Chattanooga, and Hamilton County

Dissolved Oxygen (mg/L)

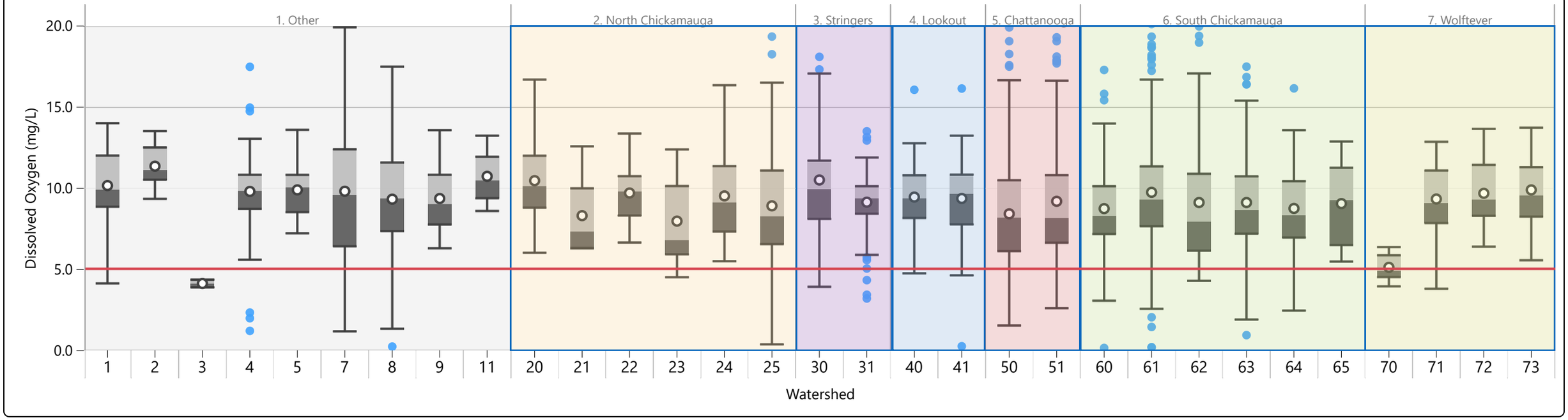
*Whiskers equal the max/min value within 1.5x the interquartile range.

— = TDEC Standard

○ = Mean ● = Outlier

Ref #	Watershed	Count	Avg	Med	Min	Max	Std Dev
1	Soddy Creek	49	10.2	9.9	4.1	14.0	2.2
2	Little Soddy Creek	6	11.4	11.1	9.4	13.5	1.3
3	Daisy Dallas Trib	2	4.1	4.1	3.9	4.4	0.2
4	Middle Creek	152	9.8	9.9	1.2	17.5	2.1
5	Shoal Creek	33	9.9	10.1	7.2	13.6	1.7
7	North Market St Branch	151	9.8	9.6	1.2	19.9	4.5
8	Citico Creek	377	9.3	9.4	0.2	20.9	3.4
9	Rogers Branch	27	9.4	9.0	6.3	13.6	2.0
11	Ison Springs Branch	5	10.7	10.5	8.6	13.3	1.7
20	US North Chickamauga Creek	97	10.5	10.1	6.0	16.7	2.2
21	Poe Branch	6	8.3	7.3	6.3	12.6	2.3
22	Falling Water Creek	40	9.7	9.8	6.7	13.4	1.6
23	Lick Branch	11	8.0	6.8	4.5	12.4	2.7
24	Pitts Branch	82	9.5	9.1	5.5	16.4	2.6
25	DS North Chickamauga Creek	237	8.9	8.3	0.4	19.4	3.2

Ref #	Watershed	Count	Avg	Med	Min	Max	Std Dev
30	Mountain Creek	255	10.5	10.0	3.9	94.3	6.0
31	Stringers Branch	87	9.1	9.4	3.2	13.5	1.8
40	Lookout Creek	37	9.5	9.4	4.8	16.1	2.1
41	Black Creek	47	9.4	9.7	0.3	16.2	2.5
50	Chattanooga Creek	498	8.4	8.2	1.5	19.9	3.3
51	Dobbs Branch	197	9.2	8.2	2.6	23.8	3.9
60	DS South Chickamauga Creek	137	8.7	8.3	0.1	17.3	2.4
61	Friar Branch	580	9.8	9.3	0.2	47.5	3.6
62	Spring Creek	59	9.1	7.9	4.3	21.4	4.3
63	US South Chickamauga Creek	145	9.1	8.7	0.9	24.5	3.0
64	Mackey Branch	74	8.8	8.3	2.5	16.2	2.5
65	Hurricane Creek	26	9.1	9.3	5.5	12.9	2.2
70	Hunter Branch	5	5.1	4.9	4.0	6.4	0.9
71	Wolftever Creek	39	9.3	9.1	3.8	12.9	1.9
72	Little Wolftever Creek	35	9.7	9.3	6.4	13.7	1.9
73	Chestnut Creek	44	9.9	9.6	5.6	13.7	1.9



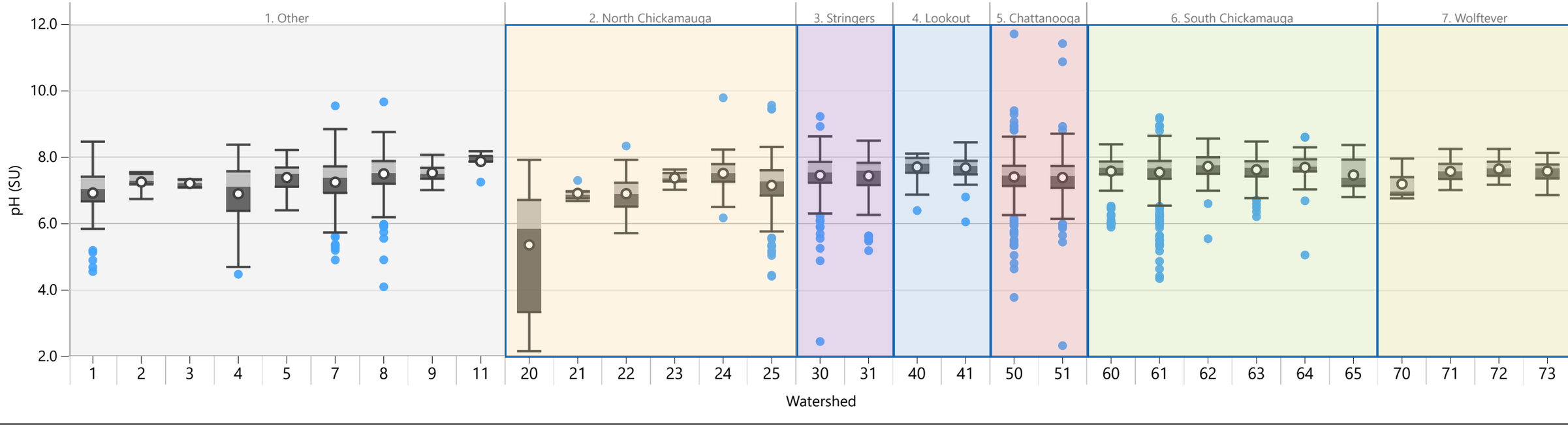
*Data were compiled between 2009-2021 from TDEC, City of Chattanooga, and Hamilton County

pH

*Whiskers equal the max/min value within 1.5x the interquartile range.

○ = Mean ● = Outlier

Ref #	Watershed	Count	Avg	Med	Min	Max	Std Dev
1	Soddy Creek	47	6.9	7.0	4.6	8.5	0.9
2	Little Soddy Creek	5	7.3	7.3	6.7	7.6	0.3
3	Daisy Dallas Trib	2	7.2	7.2	7.1	7.3	0.1
4	Middle Creek	152	6.9	7.1	4.5	8.4	0.9
5	Shoal Creek	33	7.4	7.5	6.4	8.2	0.4
7	North Market St Branch	148	7.2	7.4	4.9	9.6	0.8
8	Citico Creek	367	7.5	7.5	4.1	9.7	0.6
9	Rogers Branch	29	7.5	7.5	7.0	8.1	0.3
11	Ison Springs Branch	5	7.9	8.0	7.3	8.2	0.3
20	US North Chickamauga Creek	105	5.4	5.9	2.2	7.9	1.7
21	Poe Branch	6	6.9	6.9	6.7	7.3	0.2
22	Falling Water Creek	42	6.9	6.9	5.7	8.3	0.5
23	Lick Branch	11	7.4	7.4	7.0	7.6	0.2
24	Pitts Branch	87	7.5	7.5	6.2	9.8	0.5
25	DS North Chickamauga Creek	224	7.1	7.3	4.4	9.6	0.7
30	Mountain Creek	239	7.5	7.5	2.4	9.2	0.7
31	Stringers Branch	90	7.4	7.6	5.2	8.5	0.6
40	Lookout Creek	37	7.7	7.8	6.4	8.1	0.4
41	Black Creek	44	7.7	7.7	6.1	8.5	0.4
50	Chattanooga Creek	523	7.4	7.5	3.8	11.7	0.6
51	Dobbs Branch	183	7.4	7.4	2.3	11.4	0.8
60	DS South Chickamauga Creek	151	7.6	7.7	5.9	8.4	0.5
61	Friar Branch	527	7.5	7.7	4.3	9.2	0.6
62	Spring Creek	66	7.7	7.8	5.5	8.6	0.4
63	US South Chickamauga Creek	146	7.6	7.7	6.2	8.5	0.4
64	Mackey Branch	79	7.7	7.7	5.1	8.6	0.4
65	Hurricane Creek	26	7.5	7.4	6.8	8.4	0.5
70	Hunter Branch	5	7.2	7.0	6.8	8.0	0.4
71	Wolftever Creek	41	7.6	7.6	7.0	8.3	0.3
72	Little Wolftever Creek	39	7.6	7.7	7.2	8.3	0.3
73	Chestnut Creek	45	7.6	7.7	6.9	8.1	0.3



*Data were compiled between 2009-2021 from TDEC, City of Chattanooga, and Hamilton County

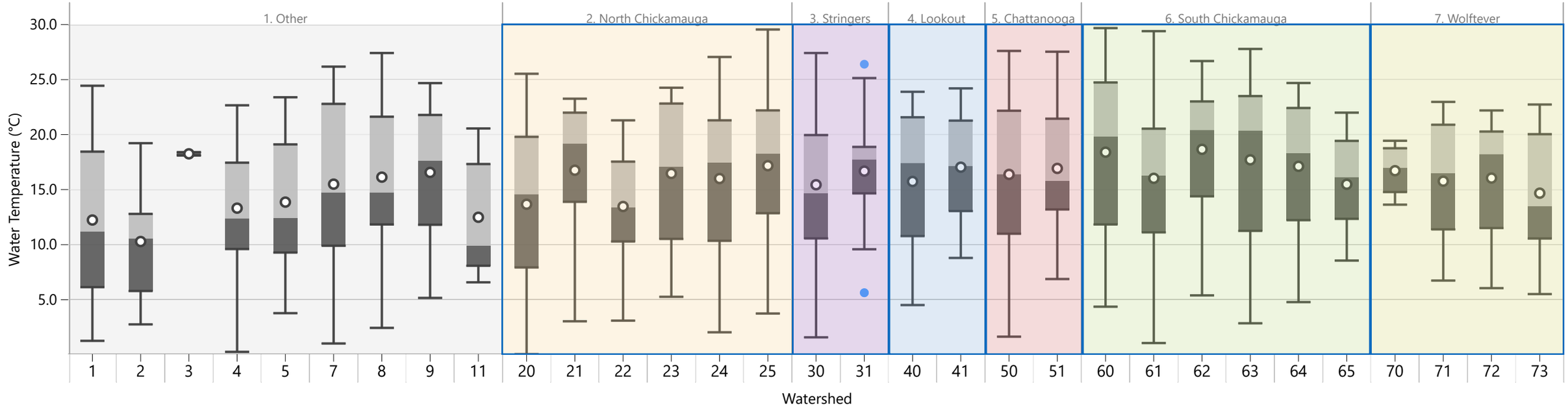
Temperature (°C)

*Whiskers equal the max/min value within 1.5x the interquartile range.

○ = Mean ● = Outlier

Ref #	Watershed	Count	Avg	Med	Min	Max	Std Dev
1	Soddy Creek	49	12	11	1	24	7
2	Little Soddy Creek	6	10	11	3	19	5
3	Daisy Dallas Trib	2	18	18	18	18	0
4	Middle Creek	155	13	12	0	23	5
5	Shoal Creek	34	14	12	4	23	5
7	North Market St Branch	157	15	15	1	26	7
8	Citico Creek	403	16	15	2	27	6
9	Rogers Branch	30	17	18	5	25	6
11	Ison Springs Branch	5	12	10	7	21	5
20	US North Chickamauga Creek	100	14	15	0	26	7
21	Poe Branch	6	17	19	3	23	7
22	Falling Water Creek	42	13	13	3	21	4
23	Lick Branch	11	16	17	5	24	7
24	Pitts Branch	89	16	17	2	27	6
25	DS North Chickamauga Creek	236	17	18	4	30	7

Ref #	Watershed	Count	Avg	Med	Min	Max	Std Dev
30	Mountain Creek	257	15	15	2	27	6
31	Stringers Branch	89	17	18	6	26	4
40	Lookout Creek	37	16	17	4	24	6
41	Black Creek	46	17	17	9	24	4
50	Chattanooga Creek	511	16	16	2	28	6
51	Dobbs Branch	199	17	16	7	28	5
60	DS South Chickamauga Creek	141	18	20	4	30	7
61	Friar Branch	583	16	16	1	29	6
62	Spring Creek	64	19	20	5	27	5
63	US South Chickamauga Creek	148	18	20	3	28	7
64	Mackey Branch	79	17	18	5	25	6
65	Hurricane Creek	26	15	16	9	22	4
70	Hunter Branch	5	17	17	14	19	2
71	Wolftever Creek	42	16	16	7	23	5
72	Little Wolftever Creek	40	16	18	6	22	5
73	Chestnut Creek	45	15	13	5	23	5



*Data were compiled between 2009-2021 from TDEC, City of Chattanooga, and Hamilton County

Conductivity (mS/cm)

*Whiskers equal the max/min value within 1.5x the interquartile range.

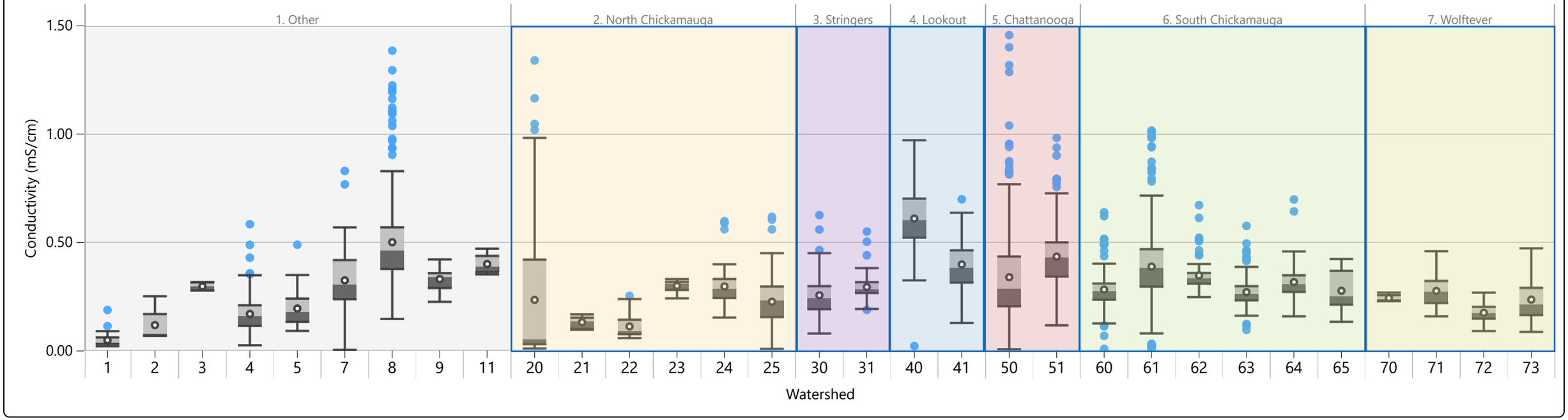
Outliers above 1.5 mg/L

8: One (1)
30: One (1)
61: One (1)

○ = Mean ● = Outlier

Ref #	Watershed	Count	Avg	Med	Min	Max	Std Dev
1	Soddy Creek	46	0.05	0.04	0.02	0.19	0.03
2	Little Soddy Creek	6	0.12	0.07	0.07	0.25	0.07
3	Daisy Dallas Trib	2	0.30	0.30	0.28	0.32	0.02
4	Middle Creek	155	0.17	0.16	0.02	0.58	0.09
5	Shoal Creek	34	0.19	0.18	0.09	0.49	0.08
7	North Market St Branch	158	0.32	0.30	0.00	0.83	0.12
8	Citico Creek	380	0.50	0.46	0.15	3.33	0.24
9	Rogers Branch	29	0.33	0.34	0.23	0.42	0.05
11	Ison Springs Branch	4	0.40	0.39	0.35	0.47	0.04
20	US North Chickamauga Creek	100	0.23	0.05	0.01	1.34	0.32
21	Poe Branch	6	0.13	0.13	0.10	0.17	0.03
22	Falling Water Creek	42	0.11	0.09	0.06	0.25	0.05
23	Lick Branch	11	0.30	0.31	0.24	0.33	0.03
24	Pitts Branch	89	0.30	0.29	0.15	0.60	0.08
25	DS North Chickamauga Creek	239	0.23	0.23	0.01	0.62	0.10

Ref #	Watershed	Count	Avg	Med	Min	Max	Std Dev
30	Mountain Creek	258	0.26	0.24	0.08	2.29	0.15
31	Stringers Branch	89	0.29	0.28	0.19	0.55	0.05
40	Lookout Creek	37	0.61	0.60	0.02	0.97	0.17
41	Black Creek	47	0.40	0.38	0.13	0.70	0.12
50	Chattanooga Creek	507	0.34	0.29	0.01	1.46	0.20
51	Dobbs Branch	198	0.43	0.43	0.12	0.98	0.13
60	DS South Chickamauga Creek	141	0.28	0.28	0.01	0.64	0.09
61	Friar Branch	584	0.39	0.38	0.00	1.73	0.17
62	Spring Creek	67	0.35	0.34	0.25	0.67	0.08
63	US South Chickamauga Creek	145	0.27	0.26	0.10	0.58	0.07
64	Mackey Branch	79	0.32	0.31	0.16	0.70	0.08
65	Hurricane Creek	26	0.28	0.25	0.13	0.42	0.09
70	Hunter Branch	4	0.24	0.24	0.23	0.27	0.02
71	Wolftever Creek	40	0.28	0.27	0.16	0.46	0.07
72	Little Wolftever Creek	37	0.17	0.17	0.09	0.27	0.04
73	Chestnut Creek	44	0.24	0.21	0.09	0.47	0.09



*Data were compiled between 2009-2021 from TDEC, City of Chattanooga, and Hamilton County

Lead (ppb)

Ref #	Watershed	Count	Avg	Med	Min	Max	Std Dev
1	Soddy Creek	30	0.47	0.00	0.00	14.00	2.51
2	Little Soddy Creek	4	0.00	0.00	0.00	0.00	0.00
3	Daisy Dallas Trib	2	0.00	0.00	0.00	0.00	0.00
4	Middle Creek	9	0.16	0.16	0.00	0.44	0.14
11	Ison Springs Branch	5	0.26	0.00	0.00	0.66	0.32
20	US North Chickamauga Creek	14	0.85	0.43	0.00	2.24	0.74
22	Falling Water Creek	6	0.09	0.07	0.00	0.21	0.09

Ref #	Watershed	Count	Avg	Med	Min	Max	Std Dev
30	Mountain Creek	26	0.00	0.00	0.00	0.00	0.00
40	Lookout Creek	8	0.58	0.52	0.00	1.43	0.43
41	Black Creek	4	0.72	0.68	0.34	1.20	0.38
50	Chattanooga Creek	107	1.03	0.61	0.00	25.40	2.56
51	Dobbs Branch	11	7.87	0.00	0.00	56.60	16.48
60	DS South Chickamauga Creek	49	0.33	0.00	0.00	4.20	0.65
61	Friar Branch	18	0.00	0.00	0.00	0.00	0.00
70	Hunter Branch	3	0.00	0.00	0.00	0.00	0.00
71	Wolftever Creek	8	0.00	0.00	0.00	0.00	0.00
72	Little Wolftever Creek	4	0.45	0.00	0.00	1.80	0.78

*Whiskers equal the max/min value within 1.5x the interquartile range.

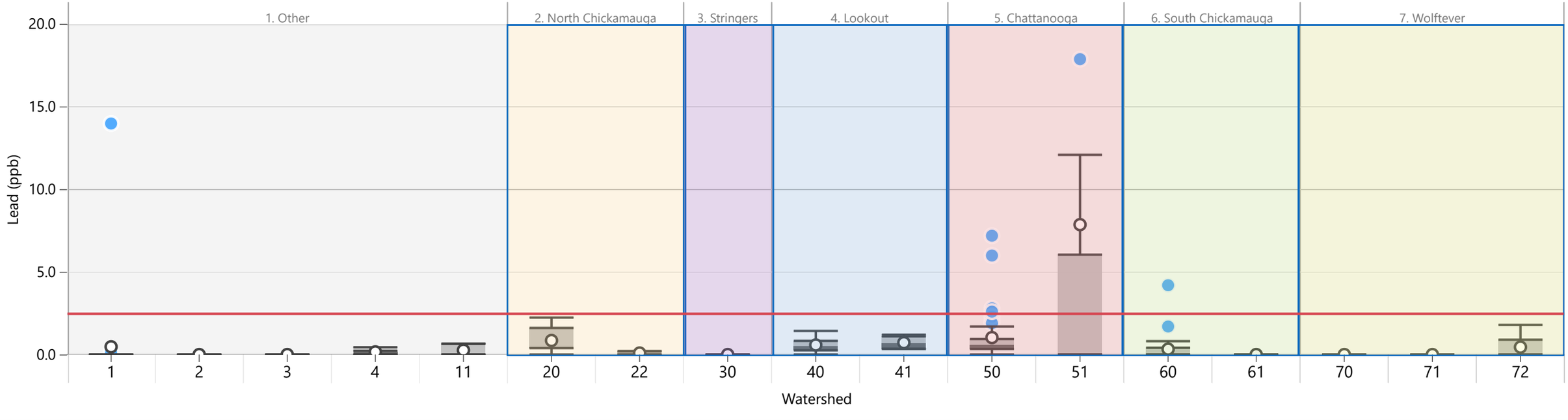
Outliers above 20 ppb

50: One (1)

51: One (1)

— = TDEC Standard

○ = Mean ● = Outlier



*Data were compiled between 2009-2021 from TDEC, City of Chattanooga, and Hamilton County

Copper (ppb)

Ref #	Watershed	Count	Avg	Med	Min	Max	Std Dev
4	Middle Creek	11	0.32	0.00	0.00	1.25	0.45
20	US North Chickamauga Creek	15	5.70	5.43	0.78	8.70	1.87
22	Falling Water Creek	6	0.00	0.00	0.00	0.00	0.00

Ref #	Watershed	Count	Avg	Med	Min	Max	Std Dev
30	Mountain Creek	26	0.00	0.00	0.00	0.00	0.00
40	Lookout Creek	8	0.85	1.00	0.00	1.41	0.55
41	Black Creek	4	1.35	1.40	0.79	1.80	0.42
50	Chattanooga Creek	96	1.90	1.10	0.00	31.30	4.31
51	Dobbs Branch	11	6.90	0.00	0.00	30.80	11.18
60	DS South Chickamauga Creek	50	0.86	0.76	0.00	3.60	0.69
61	Friar Branch	18	0.00	0.00	0.00	0.00	0.00

*Whiskers equal the max/min value within 1.5x the interquartile range.

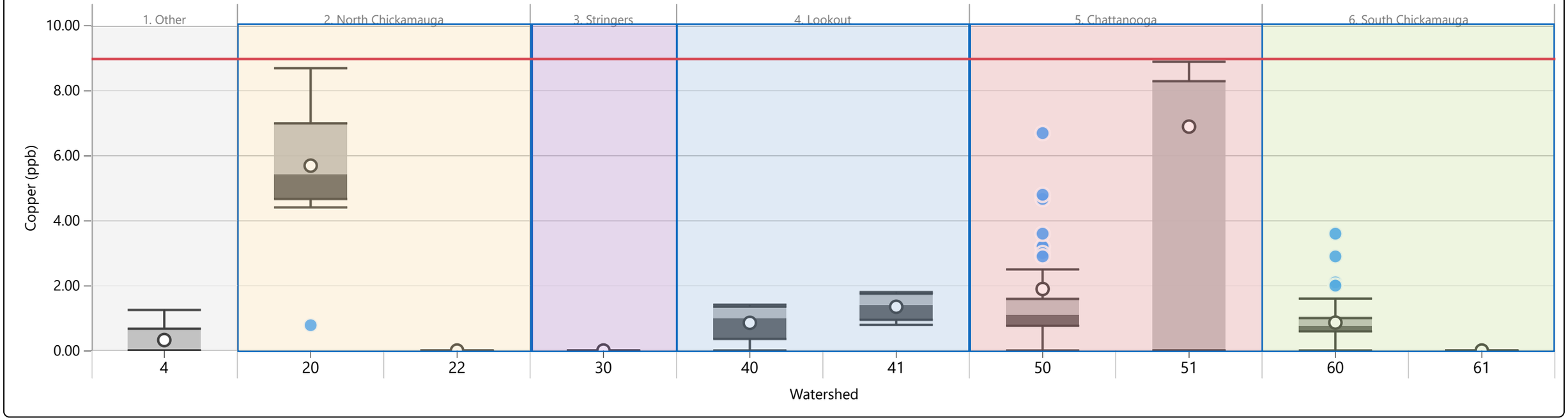
Outliers above 10 ppb

50: Two (2)

51: Two (2)

— = TDEC Standard

○ = Mean ● = Outlier



*Data were compiled between 2009-2021 from TDEC, City of Chattanooga, and Hamilton County

Iron (ppm)

Ref #	Watershed	Count	Avg	Med	Min	Max	Std Dev
1	Soddy Creek	27	0.12	0.07	0.01	0.52	0.13
2	Little Soddy Creek	5	0.04	0.03	0.01	0.07	0.02
3	Daisy Dallas Trib	2	0.03	0.03	0.02	0.03	0.00
4	Middle Creek	45	0.67	0.22	0.02	6.90	1.14
5	Shoal Creek	1	0.23	0.23	0.23	0.23	0.00
11	Ison Springs Branch	6	0.27	0.25	0.09	0.46	0.13
20	US North Chickamauga Creek	57	1.37	0.40	0.01	5.10	1.57
22	Falling Water Creek	6	0.12	0.10	0.08	0.23	0.05

Ref #	Watershed	Count	Avg	Med	Min	Max	Std Dev
30	Mountain Creek	23	0.58	0.34	0.15	2.97	0.62
40	Lookout Creek	8	0.38	0.36	0.11	0.76	0.19
41	Black Creek	4	0.39	0.36	0.24	0.60	0.13
50	Chattanooga Creek	105	0.55	0.40	0.16	2.24	0.42
51	Dobbs Branch	10	2.29	0.56	0.00	13.40	4.00
60	DS South Chickamauga Creek	49	0.38	0.24	0.06	3.20	0.50
61	Friar Branch	18	0.39	0.26	0.00	1.43	0.39
70	Hunter Branch	3	0.02	0.02	0.02	0.02	0.00
71	Wolftever Creek	8	0.25	0.26	0.03	0.48	0.15
72	Little Wolftever Creek	4	0.16	0.14	0.06	0.30	0.09
73	Chestnut Creek	2	1.42	1.42	0.54	2.30	0.88

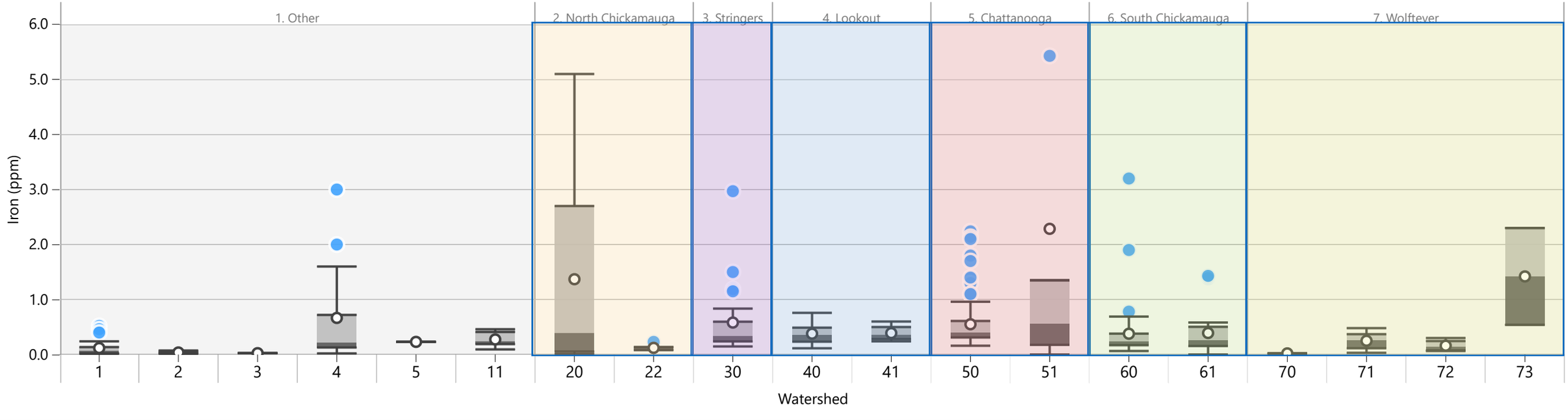
*Whiskers equal the max/min value within 1.5x the interquartile range.

Outliers above 6 ppm

4: One (1)

51: One (1)

○ = Mean ● = Outlier



*Data were compiled between 2009-2021 from TDEC, City of Chattanooga, and Hamilton County

Appendix B

Monitoring Strategy Matrix

	Sub-Watershed Name	Reference Number	Basin Drainage Area	Basin Drainage Area Within City Limits	Watershed Extends Outside County	Existing Monitoring Stations					Risks						Consequences					Historical Data Review						Monitoring Priority Level
						Total	City	County	TNDEC	USGS	Impervious Area	Reported SSOs		Remediation Sites	Permitted Industrial Facilities	Visual Stream Score	Structure Flood Risk	Vulnerable Parks	Managed Natural Areas	Impaired Waters	TMDLs	TN	TP	TSS	*E. coli*	DO	pH	
			sq.mi.	Percentage	Y/N	Count	Count	Count	Count	Count	Percentage	2020	2016-2020	Count	Count	H/M/L	Count	Count	Type	Parameter	Parameter	2009-2021						
Other	Soddy Creek	1	26	0%	Yes	11		1	10		2%	1	2		1							Good	Good	Good	Good	Fair	Fair	Long-Term
	Little Soddy Creek	2	3	0%		3		1	2		5%			1	3													Long-Term
	Daisy Dallas Trib	3	6	0%		1			1		12%	2	4		1													Long-Term
	Middle Creek	4	7	0%		10		1	9		8%	11	50		1			3	State Forest		*E. coli*	Good	Good	Good	Good	Good	Fair	Priority
	Shoal Creek	5	2	1%		3		1	2		21%	16	60	1	1	Low		1		*E. coli*	*E. coli*	Good	Good		Good	Good	Good	Priority
	Access Rd Trib	6	3	86%		1				1	36%	17	66	8	2	Medium	192											Priority
	North Market St Branch	7	1	94%		13	12		1		49%		3	16	8	Medium	77	4		DO Habitat Alterations TP *E. coli*	*E. coli*	Fair	Poor	Fair	Poor	Poor	Fair	Priority
	Citico Creek	8	6	100%		34	16		17	1	61%	4	17	23	55	Medium	775	1	State Wildlife Refuge	PCBs *E. coli* Other anthropogenic substrate altersations Nitrate/Nitrite TP DO	*E. coli* , Siltation, Habitat Alteration	Fair	Poor	Poor	Poor	Poor	Fair	High
	Rogers Branch	9	5	0%		6		1	5		16%	21	84		4	Medium		2			*E. coli*	Good	Good	Good	Good	Good	Good	Priority
	Varnell Creek	10	3	0%		1		1			8%	2	3															Long-Term
	Ison Springs Branch	11	2	0%		2		1	1		5%		1															Long-Term
North Chickamauga Creek	Upstream North Chickamauga Creek	20	21	0%	Yes	15			15		2%				1		442		Designated State Natural Area	Physical Substrate Habitat Alterations	pH, Siltation, Habitat Alteration	Good	Good	Good	Good	Good	Poor	Priority
	Poe Branch	21	11	0%		4		2	2		10%	12	45	1	5			2		Physical Substrate Habitat Alterations	pH				Good			Long-Term
	Falling Water Creek	22	16	0%	Yes	6		2	3	1	6%				9			1	Designated State Natural Areas		pH	Good	Good		Good	Good	Good	Long-Term
	Lick Branch	23	8	0%		3		1	2		15%	1	1	1	1		10	1		*E. coli*	pH		Fair		Good			Long-Term
	Pitts Branch	24	7	53%		12	2	2	7	1	12%	1	1		1	Medium	187		Designated State Natural Area	Alteration in stream-side or littoral vegegetative covers	pH	Good	Good	Good	Good	Good	Good	Priority
	Downstream North Chickamauga Creek	25	17	73%		22	9	2	3	8	26%	30	103	6	16	Medium	683	3	Registered State Natural Area		pH	Good	Good	Fair	Poor	Poor	Fair	High
Stringers Branch	Mountain Creek	30	7	59%		20	7	1	6	6	17%		1	4	5	Medium	106	5		*E. coli* Physical substrate habitat alterations	*E. coli* , Siltation, Habitat Alteration	Good	Poor	Poor	Fair	Fair	Fair	Priority
	Stringers Branch	31	6	18%		14	1	3	5	5	25%	34	140	9	11	High	12	1		*E. coli* Nitrate/Nitrite Other anthropogenic substrate alterations	*E. coli* , Siltation, Habitat Alteration	Fair	Good	Fair	Fair	Fair	Fair	High
Lookout Creek	Lookout Creek	40	10	19%	Yes	6	1		4	1	7%		4	2	7	Medium	6	2	Nature Center and National Military Park	*E. coli*		Fair	Fair	Good	Good	Fair	Good	Long-Term
	Black Creek	41	7	56%		0					19%			5	24	Medium	91	1		*E. coli* Alteration in stream-side or littoral vegetative covers		Good	Good	Good	Good	Fair	Good	Priority

	Sub-Watershed Name	Reference Number	Basin Drainage Area	Basin Drainage Area Within City Limits	Watershed Extends Outside County	Existing Monitoring Stations					Risks						Consequences					Historical Data Review						Monitoring Priority Level
						Total	City	County	TNDEC	USGS	Impervious Area	Reported SSOs		Remediation Sites	Permitted Industrial Facilities	Visual Stream Score	Structure Flood Risk	Vulnerable Parks	Managed Natural Areas	Impaired Waters	TMDLs	TN	TP	TSS	*E. coli*	DO	pH	
			sq.mi.	Percentage	Y/N	Count	Count	County	Count	Count	Percentage	2020	2016-2020	Count	Count	H/M/L	Count	Count	Type	Parameter	Parameter	2009-2021						
Chattanooga Creek	Chattanooga Creek	50	11	81%	Yes	34	17	1	14	2	52%	46	173	149	106	Medium	1035	2	National Military Park	Dioxin (including 2,3,7,8-TCDD) PCBS *E.coli* Creosote DO Other anthropogenic substrate alterations	Dioxins, PCBs, *E. coli* , Siltation, Habitat Alteration	Poor	Poor	Poor	Poor	Poor	Poor	Priority
	Dobbs Branch	51	5	100%		14	12		1	1	72%	43	133	33	62	High	1377	4		*E.coli* TP DO Ammonia Nitrate/Nitrite Other anthropogenic substrate alterations	*E. coli* , Siltation, Habitat Alteration	Poor	Fair	Poor	Poor	Poor	Fair	High
South Chickamauga Creek	Downstream South Chickamauga Creek	60	9	98%		10	1		5	4	27%	19	81	11	45	Medium	374	2		*E. coli* Physical Substrate Habitat alterations Sedimentation/siltation TP	*E. coli* , Siltation, Habitat Alteration	Good	Good	Fair	Fair	Fair	Good	Priority
	Friar Branch	61	23	72%		27	11		11	5	49%	21	49	57	95	Medium	985	3		Nutrients Sedimentation Physical substrate habitat alteration *E. coli*	*E. coli,* Siltation, Habitat Alteration	Fair	Good	Poor	Poor	Fair	Fair	High
	Spring Creek	62	10	25%	Yes	10	1	4	5		35%	101	330	7	8	Medium	300	1	Wildlife Sanctuary	*E. coli* Sedimentation/siltation	*E. coli*	Fair	Good	Good	Fair	Fair	Good	Priority
	Upstream South Chickamauga Creek	63	11	86%	Yes	10	1	2	6	1	48%	45	141	12	20	Medium	304	8	Wildlife Sanctuary	Nutrients *E. coli*	*E. coli* , Siltation, Habitat Alteration	Good	Poor	Good	Fair	Poor	Good	Priority
	Mackey Branch	64	11	63%		15	2	3	7	3	25%	11	35	1	1	Medium	160	5	Wildlife Sanctuary	*E. coli* Physical Substrate Habitat alterations Sedimentation/siltation	*E. coli*	Good	Good	Good	Fair	Fair	Good	Priority
	Hurricane Creek	65	11	1%	Yes	4		2	2		12%	1	3					1				Good	Good			Good	Good	Long-Term
Wolftever Creek	Hunter Branch	70	5	0%		2		1	1		10%		3			Low				Alteration in stream-side or Littoral vegetative covers								Long-Term
	Wolftever Creek	71	18	26%	Yes	14		3	10	1	12%	13	26	3	15	Medium		6		*E. coli*	*E. coli*	Good	Good	Good	Good	Fair	Good	Priority
	Litle Wolftever Creek	72	7	17%	Yes	7		2	5		8%			3	8	Medium				*E. coli*	*E. coli*	Good	Good		Good	Good	Good	Long-Term
	Chestnut Creek	73	9	0%		8		3	5		8%	3	3	1	3			3			*E. coli*	Good	Good		Good	Good	Good	Long-Term

*Historical data review categories are relative to one another
*Basin drainage within the City and Hamilton County only

Appendix C

Monitoring Prioritization Maps

All Subwatersheds in Study Area

Legend

Existing Stations

- USGS Gauges
- Hamilton County Sampling Stations
- Chattanooga Sampling Stations
- TNDEC Sampling Stations

Other Information

- Interstates
- Streams
- Hydro Layer
- Hamilton County
- Subwatersheds
- Chattanooga City Limits

Major Watersheds

- Individual
- Chattanooga Creek
- Lookout Creek
- North Chickamauga Creek
- South Chickamauga Creek
- Stringers Branch
- Wolftever Creek

N

0 2.5 5 10 Miles

*All watershed boundaries were approximated by the City using Arc Hydro and have not been further refined

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Chattanooga Creek and Lookout Creek

Legend

Existing Stations
- USGS Gauges
- Hamilton County Sampling Stations
- Chattanooga Sampling Stations
- TNDEC Sampling Stations

Other Information
- Interstates
- Streams
- Hydro Layer
- Hamilton County
- Subwatersheds
- Chattanooga City Limits

Major Watersheds
- Individual
- Chattanooga Creek
- Lookout Creek
- North Chickamauga Creek
- South Chickamauga Creek
- Stringers Branch
- Wolftever Creek

Risks
- Active Landfills
- Wastewater Treatment Facility
- Reported 2020 SSOs
- Industrial Permits
- Remediation Sites

Visual Stream Assessment Score
- Low
- Medium
- High

Consequences
- Managed Natural Areas
- Recreational Facilities
- Structures in the 500 Year Floodplain

*Impaired waters and TMDL watersheds are not depicted here, but are included in the accompanying summary matrix
*Structures within the 500-year floodplain are those located within City limits only
*All watershed boundaries were approximated by the City using Arc Hydro and have not been further refined

N

0 0.5 1 2 Miles

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North Chickamauga Creek and Stringers Branch

Legend

Existing Stations
- USGS Gauges
- Hamilton County Sampling Stations
- Chattanooga Sampling Stations
- TNDEC Sampling Stations

Other Information
- Interstates
- Streams
- Hydro Layer
- Hamilton County
- Subwatersheds
- Chattanooga City Limits

Major Watersheds
- Individual
- Chattanooga Creek
- Lookout Creek
- North Chickamauga Creek
- South Chickamauga Creek
- Stringers Branch
- Wolftever Creek

Risks
- Active Landfills
- Wastewater Treatment Facility
- Reported 2020 SSOs
- Industrial Permits
- Remediation Sites

Visual Stream Assessment Score
- Low
- Medium
- High

Consequences
- Managed Natural Areas
- Recreational Facilities
- Structures in the 500 Year Floodplain

0 1 2 4 Miles

N

*Impaired waters and TMDL watersheds are not depicted here, but are included in the accompanying summary matrix

*Structures within the 500-year floodplain are those located within City limits only

*All watershed boundaries were approximated by the City using Arc Hydro and have not been further refined

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South Chickamauga Creek and Wolftever Creek

Legend

Existing Stations

- USGS Gauges
- Hamilton County Sampling Stations
- Chattanooga Sampling Stations
- TNDEC Sampling Stations

Other Information

- Interstates
- Streams
- Hydro Layer
- Hamilton County
- Subwatersheds
- Chattanooga City Limits

Major Watersheds

- Individual
- Chattanooga Creek
- Lookout Creek
- North Chickamauga Creek
- South Chickamauga Creek
- Stringers Branch
- Wolftever Creek

Risks

- Active Landfills
- Wastewater Treatment Facility
- Reported 2020 SSOs
- Industrial Permits
- Remediation Sites

Visual Stream Assessment Score

- Low
- Medium
- High

Consequences

- Managed Natural Areas
- Recreational Facilities
- Structures in the 500 Year Floodplain

*Impaired waters and TMDL watersheds are not depicted here, but are included in the accompanying summary matrix
*Structures within the 500-year floodplain are those located within City limits only
*All watershed boundaries were approximated by the City using Arc Hydro and have not been further refined

N

0 0.75 1.5 3 Miles

Date Exported: 11/16/2021 10:24 AM

Physicochemical Monitoring Data

Timestamp	Barometer (in	Specific Cond	Dissolved Ox	pH_1 (Units)	Temperature	E. coli (CFU/1	Site
7/1/2021 11:21						30	LWOLF000.5HM
7/1/2021 11:28	29.202	286.1	6.92		23.2		LWOLF0005
7/1/2021 11:28	29.202	286.5	6.91		23.2		LWOLF0005
7/1/2021 11:28	29.202	280.3	6.92		23.2		LWOLF0005
7/1/2021 11:28	29.202	279.4	6.92		23.2		LWOLF0005
7/1/2021 11:28	29.202	282.2	6.91		23.2		LWOLF0005
7/1/2021 11:28	29.202	281.7	6.9		23.2		LWOLF0005
7/1/2021 11:28	29.202	279.5	6.89		23.2		LWOLF0005
7/1/2021 11:28	29.202	280.6	6.88		23.2		LWOLF0005
7/1/2021 11:28	29.202	280.4	6.88		23.2		LWOLF0005
7/1/2021 11:28	29.202	280.4	6.88		23.2		LWOLF0005
7/1/2021 12:35						30	WILKE001.8HM
7/1/2021 12:39	29.093	236.6	5.29		27.4		WILKE0018
7/1/2021 12:39	29.093	234.3	5.26		27.4		WILKE0018
7/1/2021 12:39	29.093	232.9	5.23		27.4		WILKE0018
7/1/2021 12:39	29.093	234.9	5.2		27.4		WILKE0018
7/1/2021 12:39	29.093	234.7	5.18		27.4		WILKE0018
7/1/2021 12:39	29.093	238.9	5.16		27.4		WILKE0018
7/1/2021 12:39	29.093	237	5.14		27.4		WILKE0018
7/1/2021 12:39	29.093	237.2	5.11		27.4		WILKE0018
7/1/2021 12:39	29.093	237	5.08		27.4		WILKE0018
7/1/2021 12:39	29.093	237.1	5.09		27.3		WILKE0018
7/9/2021 10:29						510	SPRIN000.7HM
7/9/2021 10:40	29.288	376.6	5.23		23		SPRIN000.7HM
7/9/2021 10:40	29.288	374.4	5.21		23		SPRIN000.7HM
7/9/2021 10:40	29.288	383	5.23		23		SPRIN000.7HM
7/9/2021 10:40	29.291	369.1	5.25		23		SPRIN000.7HM
7/9/2021 10:40	29.291	370	5.27		23		SPRIN000.7HM
7/9/2021 10:40	29.291	365.8	5.26		23		SPRIN000.7HM
7/9/2021 10:40	29.288	375.7	5.27		23		SPRIN000.7HM
7/9/2021 10:41	29.288	367.4	5.25		23		SPRIN000.7HM
7/9/2021 10:41	29.288	374.5	5.24		23		SPRIN000.7HM
7/9/2021 10:41	29.288	375.7	5.26		23		SPRIN000.7HM
7/9/2021 10:41	29.288	375.6	5.26		23		SPRIN000.7HM
7/9/2021 10:41	29.288	375.8	5.26		23		SPRIN000.7HM
7/9/2021 10:41	29.288	375.6	5.26		23		SPRIN000.7HM
7/9/2021 11:05						210	MACKE004.6HM
7/16/2021 10:35						280	SPRIN000.7HM
7/16/2021 10:40	29.368	371.2	4.5	7.22	23.5		SPRIN000.7HM
7/16/2021 10:40	29.365	371.2	4.49	7.21	23.5		SPRIN000.7HM
7/16/2021 10:40	29.368	370.9	4.5	7.22	23.5		SPRIN000.7HM
7/16/2021 10:40	29.368	370	4.49	7.22	23.5		SPRIN000.7HM
7/16/2021 10:40	29.368	371.1	4.48	7.22	23.5		SPRIN000.7HM
7/16/2021 10:40	29.368	371.8	4.46	7.22	23.6		SPRIN000.7HM
7/16/2021 10:40	29.368	370.1	4.45	7.21	23.6		SPRIN000.7HM
7/16/2021 10:40	29.368	371.1	4.45	7.21	23.6		SPRIN000.7HM
7/16/2021 10:40	29.368	371.3	4.46	7.21	23.6		SPRIN000.7HM
7/16/2021 10:40	29.371	371.4	4.47	7.2	23.6		SPRIN000.7HM
7/16/2021 10:41	29.368	371.4	4.48	7.21	23.6		SPRIN000.7HM
7/16/2021 11:07						200	MACKE004.6HM
7/16/2021 11:12	29.282	251.5	8.59	7.82	23.9		MACKE004.6HM
7/16/2021 11:12	29.282	251.9	8.56	7.82	23.9		MACKE004.6HM
7/16/2021 11:12	29.282	251.9	8.58	7.83	23.9		MACKE004.6HM
7/16/2021 11:12	29.282	252.1	8.58	7.83	23.9		MACKE004.6HM
7/16/2021 11:12	29.282	252	8.53	7.83	23.9		MACKE004.6HM
7/16/2021 11:13	29.282	252.3	8.44	7.83	23.9		MACKE004.6HM
7/16/2021 11:13	29.282	252.9	8.36	7.83	23.9		MACKE004.6HM
7/16/2021 11:13	29.282	251.4	8.37	7.83	23.9		MACKE004.6HM
7/16/2021 11:13	29.282	251.6	8.36	7.83	23.9		MACKE004.6HM
7/16/2021 11:13	29.282	251.4	8.34	7.83	23.9		MACKE004.6HM
7/26/2021 9:50	29.244	375.9	5.72		23.6		SPRIN000.7HM
7/26/2021 9:50	29.246	376.6	5.75		23.6		SPRIN000.7HM
7/26/2021 9:50	29.244	375.2	5.76		23.6		SPRIN000.7HM
7/26/2021 9:50	29.244	375.2	5.76		23.6		SPRIN000.7HM
7/26/2021 9:50	29.246	374.3	5.71		23.6		SPRIN000.7HM
7/26/2021 9:50	29.246	374.8	5.68		23.6		SPRIN000.7HM
7/26/2021 9:50	29.246	375.5	5.62		23.6		SPRIN000.7HM
7/26/2021 9:50	29.246	375	5.6		23.6		SPRIN000.7HM
7/26/2021 9:50	29.246	375.2	5.63		23.6		SPRIN000.7HM
7/26/2021 9:51	29.244	375.3	5.64		23.6		SPRIN000.7HM
7/26/2021 9:51	29.244	375.2	5.64		23.7		SPRIN000.7HM
7/26/2021 9:51	29.246	375.2	5.64		23.7		SPRIN000.7HM
7/26/2021 10:21	29.152	261.2	11.12		23.1		MACKE004.6HM
7/26/2021 10:21	29.152	261.7	10.93		23.1		MACKE004.6HM

7/26/2021 10:21	29.152	259.7	10.8	23.1	MACKE004.6HM	
7/26/2021 10:21	29.152	263.7	10.69	23.1	MACKE004.6HM	
7/26/2021 10:21	29.152	262.9	10.71	23.1	MACKE004.6HM	
7/26/2021 10:21	29.152	262.4	10.77	23.1	MACKE004.6HM	
7/26/2021 10:21	29.155	262.3	10.83	23.1	MACKE004.6HM	
7/26/2021 10:21	29.155	260	10.8	23.1	MACKE004.6HM	
7/26/2021 10:21	29.152	261.4	10.85	23.1	MACKE004.6HM	
7/26/2021 10:22	29.152	261.7	10.88	23.1	MACKE004.6HM	
7/26/2021 10:22	29.152	261.6	10.82	23.1	MACKE004.6HM	
7/26/2021 10:22	29.155	261.7	10.69	23.1	MACKE004.6HM	
7/28/2021 11:08	29.279	376.3	5.94	23.6	SPRIN000.7HM	
7/28/2021 11:08	29.279	376.1	5.91	23.6	SPRIN000.7HM	
7/28/2021 11:09	29.279	376.3	5.93	23.6	SPRIN000.7HM	
7/28/2021 11:09	29.276	376.7	5.91	23.6	SPRIN000.7HM	
7/28/2021 11:09	29.279	375.6	5.89	23.6	SPRIN000.7HM	
7/28/2021 11:09	29.279	376.1	5.87	23.6	SPRIN000.7HM	
7/28/2021 11:09	29.282	375.6	5.88	23.6	SPRIN000.7HM	
7/28/2021 11:09	29.279	375.5	5.88	23.6	SPRIN000.7HM	
7/28/2021 11:09	29.279	376	5.84	23.6	SPRIN000.7HM	
7/28/2021 11:09	29.279	376.1	5.87	23.6	SPRIN000.7HM	
7/28/2021 11:09	29.279	376.1	5.89	23.6	SPRIN000.7HM	
7/28/2021 11:09	29.279	376.1	5.83	23.7	SPRIN000.7HM	
7/28/2021 11:33	29.196	263.7	9.17	25.2	MACKE004.6HM	
7/28/2021 11:33	29.199	261.4	9.17	25.2	MACKE004.6HM	
7/28/2021 11:33	29.199	261.5	9.18	25.2	MACKE004.6HM	
7/28/2021 11:34	29.196	261.5	9.14	25.2	MACKE004.6HM	
7/28/2021 11:34	29.196	261.4	9.05	25.2	MACKE004.6HM	
7/28/2021 11:34	29.196	261.2	8.95	25.2	MACKE004.6HM	
7/28/2021 11:34	29.199	260.9	8.84	25.2	MACKE004.6HM	
7/28/2021 11:34	29.196	261.2	8.75	25.2	MACKE004.6HM	
7/28/2021 11:34	29.196	261.4	8.71	25.1	MACKE004.6HM	
7/28/2021 11:34	29.196	261.3	8.64	25.1	MACKE004.6HM	
7/28/2021 11:34	29.199	261.3	8.57	25.1	MACKE004.6HM	
7/28/2021 11:34	29.199	261.3	8.49	25.1	MACKE004.6HM	
7/28/2021 11:34	29.199	261.2	8.43	25.1	MACKE004.6HM	
7/28/2021 11:34	29.196	261.2	8.37	25.1	MACKE004.6HM	
7/29/2021 10:58					610 SPRIN000.7HM	
7/29/2021 11:03	29.306	374.7	5.09	23.8	SPRIN000.7HM	
7/29/2021 11:03	29.306	374	5.07	23.9	SPRIN000.7HM	
7/29/2021 11:03	29.306	375.6	5.03	23.9	SPRIN000.7HM	
7/29/2021 11:04	29.306	375.2	5.03	23.9	SPRIN000.7HM	
7/29/2021 11:04	29.303	375.6	5.05	23.9	SPRIN000.7HM	
7/29/2021 11:04	29.306	375.6	5.06	23.9	SPRIN000.7HM	
7/29/2021 11:04	29.306	375	5.05	23.9	SPRIN000.7HM	
7/29/2021 11:04	29.306	374.9	5	23.9	SPRIN000.7HM	
7/29/2021 11:04	29.306	375.3	4.97	23.9	SPRIN000.7HM	
7/29/2021 11:04	29.303	375.4	5	23.9	SPRIN000.7HM	
7/29/2021 11:04	29.306	375.3	5.04	23.9	SPRIN000.7HM	
7/29/2021 11:22					200 MACKE004.6HM	
7/29/2021 11:23					230 MACKE004.6HM	
7/29/2021 11:29	29.22	262.1	9	24.6	MACKE004.6HM	
7/29/2021 11:29	29.22	262.4	8.91	24.5	MACKE004.6HM	
7/29/2021 11:29	29.22	261.8	8.85	24.5	MACKE004.6HM	
7/29/2021 11:29	29.223	263.1	8.8	24.5	MACKE004.6HM	
7/29/2021 11:29	29.22	260.9	8.8	24.5	MACKE004.6HM	
7/29/2021 11:29	29.22	261.5	8.76	24.6	MACKE004.6HM	
7/29/2021 11:29	29.22	263.5	8.78	24.5	MACKE004.6HM	
7/29/2021 11:29	29.22	262.8	8.7	24.5	MACKE004.6HM	
7/29/2021 11:29	29.217	262.7	8.63	24.5	MACKE004.6HM	
7/29/2021 11:29	29.217	262.6	8.56	24.5	MACKE004.6HM	
7/29/2021 11:29	29.22	262.5	8.53	24.5	MACKE004.6HM	
8/2/2021 10:45					90 GSPRI001.3HM	
8/2/2021 10:48	28.192	398.4	10	20.6	GSPRI001.3HM	
8/2/2021 10:48	28.192	398.9	9.96	20.6	GSPRI001.3HM	
8/2/2021 10:48	28.192	401.8	9.97	20.6	GSPRI001.3HM	
8/2/2021 10:48	28.192	400.5	9.97	20.6	GSPRI001.3HM	
8/2/2021 10:49	28.192	402.7	9.94	20.6	GSPRI001.3HM	
8/2/2021 10:49	28.192	402.1	9.94	20.6	GSPRI001.3HM	
8/2/2021 10:49	28.192	406.4	9.94	20.6	GSPRI001.3HM	
8/2/2021 10:49	28.192	401.1	9.88	20.6	GSPRI001.3HM	
8/2/2021 10:49	28.192	401	9.96	20.5	GSPRI001.3HM	
8/2/2021 10:49	28.192	400.8	9.91	20.6	GSPRI001.3HM	
8/2/2021 10:49	28.192	400.9	9.97	20.6	GSPRI001.3HM	
8/2/2021 10:49	28.192	400.8	9.93	20.6	GSPRI001.3HM	
8/2/2021 10:49	28.192	400.9	9.94	20.6	GSPRI001.3HM	

8/3/2021 11:40						190	GSPRI001.3HM
8/4/2021 10:40						120	GSPRI001.3HM
8/9/2021 11:44						120	GSPRI001.3HM
8/11/2021 11:40						490	GSPRI001.3HM
8/11/2021 11:41						150	GSPRI001.3HM
10/26/2021 13:51	29.111	210.1	7.73	6.65	15.3		RSPRI0013
10/26/2021 13:51	29.111	211.5	7.71	6.65	15.3		RSPRI0013
10/26/2021 13:51	29.111	198.9	7.67	6.65	15.3		RSPRI0013
10/26/2021 13:51	29.111	208.8	7.67	6.65	15.3		RSPRI0013
10/26/2021 13:51	29.111	200.5	7.66	6.65	15.3		RSPRI0013
10/26/2021 13:51	29.108	189.1	7.66	6.65	15.3		RSPRI0013
10/26/2021 13:51	29.111	198.3	7.68	6.66	15.3		RSPRI0013
10/26/2021 13:51	29.111	211.2	7.67	6.66	15.3		RSPRI0013
10/26/2021 13:51	29.111	199.5	7.69	6.66	15.3		RSPRI0013
10/26/2021 13:52	29.111	198.2	7.7	6.66	15.3		RSPRI0013
10/26/2021 13:52	29.114	198	7.71	6.66	15.3		RSPRI0013
10/26/2021 13:52	29.108	198	7.7	6.66	15.3		RSPRI0013
10/26/2021 13:52	29.108	199.7	7.69	6.67	15.3		RSPRI0013
10/26/2021 13:52	29.108	198.4	7.69	6.67	15.3		RSPRI0013
10/26/2021 13:52	29.108	203.8	7.7	6.67	15.3		RSPRI0013
10/26/2021 13:52	29.108	193	7.69	6.67	15.3		RSPRI0013
11/3/2021 14:06	29.492	490.7	8.77	7.92	12.6		VARNE0003HM
11/3/2021 14:06	29.492	490	8.74	7.87	12.6		VARNE0003HM
11/3/2021 14:06	29.492	488.3	8.73	7.84	12.6		VARNE0003HM
11/3/2021 14:06	29.492	488	8.71	7.81	12.6		VARNE0003HM
11/3/2021 14:06	29.495	493.4	8.7	7.79	12.6		VARNE0003HM
11/3/2021 14:06	29.495	489.9	8.69	7.77	12.6		VARNE0003HM
11/3/2021 14:06	29.495	492.2	8.67	7.75	12.6		VARNE0003HM
11/3/2021 14:06	29.495	490.1	8.65	7.73	12.6		VARNE0003HM
11/3/2021 14:06	29.492	490.4	8.65	7.72	12.6		VARNE0003HM
11/3/2021 14:06	29.495	490.6	8.65	7.7	12.6		VARNE0003HM
11/3/2021 14:07	29.492	490.6	8.64	7.69	12.6		VARNE0003HM
11/4/2021 13:49	29.391	267.2	11.28	8.09	12.8		MACKE004.6HM
11/4/2021 13:49	29.391	266	11.27	8.09	12.8		MACKE004.6HM
11/4/2021 13:49	29.388	275.8	11.27	8.08	12.8		MACKE004.6HM
11/4/2021 13:50	29.388	270.8	11.26	8.08	12.8		MACKE004.6HM
11/4/2021 13:50	29.388	269.4	11.27	8.08	12.8		MACKE004.6HM
11/4/2021 13:50	29.388	254.2	11.27	8.08	12.8		MACKE004.6HM
11/4/2021 13:50	29.388	267.5	11.27	8.08	12.8		MACKE004.6HM
11/4/2021 13:50	29.391	271.6	11.27	8.08	12.8		MACKE004.6HM
11/4/2021 13:50	29.388	266	11.28	8.08	12.8		MACKE004.6HM
11/4/2021 13:50	29.388	265.4	11.28	8.08	12.8		MACKE004.6HM
11/4/2021 13:50	29.388	265.4	11.27	8.08	12.8		MACKE004.6HM
11/5/2021 13:10	29.368	183.8	10.75	8.01	11.5		WILKE001.8HM
11/5/2021 13:10	29.371	184.8	10.74	7.96	11.5		WILKE001.8HM
11/5/2021 13:10	29.371	183.8	10.72	7.92	11.5		WILKE001.8HM
11/5/2021 13:10	29.368	185.1	10.72	7.89	11.5		WILKE001.8HM
11/5/2021 13:10	29.368	184.1	10.71	7.86	11.5		WILKE001.8HM
11/5/2021 13:10	29.371	184.1	10.7	7.83	11.5		WILKE001.8HM
11/5/2021 13:10	29.371	184.5	10.69	7.81	11.5		WILKE001.8HM
11/5/2021 13:10	29.371	184.7	10.68	7.77	11.5		WILKE001.8HM
11/5/2021 13:10	29.371	184.5	10.68	7.75	11.5		WILKE001.8HM
11/5/2021 13:10	29.371	184.5	10.67	7.73	11.5		WILKE001.8HM
11/8/2021 14:09	29.53	311.6	9.32	8.25	10.4		SCHIC012.7HM
11/8/2021 14:09	29.527	309	9.4	8.22	10.4		SCHIC012.7HM
11/8/2021 14:09	29.527	310.2	9.38	8.21	10.4		SCHIC012.7HM
11/8/2021 14:09	29.527	309.8	9.39	8.19	10.4		SCHIC012.7HM
11/8/2021 14:09	29.53	308.3	9.47	8.18	10.4		SCHIC012.7HM
11/8/2021 14:09	29.527	308.1	9.54	8.17	10.4		SCHIC012.7HM
11/8/2021 14:09	29.527	310.9	9.52	8.15	10.4		SCHIC012.7HM
11/8/2021 14:09	29.53	311.9	9.54	8.14	10.4		SCHIC012.7HM
11/8/2021 14:09	29.527	309.6	9.56	8.12	10.4		SCHIC012.7HM
11/8/2021 14:09	29.527	309.3	9.58	8.11	10.4		SCHIC012.7HM
11/8/2021 14:09	29.53	309.2	9.58	8.1	10.4		SCHIC012.7HM
11/9/2021 14:00	29.474	303.7	10.47	8.18	11.6		SCHIC017.3HM
11/9/2021 14:00	29.474	303.5	10.48	8.16	11.6		SCHIC017.3HM
11/9/2021 14:00	29.474	305.6	10.5	8.15	11.6		SCHIC017.3HM
11/9/2021 14:00	29.471	302.4	10.53	8.13	11.6		SCHIC017.3HM
11/9/2021 14:00	29.474	303.6	10.55	8.1	11.6		SCHIC017.3HM
11/9/2021 14:00	29.474	304.4	10.58	8.06	11.6		SCHIC017.3HM
11/9/2021 14:00	29.474	303.4	10.57	8.01	11.6		SCHIC017.3HM
11/9/2021 14:00	29.474	302.9	10.57	7.98	11.6		SCHIC017.3HM
11/9/2021 14:00	29.474	303.8	10.59	7.95	11.6		SCHIC017.3HM
11/9/2021 14:00	29.474	304.1	10.6	7.94	11.6		SCHIC017.3HM
11/9/2021 14:00	29.474	304.1	10.6	7.92	11.6		SCHIC017.3HM

11/10/2021 14:39	29.344	302.7	9.97	7.67	11.6	WCHIC0030
11/10/2021 14:39	29.341	303.6	9.99	7.67	11.6	WCHIC0030
11/10/2021 14:39	29.341	304.2	9.99	7.68	11.6	WCHIC0030
11/10/2021 14:39	29.344	299.4	9.99	7.68	11.6	WCHIC0030
11/10/2021 14:39	29.344	302.2	10	7.68	11.6	WCHIC0030
11/10/2021 14:39	29.344	305.9	10.01	7.68	11.6	WCHIC0030
11/10/2021 14:39	29.344	302.7	10.02	7.68	11.6	WCHIC0030
11/10/2021 14:39	29.344	304.8	10.03	7.68	11.6	WCHIC0030
11/10/2021 14:39	29.344	303.6	10.04	7.68	11.6	WCHIC0030
11/10/2021 14:39	29.344	303.1	10.05	7.68	11.6	WCHIC0030
11/10/2021 14:39	29.344	303	10.05	7.68	11.6	WCHIC0030
11/11/2021 15:00	29.004	418.9	10.01	8.15	14.5	CHEST000.1HM
11/11/2021 15:00	29.004	423.5	10.04	8.14	14.5	CHEST000.1HM
11/11/2021 15:00	29.004	423.5	10.06	8.13	14.5	CHEST000.1HM
11/11/2021 15:00	29.004	420.6	10.08	8.12	14.5	CHEST000.1HM
11/11/2021 15:00	29.004	420.2	10.1	8.11	14.5	CHEST000.1HM
11/11/2021 15:00	29.004	421.4	10.12	8.1	14.5	CHEST000.1HM
11/11/2021 15:00	29.001	419.6	10.13	8.09	14.5	CHEST000.1HM
11/11/2021 15:00	29.004	418	10.15	8.08	14.5	CHEST000.1HM
11/11/2021 15:01	29.001	419.8	10.17	8.07	14.5	CHEST000.1HM
11/11/2021 15:01	29.001	420	10.17	8.06	14.5	CHEST000.1HM
11/11/2021 15:01	29.001	420.1	10.2	8.05	14.5	CHEST000.1HM
11/15/2021 14:34	29.291	229.9	8.53	7.44	11.7	LWOLF002.9HM
11/15/2021 14:34	29.291	228.3	8.58	7.4	11.7	LWOLF002.9HM
11/15/2021 14:34	29.291	233	8.55	7.38	11.7	LWOLF002.9HM
11/15/2021 14:34	29.291	231.8	8.53	7.36	11.7	LWOLF002.9HM
11/15/2021 14:34	29.291	234.2	8.51	7.35	11.7	LWOLF002.9HM
11/15/2021 14:34	29.291	230.1	8.5	7.33	11.7	LWOLF002.9HM
11/15/2021 14:34	29.291	234.3	8.51	7.31	11.7	LWOLF002.9HM
11/15/2021 14:35	29.291	232.4	8.51	7.3	11.7	LWOLF002.9HM
11/15/2021 14:35	29.291	233.4	8.49	7.28	11.7	LWOLF002.9HM
11/15/2021 14:35	29.291	232.5	8.5	7.27	11.7	LWOLF002.9HM
11/15/2021 14:35	29.288	232.3	8.49	7.25	11.7	LWOLF002.9HM
11/17/2021 14:02	29.394	291.4	9.67	7.5	13.6	SAVAN008.3HM
11/17/2021 14:03	29.397	294.9	9.71	7.5	13.6	SAVAN008.3HM
11/17/2021 14:03	29.394	285.9	9.75	7.5	13.6	SAVAN008.3HM
11/17/2021 14:03	29.394	293	9.76	7.5	13.6	SAVAN008.3HM
11/17/2021 14:03	29.391	298	9.77	7.5	13.6	SAVAN008.3HM
11/17/2021 14:03	29.394	296	9.77	7.5	13.6	SAVAN008.3HM
11/17/2021 14:03	29.394	296.6	9.76	7.5	13.6	SAVAN008.3HM
11/17/2021 14:03	29.394	295.1	9.76	7.5	13.6	SAVAN008.3HM
11/17/2021 14:03	29.397	295.8	9.76	7.5	13.6	SAVAN008.3HM
11/17/2021 14:03	29.397	296.8	9.76	7.5	13.6	SAVAN008.3HM
11/17/2021 14:03	29.394	295.9	9.75	7.5	13.6	SAVAN008.3HM
11/17/2021 14:03	29.391	296	9.76	7.5	13.6	SAVAN008.3HM
11/17/2021 14:03	29.394	295.6	9.76	7.5	13.6	SAVAN008.3HM
11/17/2021 14:03	29.397	294.8	9.76	7.5	13.6	SAVAN008.3HM
11/17/2021 14:03	29.397	295.5	9.75	7.5	13.6	SAVAN008.3HM
11/17/2021 14:03	29.394	295.1	9.76	7.5	13.6	SAVAN008.3HM
11/17/2021 14:03	29.397	295.4	9.75	7.5	13.6	SAVAN008.3HM
4/19/2022 12:20	29.48	86.9	10.9	8.37	10.6	SALE0054
4/19/2022 12:20	29.48	86.5	10.97	8.3	10.6	SALE0054
4/19/2022 12:20	29.48	87.4	11	8.25	10.6	SALE0054
4/19/2022 12:20	29.48	85.6	11.01	8.21	10.6	SALE0054
4/19/2022 12:20	29.48	87.5	10.99	8.17	10.6	SALE0054
4/19/2022 12:20	29.477	85.1	11	8.13	10.6	SALE0054
4/19/2022 12:20	29.48	86.5	11	8.1	10.6	SALE0054
4/19/2022 12:20	29.48	86.2	11.02	8.07	10.6	SALE0054
4/19/2022 12:21	29.48	86.5	11.03	8.03	10.6	SALE0054
4/19/2022 12:21	29.48	86.5	11.01	8	10.6	SALE0054
4/19/2022 12:21	29.477	86.5	11	7.98	10.6	SALE0054
4/22/2022 12:25	29.598	117.2	10.16	7.73	14.6	SALE066T03
4/22/2022 12:25	29.601	114.1	10.17	7.7	14.6	SALE066T03
4/22/2022 12:25	29.601	116.9	10.15	7.69	14.6	SALE066T03
4/22/2022 12:25	29.601	115.5	10.16	7.67	14.6	SALE066T03
4/22/2022 12:25	29.601	114.2	10.16	7.66	14.6	SALE066T03
4/22/2022 12:25	29.601	114.4	10.15	7.64	14.6	SALE066T03
4/22/2022 12:25	29.601	115.6	10.16	7.63	14.6	SALE066T03
4/22/2022 12:25	29.601	115.1	10.16	7.61	14.6	SALE066T03
4/22/2022 12:25	29.598	115.5	10.16	7.6	14.6	SALE066T03
4/22/2022 12:25	29.601	115.5	10.16	7.59	14.6	SALE066T03
4/27/2022 12:10	29.492	238.4	9.69	7.47	16.5	SPRIN002.6HM
4/27/2022 12:10	29.489	241.9	9.69	7.46	16.5	SPRIN002.6HM
4/27/2022 12:10	29.492	235.5	9.68	7.45	16.5	SPRIN002.6HM
4/27/2022 12:10	29.492	236.8	9.68	7.45	16.5	SPRIN002.6HM

4/27/2022 12:10	29.492	237.7	9.68	7.44	16.5	SPRIN002.6HM
4/27/2022 12:11	29.492	239.2	9.67	7.44	16.5	SPRIN002.6HM
4/27/2022 12:11	29.489	237.3	9.67	7.44	16.5	SPRIN002.6HM
4/27/2022 12:11	29.489	235.1	9.67	7.43	16.5	SPRIN002.6HM
4/27/2022 12:11	29.489	237.3	9.66	7.43	16.5	SPRIN002.6HM
4/27/2022 12:11	29.492	237.1	9.66	7.43	16.5	SPRIN002.6HM
5/10/2022 11:16	29.539	295.8	8.08	6.88	18.4	SCHIC012.7HM
5/10/2022 11:16	29.539	288.9	8.06	6.77	18.4	SCHIC012.7HM
5/10/2022 11:16	29.536	284	8.06	6.72	18.4	SCHIC012.7HM
5/10/2022 11:16	29.536	294.5	8.03	6.7	18.4	SCHIC012.7HM
5/10/2022 11:16	29.539	291.1	8.08	6.7	18.4	SCHIC012.7HM
5/10/2022 11:16	29.539	286.7	8.07	6.7	18.4	SCHIC012.7HM
5/10/2022 11:16	29.539	285.2	8.06	6.7	18.4	SCHIC012.7HM
5/10/2022 11:16	29.539	289.4	8.05	6.7	18.4	SCHIC012.7HM
5/10/2022 11:16	29.536	293.1	8.05	6.7	18.4	SCHIC012.7HM
5/10/2022 11:16	29.539	293.9	8.06	6.7	18.4	SCHIC012.7HM
5/10/2022 11:16	29.539	294	8.06	6.7	18.4	SCHIC012.7HM
5/13/2022 11:47	29.303	278.5	8.86	8.1	21.6	SCHIC017.3HM
5/13/2022 11:47	29.303	278.8	8.83	8.06	21.6	SCHIC017.3HM
5/13/2022 11:47	29.303	278.2	8.83	8.04	21.6	SCHIC017.3HM
5/13/2022 11:47	29.303	278.1	8.84	8.03	21.6	SCHIC017.3HM
5/13/2022 11:47	29.303	277.7	8.85	8.02	21.6	SCHIC017.3HM
5/13/2022 11:47	29.303	278.6	8.86	8	21.6	SCHIC017.3HM
5/13/2022 11:47	29.3	277.8	8.84	7.99	21.6	SCHIC017.3HM
5/13/2022 11:47	29.3	277.9	8.85	7.97	21.6	SCHIC017.3HM
5/13/2022 11:47	29.303	278.3	8.84	7.97	21.6	SCHIC017.3HM
5/13/2022 11:47	29.303	278.3	8.83	7.96	21.6	SCHIC017.3HM
5/13/2022 11:47	29.303	278.3	8.83	7.95	21.6	SCHIC017.3HM
5/13/2022 11:47	29.3	277.9	8.82	7.94	21.6	SCHIC017.3HM
5/13/2022 11:47	29.3	278.1	8.82	7.94	21.6	SCHIC017.3HM
5/17/2022 10:49	29.288	277.8	5.5	8.06	21.3	WCHIC0014
5/17/2022 10:49	29.282	272.7	5.49	8.05	21.3	WCHIC0014
5/17/2022 10:49	29.276	257.4	5.49	8.05	21.3	WCHIC0014
5/17/2022 10:49	29.279	269.5	5.5	8.04	21.3	WCHIC0014
5/17/2022 10:49	29.282	289	5.51	8.03	21.3	WCHIC0014
5/17/2022 10:49	29.282	267.5	5.52	8.03	21.3	WCHIC0014
5/17/2022 10:49	29.282	285.4	5.52	8.03	21.3	WCHIC0014
5/17/2022 10:49	29.279	271	5.52	8.02	21.3	WCHIC0014
5/17/2022 10:49	29.279	274.6	5.51	8.02	21.3	WCHIC0014
5/17/2022 10:49	29.279	277.2	5.5	8.02	21.3	WCHIC0014
5/17/2022 10:49	29.282	277.5	5.48	8.02	21.3	WCHIC0014
5/18/2022 12:59	29.066	321.9	9.39	12.71	18.3	JOHNS000.2HM
5/18/2022 12:59	29.06	322.1	9.4	12.71	18.3	JOHNS000.2HM
5/18/2022 12:59	29.06	322.4	9.41	12.72	18.3	JOHNS000.2HM
5/18/2022 12:59	29.06	322.2	9.42	12.73	18.3	JOHNS000.2HM
5/18/2022 13:00	29.058	321.8	9.42	12.74	18.3	JOHNS000.2HM
5/18/2022 13:00	29.06	322	9.41	12.76	18.3	JOHNS000.2HM
5/18/2022 13:00	29.06	322.1	9.39	12.77	18.3	JOHNS000.2HM
5/18/2022 13:00	29.06	322.1	9.39	12.78	18.3	JOHNS000.2HM
5/18/2022 13:00	29.06	322.2	9.38	12.78	18.3	JOHNS000.2HM
5/18/2022 13:00	29.06	322.2	9.37	12.8	18.3	JOHNS000.2HM
5/18/2022 13:00	29.06	322.2	9.36	12.81	18.3	JOHNS000.2HM
5/18/2022 13:00	29.063	322.2	9.34	12.82	18.3	JOHNS000.2HM
5/18/2022 13:00	29.06	322.2	9.35	12.84	18.3	JOHNS000.2HM
5/18/2022 13:00	29.063	322.2	9.36	12.85	18.3	JOHNS000.2HM
6/1/2022 12:06	29.125	191.6	8.99	7.08	19.6	RSPRI002.0HM
6/1/2022 12:06	29.125	191.7	8.98	7.07	19.6	RSPRI002.0HM
6/1/2022 12:06	29.125	190.6	8.99	7.07	19.6	RSPRI002.0HM
6/1/2022 12:06	29.128	192.8	8.99	7.06	19.6	RSPRI002.0HM
6/1/2022 12:06	29.128	193.4	8.98	7.05	19.6	RSPRI002.0HM
6/1/2022 12:06	29.125	191.8	8.98	7.04	19.6	RSPRI002.0HM
6/1/2022 12:06	29.128	192.3	8.99	7.01	19.6	RSPRI002.0HM
6/1/2022 12:06	29.128	192.7	8.99	6.99	19.6	RSPRI002.0HM
6/1/2022 12:06	29.125	192.3	8.99	6.96	19.6	RSPRI002.0HM
6/1/2022 12:06	29.128	192.3	8.98	6.91	19.6	RSPRI002.0HM
6/1/2022 12:06	29.125	192.3	8.98	6.89	19.6	RSPRI002.0HM
6/1/2022 12:07	29.128	192.3	8.98	6.86	19.6	RSPRI002.0HM
6/14/2022 10:13					700	STRIN000.6HM
6/14/2022 10:22	29.329	328	8.37	6.79	17.8	STRIN000.6HM
6/14/2022 10:22	29.332	328.1	8.34	6.78	17.8	STRIN000.6HM
6/14/2022 10:22	29.329	328.1	8.3	6.78	17.8	STRIN000.6HM
6/14/2022 10:23	29.332	328	8.25	6.78	17.8	STRIN000.6HM
6/14/2022 10:23	29.329	328	8.19	6.78	17.8	STRIN000.6HM
6/14/2022 10:23	29.329	328.2	8.18	6.77	17.8	STRIN000.6HM
6/14/2022 10:23	29.332	328	8.18	6.77	17.8	STRIN000.6HM

6/14/2022 10:23	29.329	328	8.18	6.77	17.8		STRIN000.6HM
6/14/2022 10:23	29.329	328	8.17	6.77	17.8		STRIN000.6HM
6/14/2022 10:23	29.329	328.2	8.17	6.77	17.8		STRIN000.6HM
6/14/2022 10:23	29.329	328.1	8.17	6.77	17.8		STRIN000.6HM
6/14/2022 10:23	29.329	328.3	8.15	6.77	17.8		STRIN000.6HM
6/14/2022 10:37						1500	STRIN003.5HM
6/14/2022 10:41	29.27	327.8	6.96	7.54	22.4		STRIN003.5HM
6/14/2022 10:41	29.273	327.5	6.92	7.55	22.4		STRIN003.5HM
6/14/2022 10:41	29.273	328.6	6.93	7.55	22.4		STRIN003.5HM
6/14/2022 10:41	29.273	327	6.94	7.55	22.4		STRIN003.5HM
6/14/2022 10:41	29.273	327.1	6.94	7.55	22.4		STRIN003.5HM
6/14/2022 10:42	29.273	327.9	6.95	7.55	22.4		STRIN003.5HM
6/14/2022 10:42	29.273	328.5	6.95	7.55	22.4		STRIN003.5HM
6/14/2022 10:42	29.273	328	6.96	7.55	22.4		STRIN003.5HM
6/14/2022 10:42	29.273	327.8	6.97	7.56	22.4		STRIN003.5HM
6/14/2022 10:42	29.273	327.8	6.97	7.56	22.4		STRIN003.5HM
6/14/2022 10:42	29.273	327.8	6.95	7.56	22.4		STRIN003.5HM
6/14/2022 10:57						380	MOUNT002.2HM
6/14/2022 11:01	29.338	304.8	7.16	7.78	22.7		MOUNT002.2HM
6/14/2022 11:01	29.338	296.6	7.18	7.77	22.7		MOUNT002.2HM
6/14/2022 11:01	29.338	298.2	7.1	7.77	22.7		MOUNT002.2HM
6/14/2022 11:02	29.335	298.7	6.98	7.77	22.7		MOUNT002.2HM
6/14/2022 11:02	29.335	297.7	6.99	7.76	22.7		MOUNT002.2HM
6/14/2022 11:02	29.338	298.5	6.98	7.76	22.7		MOUNT002.2HM
6/14/2022 11:02	29.335	298	6.96	7.76	22.7		MOUNT002.2HM
6/14/2022 11:02	29.338	298.8	6.96	7.75	22.7		MOUNT002.2HM
6/14/2022 11:02	29.341	297.2	7.01	7.75	22.7		MOUNT002.2HM
6/14/2022 11:02	29.338	299.8	7.09	7.74	22.7		MOUNT002.2HM
6/14/2022 11:02	29.338	296.9	7.17	7.74	22.7		MOUNT002.2HM
6/14/2022 11:02	29.335	299.5	7.1	7.74	22.7		MOUNT002.2HM

Macroinvertebrate Monitoring Dats

FIELD_LOG_NUMBER	STATION_ID	ACTIVITY_START_DATE	INDEX	TAXA_ RICH	EPT_ RICH	%EPTCHEUM	%OC	NCBI	%CLINGCHEUM	%TNULTOL	TMI
ABR1026202101	RSPRI001.3HM	10/26/21	32	18	3	49.00	27.90	4.86	48.40	32.60	26
ABR1103202101	VARNE000.3HM	11/03/21	32	18	5	5.50	23.00	5.14	57.60	56.40	24
ABR1104202101	MACKE004.6HM	11/04/21	32	20	5	19.80	9.10	5.08	41.70	55.10	22
ABR1105202101	WILKE001.8HM	11/05/21	32	23	9	32.30	11.00	5.57	38.40	59.80	28
ABR1108202101	SCHIC012.7HM	11/08/21	32	38	10	17.40	13.00	4.79	58.00	43.50	36
ABR1109202101	SCHIC017.3HM	11/09/21	32	26	14	40.60	3.10	4.88	42.70	47.40	34
ABR1110202101	WCHIC003.0HM	11/10/21	32	22	7	69.70	4.50	4.27	63.60	6.10	38
ABR1111202101	CHEST000.1HM	11/11/21	32	21	9	28.40	7.10	4.96	57.40	34.10	32
ABR1115202101	LWOLF002.9HM	11/15/21	32	15	6	46.90	2.60	5.02	54.70	43.20	32
ABR1116202101	SAVAN008.3HM	11/16/21	32	28	7	29.00	28.50	5.52	38.60	17.90	32
ABR0422202201	SALE06.6T0.3HM	04/22/22	32	22	13	32.50	10.20	3.87	43.70	5.10	34
ABR0427202201	SPRIN002.6HM	04/27/22	32	15	4	2.10	68.70	6.99	50.80	71.80	14
ABR0510202201	SCHIC012.7HM	05/10/22	32	39	13	19.60	24.70	5.81	48.70	38.60	40
ABR0513202201	SCHIC017.3HM	05/13/22	32	23	7	13.10	28.30	6.00	22.00	25.70	22
ABR0517202201	WCHIC001.4HM	05/17/22	32	33	3	4.00	21.20	7.08	9.60	21.20	26
ABR0518202201	JOHNS000.2HM	05/18/22	32	32	6	37.70	21.80	5.16	39.10	13.20	32
ABR0601202201	RSPRI002.0HM	06/01/22	32	23	5	13.20	28.80	5.68	13.70	11.80	20

Habitat Monitoring Data

STATION_ID	RSPRI001.3HM	VARNE000.3HM	MACKE004.6HM	WILKE001.8HM	SCHIC012.7HM	SCHIC017.3HM
ACTIVITY_START_DATE	10/26/21	11/03/21	11/04/21	11/05/21	11/08/21	11/09/21
FIELD_LOG_NUMBER	ABR1026202101	ABR1103202101	ABR1104202101	ABR1105202101	ABR1108202101	ABR1109202101
MONITORING_LOCATION_ID						
PROJECT_ID						
PROJECT_NAME						
INDEX_PERIOD						
ORGANIZATION	HCWQ	HCWQ	HCWQ	HCWQ	HCWQ	HCWQ
SAMPLER	AR/CW	AR/CW	AR/CW	AR/CW	AR/CW	AR/CW
ACTIVITY_TYPE						
HABITAT_ASSESSOR	AR/CW	AR/CW	AR/CW	AR/CW	AR/CW	AR/CW
HABITAT_TYPE	HI	HI	HI	HI	LO	HI
EPIFAUNAL_SUBSTRATE	17	19	17	17	19	19
EMBEDDEDNESS	17	8	11	12		11
VELOCITY_DEPTH_REGIME	13	18	10	10		19
SEDIMENT_DEPOSITION	3	9	7	11	18	12
CHANNEL_FLOW_STATUS	15	17	13	14	19	19
CHANNEL_ALTERATION	20	16	15	14	20	16
FREQUENCY_OF_REOXYGENATION	8	18	18	18		18
BANK_STABILITY_LDB	7	9	2	8	1	3
BANK_STABILITY_RDB	6	9	2	3	1	7
VEGETATIVE_PROTECTION_LDB	7	8	3	1	9	6
VEGETATIVE_PROTECTION_RDB	7	8	7	7	8	8
RIPARIAN_WIDTH_LDB	4	2	2	0	2	1
RIPARIAN_WIDTH_RDB	10	2	1	1	1	8
CHANNEL_SUBSTRATE_CHAR					12	
POOL_VARIABILITY					20	
CHANNEL_SINUOSITY					12	
TOTAL_HABITAT_SCORE	134	143	108	116	142	147

STATION_ID	WCHIC003.0HM	CHEST000.1HM	LWOLF002.9HM	SAVAN008.3HM	SALE005.4HM	SALE06.6T0.3HM
ACTIVITY_START_DATE	11/10/21	11/11/21	11/15/21	11/16/21	04/19/22	04/22/22
FIELD_LOG_NUMBER	ABR1110202101	ABR1111202101	ABR1115202101	ABR1116202101	ABR0419202201	ABR0422202201
MONITORING_LOCATION_ID						
PROJECT_ID						
PROJECT_NAME						
INDEX_PERIOD						
ORGANIZATION	HCWQ	HCWQ	HCWQ	HCWQ	HCWQ	HCWQ
SAMPLER	AR/CW	AR/CW	AR/CW	AR/CW	AR	AR/JJ
ACTIVITY_TYPE						
HABITAT_ASSESSOR	AR/CW	AR/CW	AR/CW	AR/CW	AR	AR/JJ
HABITAT_TYPE	HI	HI	HI	HI	LO	HI
EPIFAUNAL_SUBSTRATE	17	19	17	17	16	19
EMBEDDEDNESS	15	18	18	17		18
VELOCITY_DEPTH_REGIME	15	19	13	19		15
SEDIMENT_DEPOSITION	10	10	10	14	18	14
CHANNEL_FLOW_STATUS	19	19	18	18	19	18
CHANNEL_ALTERATION	10	14	8	16	8	16
FREQUENCY_OF_REOXYGENATION	18	20	14	18		20
BANK_STABILITY_LDB	2	8	7	2	7	9
BANK_STABILITY_RDB	1	9	9	1	8	8
VEGETATIVE_PROTECTION_LDB	7	3	6	3	9	10
VEGETATIVE_PROTECTION_RDB	8	3	6	3	9	9
RIPARIAN_WIDTH_LDB	1	0	4	1	9	4
RIPARIAN_WIDTH_RDB	2	1	1	1	9	4
CHANNEL_SUBSTRATE_CHAR					6	
POOL_VARIABILITY					15	
CHANNEL_SINUOSITY					8	
TOTAL_HABITAT_SCORE	125	143	131	130	141	164

STATION_ID	SPRIN002.6HM	SCHIC012.7HM2	SCHIC017.3HM3	WCHIC001.4HM	JOHNS000.2HM	RSPRI002.0HM
ACTIVITY_START_DATE	04/27/22	05/10/22	05/13/22	05/17/22	05/18/22	06/01/22
FIELD_LOG_NUMBER	ABR0427202201	ABR0510202201	ABR0513202201	ABR0517202201	ABR0518202201	ABR0601202201
MONITORING_LOCATION_ID						
PROJECT_ID						
PROJECT_NAME						
INDEX_PERIOD						
ORGANIZATION	HCWQ	HCWQ	HCWQ	HCWQ	HCWQ	HCWQ
SAMPLER	AR/JJ	AR/BC	AR/BC	AR/KS	AR/JJ	AR/JT
ACTIVITY_TYPE						
HABITAT_ASSESSOR	AR/JJ	AR/BC	AR/BC	AR/KS	AR/JJ	AR/JT
HABITAT_TYPE	HI	LO	HI	LO	HI	HI
EPIFAUNAL_SUBSTRATE	17	16	19	19	17	12
EMBEDDEDNESS	16		16		15	12
VELOCITY_DEPTH_REGIME	19		19		10	10
SEDIMENT_DEPOSITION	2	7	12	9	13	5
CHANNEL_FLOW_STATUS	19	18	15	18	14	14
CHANNEL_ALTERATION	16	17	20	17	16	9
FREQUENCY_OF_REOXYGENATION	18		18		13	13
BANK_STABILITY_LDB	10	1	6	7	9	1
BANK_STABILITY_RDB	4	7	8	7	9	7
VEGETATIVE_PROTECTION_LDB	8	4	6	8	8	1
VEGETATIVE_PROTECTION_RDB	5	7	8	8	8	6
RIPARIAN_WIDTH_LDB	9	5	0	10	5	1
RIPARIAN_WIDTH_RDB	9	1	9	1	2	2
CHANNEL_SUBSTRATE_CHAR		12		17		
POOL_VARIABILITY		20		20		
CHANNEL_SINUOSITY		12		8		
TOTAL_HABITAT_SCORE	152	127	156	149	139	93

WATERBODY ID# AND NAME OF UNAVAILABLE WATERBODY	PARAMETERS OF CONCERN
TN06020001007_0510 Spring Creek	E.coli
TN0602000106_0210 Ninemile Branch	Siltation/Habitat Alteration
TN06020001007_1000 South Chickamauga Creek	Siltation/Habitat Alteration; E.coli
TN06020001067_0100 Unnamed tributary to North Chickamauga Creek	Siltation/Habitat Alteration
TN060200011244_0400 Gillespie Springs Branch	Siltation/Habitat Alteration; E.coli
TN06020001426_0100 Stringers Branch	Siltation/Habitat Alteration; E.coli
TN06020001426_1000 Mountain Creek	Siltation/Habitat Alteration; E.coli
TN06020001889_1000 Wolftever Creek	E.coli
TN06020001007 – 0300 MACKEY BRANCH	E. coli
TN06020001087 – 1000 SHOAL CREEK	E. coli
TN06020001889 – 0200 CHESTNUT CREEK	E. coli
TN06020001889 – 0300 WILKERSON BRANCH	E. coli
TN06020001889 – 0100 LITTLE WOLFTEVER CREEK	E. coli
TN06020001880 – 1000 ROGERS BRANCH	E. coli
TN06020001001_1000 Nickajack Reservoir	Dioxin, PCBs

Column1	Column2
Shoal Creek	E. coli; Exceptional
North Chickamauga Creek	pH; Exceptional
Little Falling Water Creek	Unknown; Exceptional
Falling Water Creek	Exceptional
West Chickamauga Creek	Exceptional
Johnson Branch	Exceptional
Hurricane Creek	Exceptional
Ryall Springs Branch	Habitat and Stream Side or Littoral Alteration; Exceptional
Mackey Branch	Habitat Alteration; Siltation; E. coli; Exceptional
Unnamed Tributary to Friar Branch	Exceptional
Unnamed Tributary to Lookout Creek	Exceptional
Unnamed Tributary Pitts Branch	Exceptional
West Chickamauga Creek & Unnamed Trib.	Exceptional
South Chickamauga Creek & perennial Unnamed Tribs.	Habitat Alteration; Siltation; E. coli; Total Phosphorous; Exceptional
Spring Creek	Siltation; E. coli; Exceptional
Middle Creek	Exceptional
Nickajack Reservoir	Dioxin; PCBs; Exceptional
Wetland adjacent to West Chickamauga Creek	Exceptional

Event Date	Activity / Topic	Partners	Level of Participation	Number of attendees	Target Audience	Notes
3/9/2022 6/2/22	TNSA Regional Meeting	Presentation from TDEC regarding updated MS4 Permit rules.	Program manager, Autumn Friday, led the meeting. Food and drink was provided by Hamilton County Water Quality program.	Approx. 30		The meeting was from 11:00 - 1:00 at Enterprise South Nature Park, 109 Still Hollow Loop
3/26/2022	Save Water, Drink Wine	WaterWays hosted the event	Program Manager, Autumn Friday, and two other employees provided educational pamphlets, gave away promotional hand-outs, and advertised the upcoming Project WET Workshop.	Approx. 300	This was a networking event with a general public audience as well as connecting with environmental citizen groups	The event was from 3:00 p.m. to 8:00 p.m. at Crabtree Farms
3/31/2022	Camp Jordan Pet Waste Station	For the City of East Ridge	Purchased bags for the station	Supplied 2,000 bags	Public Education and Outreach	The station provides the water pollution hotline phone number.
4/16/2022	Swing into Spring	Parks and Recreation event	Employees worked a booth for the purpose of engaging with public and gave handouts.		Public Outreach	The event was from 10:00 a.m. to 2:00 p.m. at McDonald Farm
5/11/2022	Hardy Elementary Field Trip	WaterWays hosted the event	Employees assisted with water education activates. Macroinvertebrate samples, hike, games, and Project WET activities	Approx. 60 third graders, chaperones and teachers	Public Education	The event was at Audubon Acres from 9:00 a.m. to 2:00 p.m.
6/2/2022	TNSA Regional Meeting - Quarterly		Food and drink provided by Hamilton County Water Quality Program - Meeting led by Program Manager, Autumn Friday			
6/8/2022	Project WET Workshop	Cleveland, Bradley County, Keep Cleveland and Bradley County Beautiful (Keep America Beautiful Affiliate - Amanda Peels), and facilitator George Bartnik	Hamilton County provided food/drinks, supplies and materials, rented the venue, scheduled the facilitator, and sent all correspondences with all parties.	20	Teachers - Students	The event was at YMCA Camp Ocoee, Wasson Lodge. There was a snorkeling adventure planned with the USDA Forestry Service for the second half of the day, but was cancelled due to forecasted thunderstorms. Teachers participated in additional Project WET activities.
Monthly	TNSA Education and Outreach Committee	Tennessee Stormwater Association	Environmental Outreach and Water Quality Program Coordinator, Bonnie Capley, and Sr. Engineering Tech, Adam Reynolds, are on the committee.	Approx 10		
Quarterly	SESWA - Quarterly		Program manager, Autumn Friday is on the Communication Committee			


Municipal
Separate
Storm
Sewer
System
WHAT IS STORMWATER?
Stormwater runoff is generated from rain and snowmelt events that flow over impervious surfaces, such as paved streets, parking lots, and building rooftops. It does not soak into the ground. The runoff picks up pollutants like trash, chemicals, biological agents, oils, and dirt/sediment that can harm our waterways!
Hamilton County's Action:
Public Involvement & Education
Illicit Discharge Detection & Elimination
Construction Site Stormwater Runoff Controls
Erosion Prevention and Sediment Control Practices
Pollution Prevention and Municipal Good Housekeeping
Where is our program area?
SCAN TO LEARN MORE
About the June 8, 2022
Project WET Workshop
ATTENTION:
3rd - 6th Grade Teachers
We are holding a
Project WET Workshop
HELP KEEP OUR WATERS CLEAN!
PLEASE TAKE ONE!
SCAN TO LEARN MORE
About the Hamilton County
Water Quality Program

SWING INTO SPRING

AT MCDONALD FARM PARK

Bring your bag chairs and a picnic lunch out to

McDonald Farm Park

SATURDAY, APRIL 16TH, 2022

FROM 10 AM - 2:30 PM

for a fun-filled day for all ages

FEATURING

An exhibition game of Vintage Base Ball -

The Lightfoots vs. Mountain City

★

Music by

The New Dismembered Tennesseans

★

Face Paint • Inflatables • Corn Hole

★

Petting Zoo • Snow Cones • Kettle Corn

AND

An Easter Egg Hunt beginning at 2pm for elementary aged children (and younger) - bring your Easter baskets!

Guests are also encouraged to tour the first floor of the main residence

16705 COULTERVILLE ROAD, SALE CREEK, TENNESSEE 37373—NO ENTRY FEE AND FREE PARKING!