STREAM CONDITION INDEX

FOR THE DISTRICT OF COLUMBIA

DEPARTMENT OF ENERGY & ENVIRONMENT

GOVERNMENT OF THE DISTRICT OF COLUMBIA
MURIEL BOWSER, MAYOR

Objectives

- Communicate information on stream and watershed health **to the general public** in an understandable way.
- Utilize **metrics that best reflect issues** of concern in District waterbodies and that help to characterize watershed health.
- Use **existing data** to populate the SCI (the District is not developing any new monitoring programs for the SCI).
- Demonstrate **trends** over time.
- Establish a **flexible framework** for the SCI that can be revised over time with new data or information.

Overarching Process

Selected high-level indicator categories & metrics

- Compiled data collected through multiple DOEE monitoring efforts
- Established a limit or a threshold against which they are evaluated

Developed a scoring system to score:

- Metrics
- Indicator categories
- Watershed as a whole

Indicators and Metrics

Indicator: Hydrology

Metrics

- Effective Impervious Surface

Indicator: Human Health

Metrics

- *E. coli*
- Dumpsites
- Trash

Indicator: Water Quality

Metrics

- Dissolved Oxygen
- Nutrients
- Turbidity
- Water Temperature
- Conductivity
- pH

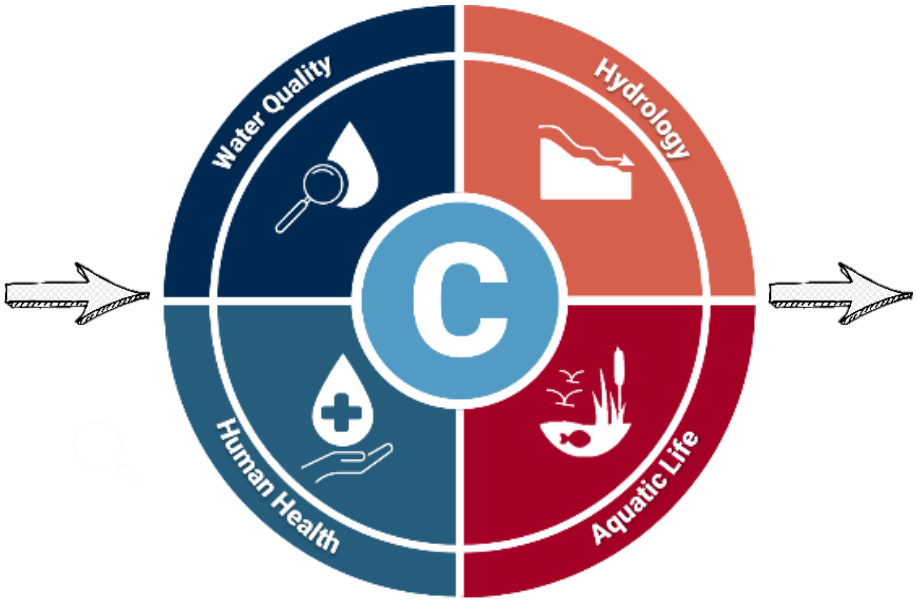
Indicator: Aquatic Life

Metrics

- Fish
- Macro-invertebrates
- Habitat
- Connectivity to the mainstem waterbody

Scoring Process

Score	Interpretation
10	Metric represents a healthy, functioning condition
9	
8	
7	Metric provides some function to support a healthy watershed
6	
5	
4	
3	Metric provides little to no function to support a healthy
2	
1	

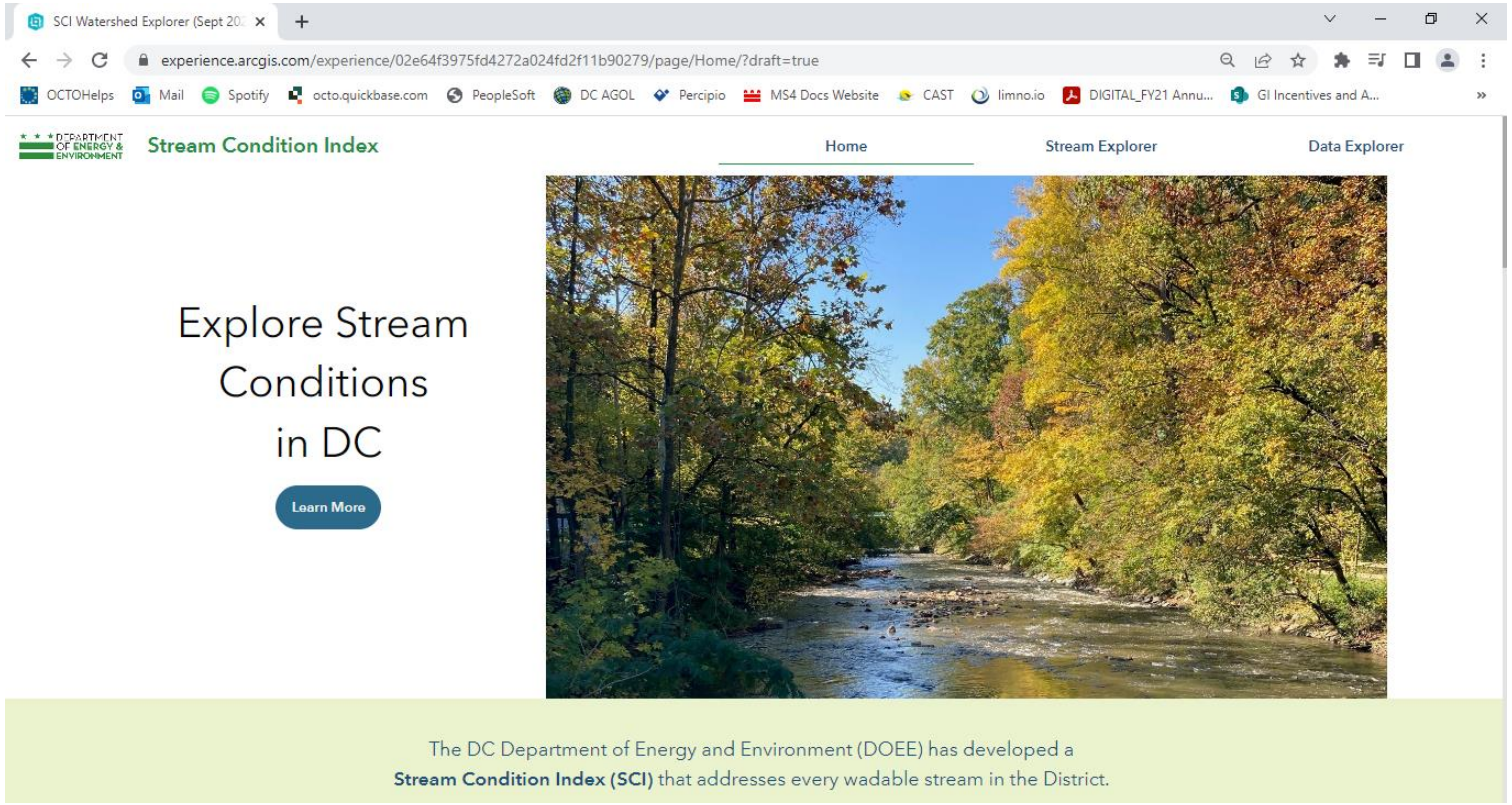


A	90 - 100%
B	80 - 89%
C	70 - 79%
D	60 - 69
F	0 - 59%

1. Each metric receives a score of 1 to 10
2. Metric scores are averaged to produce a score for the indicator category
3. Metric / Index scores are averaged to produce a stream score

Interactive Website

https://experience.arcgis.com/experience/02e64f3975fd4272a024fd2f11b90279/



Thanks!

Please reach out if you have questions and/or would like to learn more!

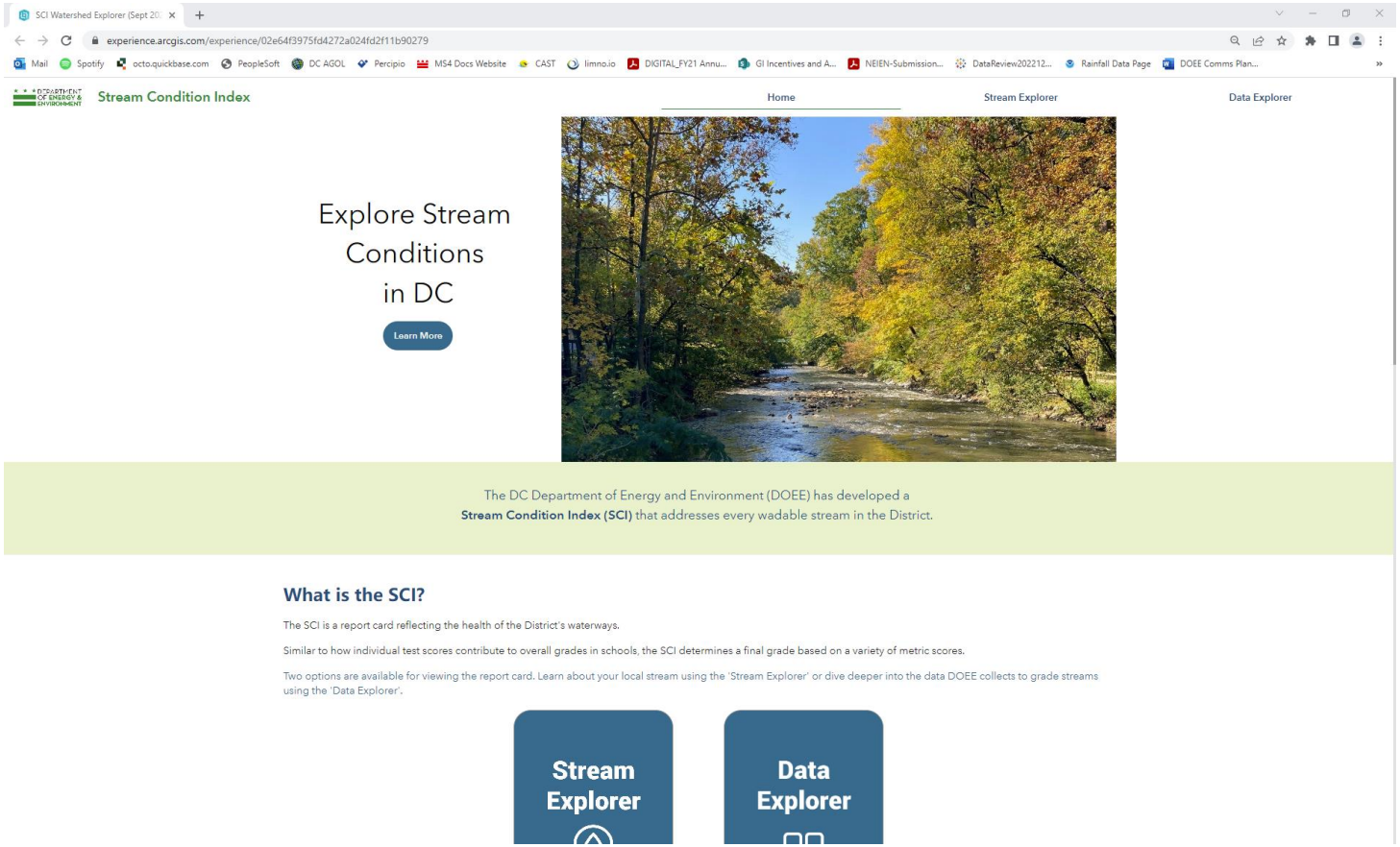
Alicia Ritzenthaler

Department of Energy and Environment
Environmental Protection Specialist
alicia.ritzenthaler@dc.gov

Check out the Stream Condition Index Website here:

https://experience.arcgis.com/experience/02e64f3975fd4272a024fd2f11b90279/

Interactive Website



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SCI Watershed Explorer (Sept 20...

experience.arcgis.com/experience/02e64f3975fd4272a024fd2f11b90279

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DEPARTMENT OF ENERGY & ENVIRONMENT **Stream Condition Index**

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What is the purpose?

The goals of the SCI are to:

- Provide an overall picture of the District's wadable streams,
- Identify which streams in the District may need additional protection or restoration,
- Evaluate trends in stream health over time as new data are collected, and
- Identify areas where the public can help improve watershed health (e.g., through trash pick ups).

The SCI does not replace the integrated report but is instead intended to serve as an educational tool for public, non-technical audiences.

How was the SCI developed?

DOEE has a number of programs that collect data used to assess the health of the District's waterways. While some of these programs are driven by regulatory requirements, all of them collect important data.

The data from the following sources were compiled and used to calculate metric scores and watershed grades:

- Ambient stream monitoring of water chemistry, aquatic insects, fish, and stream habitat
- Rapid Stream Assessment program
- Mapping and GIS data

What Can You Do?

Trash pick up
Help create a Trash Free DC

Volunteer monitoring
View opportunities for engaging in Citizen Science Initiatives

Road Salt Reduction
Discover winter weather best practices

Stormwater runoff reduction
Participate in the RiverSmart Program

Fertilizer usage reduction
Explore best practices for fertilizer usage

Pet waste pick up
Learn why it's important to Doo your Dooty

Stormwater pollution and illegal dumping prevention
Report sanitation violations by calling 311

For questions about the SCI please contact:
streamconditionindex@dc.gov

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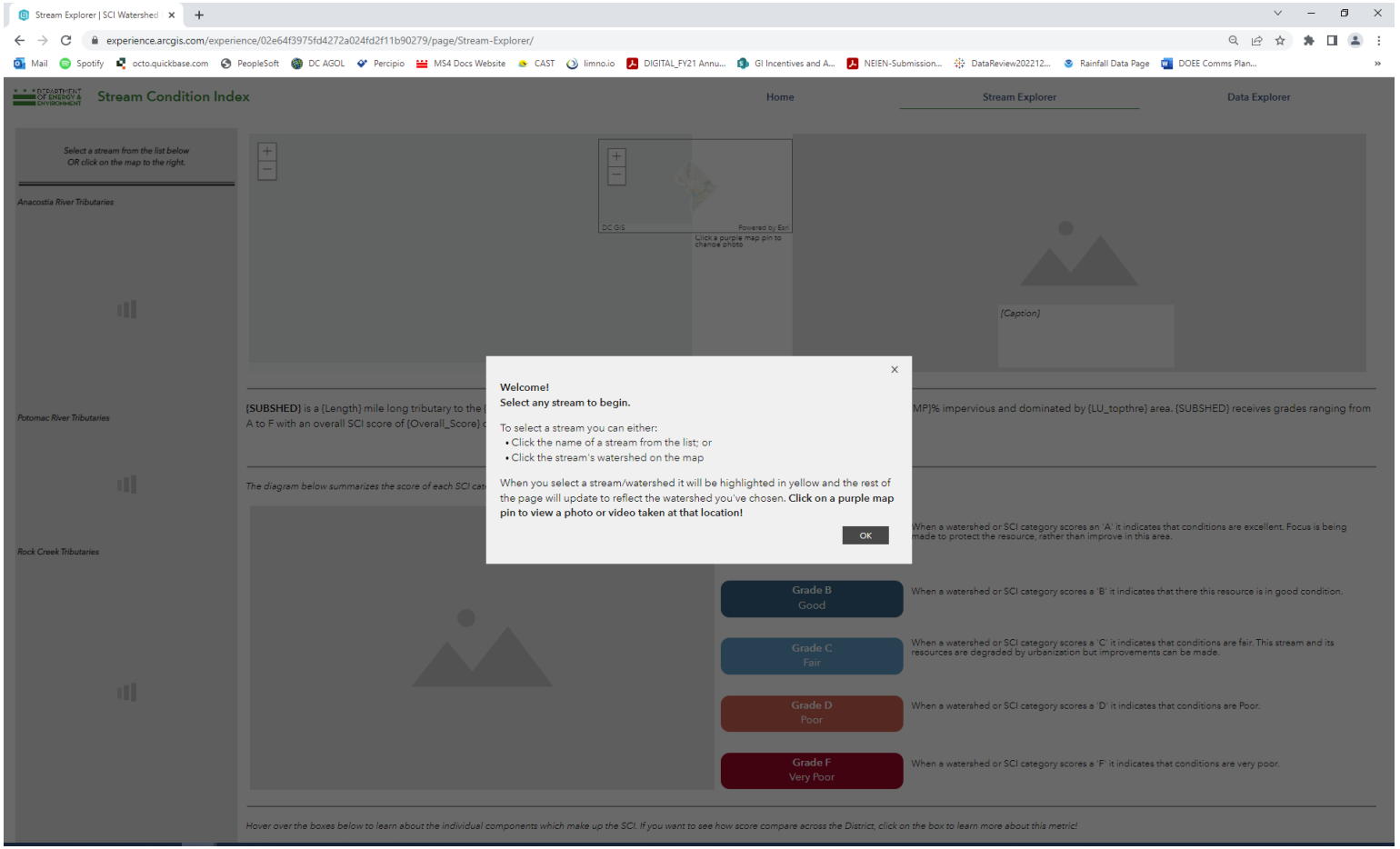
Stream Explorer | SCI Watershed
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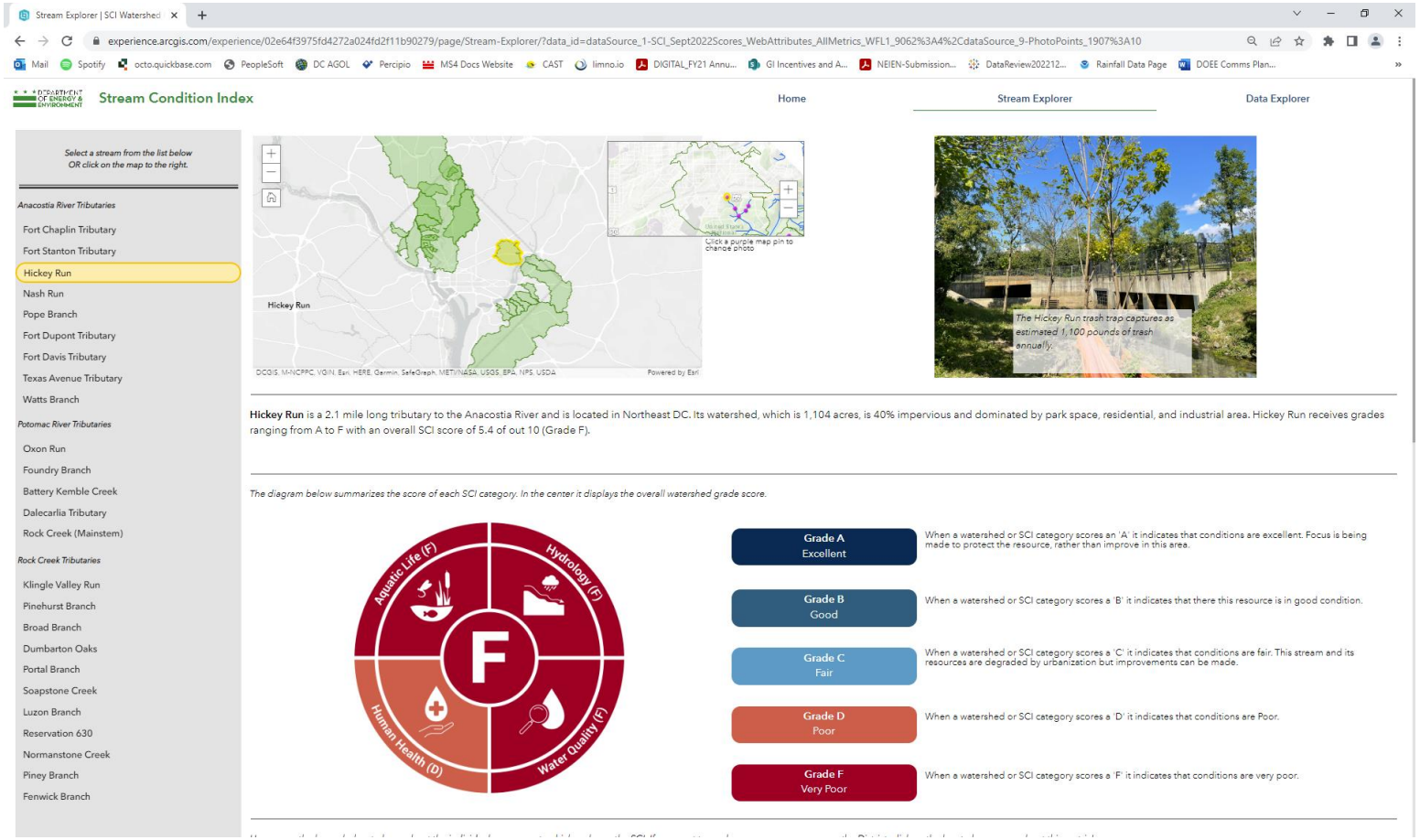
Stream Condition Index
Home
Stream Explorer
Data Explorer
Select a stream from the list below OR click on the map to the right.
Anacostia River Tributaries
Potomac River Tributaries
Rock Creek Tributaries
Click a purple map pin to change photo
{Caption}
Welcome!
Select any stream to begin.
To select a stream you can either:
• Click the name of a stream from the list; or
• Click the stream's watershed on the map
When you select a stream/watershed it will be highlighted in yellow and the rest of the page will update to reflect the watershed you've chosen. Click on a purple map pin to view a photo or video taken at that location!
OK
{SUBSHED} is a {Length} mile long tributary to the
A to F with an overall SCI score of {Overall_Score}
MP}% impervious and dominated by {LU_topthre} area. {SUBSHED} receives grades ranging from
The diagram below summarizes the score of each SCI cat
Grade B
Good
When a watershed or SCI category scores a 'B' it indicates that there this resource is in good condition.
Grade C
Fair
When a watershed or SCI category scores a 'C' it indicates that conditions are fair. This stream and its resources are degraded by urbanization but improvements can be made.
Grade D
Poor
When a watershed or SCI category scores a 'D' it indicates that conditions are Poor.
Grade F
Very Poor
When a watershed or SCI category scores a 'F' it indicates that conditions are very poor.
Hover over the boxes below to learn about the individual components which make up the SCI. If you want to see how score compare across the District, click on the box to learn more about this metric!


Stream Explorer | SCI Watershed
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Stream Condition Index
Home
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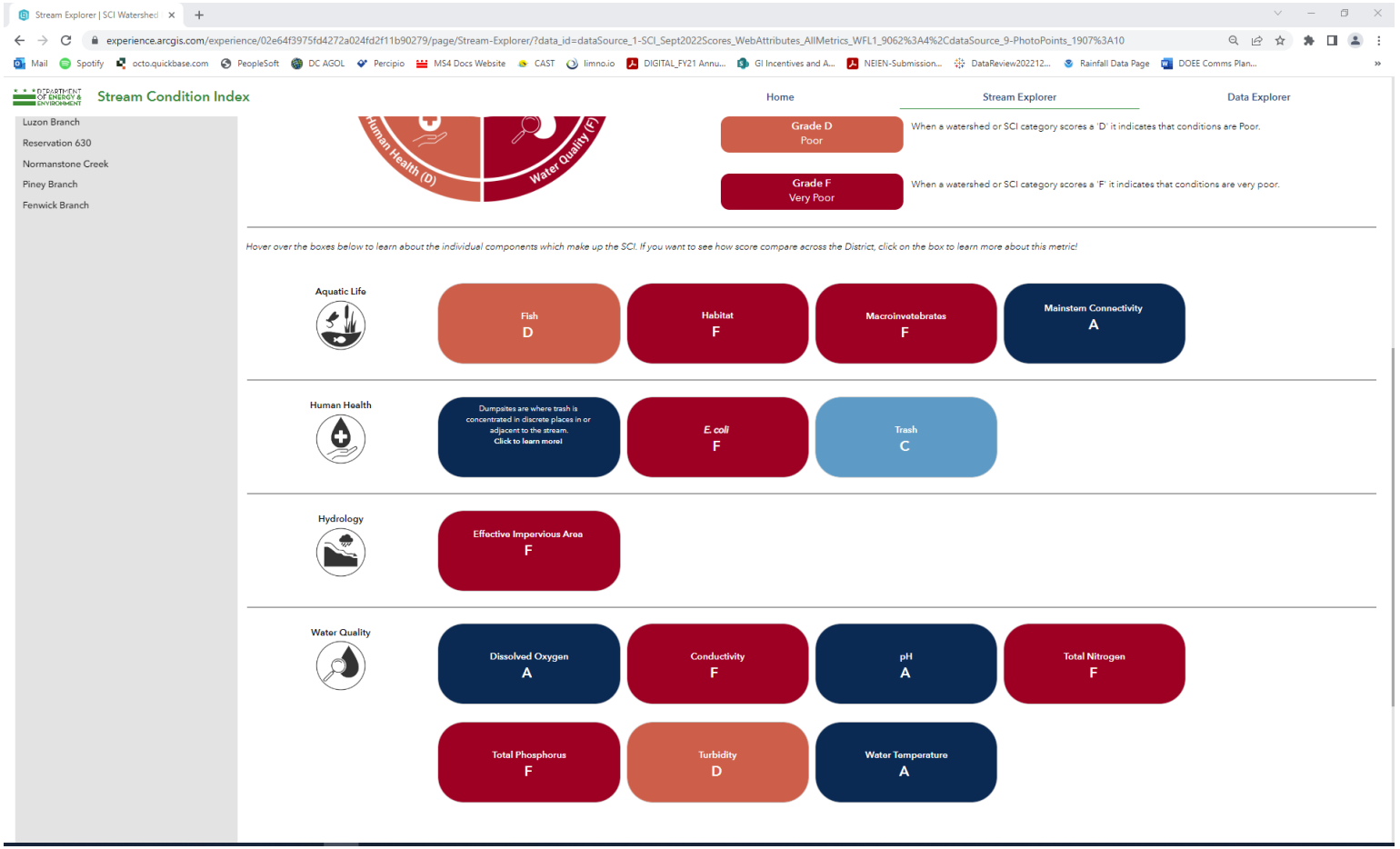
Data Explorer
Select a stream from the list below OR click on the map to the right.
Anacostia River Tributaries
Fort Chaplin Tributary
Fort Stanton Tributary
Hickey Run
Nash Run
Pope Branch
Fort Dupont Tributary
Fort Davis Tributary
Texas Avenue Tributary
Watts Branch
Potomac River Tributaries
Oxon Run
Foundry Branch
Battery Kemble Creek
Dalecarlia Tributary
Rock Creek (Mainstem)
Rock Creek Tributaries
Klingle Valley Run
Pinehurst Branch
Broad Branch
Dumbarton Oaks
Portal Branch
Soapstone Creek
Luzon Branch
Reservation 630
Normanstone Creek
Piney Branch
Fenwick Branch
Hickey Run
Click a purple map pin to change photo
The Hickey Run trash trap captures as estimated 1,100 pounds of trash annually.
Hickey Run is a 2.1 mile long tributary to the Anacostia River and is located in Northeast DC. Its watershed, which is 1,104 acres, is 40% impervious and dominated by park space, residential, and industrial area. Hickey Run receives grades ranging from A to F with an overall SCI score of 5.4 of out 10 (Grade F).
The diagram below summarizes the score of each SCI category. In the center it displays the overall watershed grade score.
Aquatic Life (F)
Hydrology (F)
F
Human Health (D)
Water Quality (F)
Grade A
Excellent
When a watershed or SCI category scores an 'A' it indicates that conditions are excellent. Focus is being made to protect the resource, rather than improve in this area.
Grade B
Good
When a watershed or SCI category scores a 'B' it indicates that there this resource is in good condition.
Grade C
Fair
When a watershed or SCI category scores a 'C' it indicates that conditions are fair. This stream and its resources are degraded by urbanization but improvements can be made.
Grade D
Poor
When a watershed or SCI category scores a 'D' it indicates that conditions are Poor.
Grade F
Very Poor
When a watershed or SCI category scores a 'F' it indicates that conditions are very poor.



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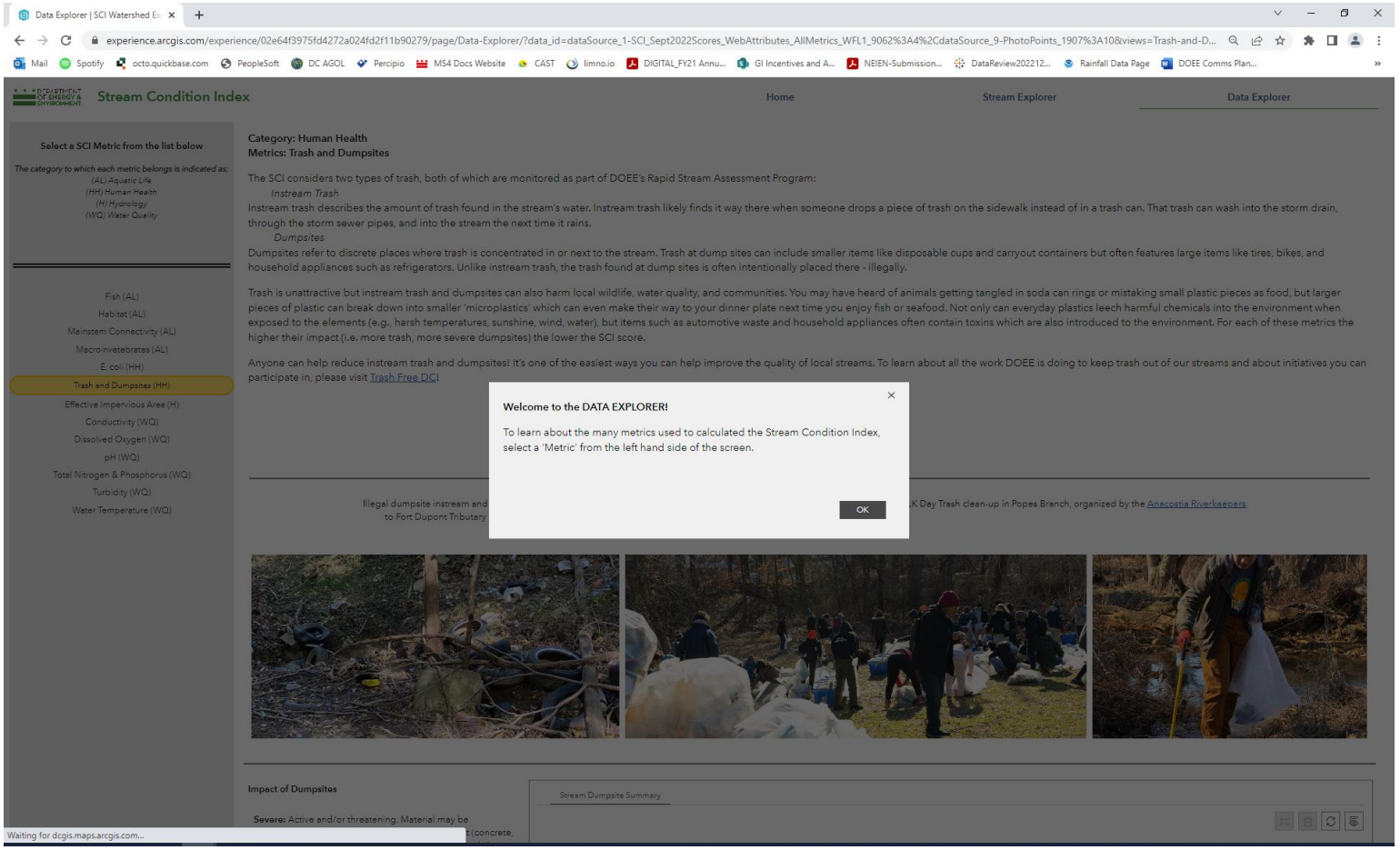
Data Explorer | SCI Watershed Ex
experience.arcgis.com/experience/02e64f3975fd4272a024fd2f11b90279/page/Data-Explorer/?data_id=dataSource_1-SCI_Sept2022Scores_WebAttributes_AllMetrics_WFL1_9062%3A4%2CdataSource_9-PhotoPoints_1907%3A10&views=Trash-and-D...
Mail
Spotify
octo.quickbase.com
PeopleSoft
DC AGOL
Percipio
MS4 Docs Website
CAST
limno.io
DIGITAL_FY21 Annu...
GI Incentives and A...
NEIEN-Submission...
DataReview202212...
Rainfall Data Page
DOEE Comms Plan...
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Select a SCI Metric from the list below
The category to which each metric belongs is indicated as:
(AL) Aquatic Life
(HH) Human Health
(H) Hydrology
(WQ) Water Quality
Fish (AL)
Habitat (AL)
Mainstem Connectivity (AL)
Macroinvetebrates (AL)
E. coli (HH)
Trash and Dumpsites (HH)
Effective Impervious Area (H)
Conductivity (WQ)
Dissolved Oxygen (WQ)
pH (WQ)
Total Nitrogen & Phosphorus (WQ)
Turbidity (WQ)
Water Temperature (WQ)
Category: Human Health
Metrics: Trash and Dumpsites
The SCI considers two types of trash, both of which are monitored as part of DOEE's Rapid Stream Assessment Program:
Instream Trash
Instream trash describes the amount of trash found in the stream's water. Instream trash likely finds it way there when someone drops a piece of trash on the sidewalk instead of in a trash can. That trash can wash into the storm drain, through the storm sewer pipes, and into the stream the next time it rains.
Dumpsites
Dumpsites refer to discrete places where trash is concentrated in or next to the stream. Trash at dump sites can include smaller items like disposable cups and carryout containers but often features large items like tires, bikes, and household appliances such as refrigerators. Unlike instream trash, the trash found at dump sites is often intentionally placed there - illegally.
Trash is unattractive but instream trash and dumpsites can also harm local wildlife, water quality, and communities. You may have heard of animals getting tangled in soda can rings or mistaking small plastic pieces as food, but larger pieces of plastic can break down into smaller 'microplastics' which can even make their way to your dinner plate next time you enjoy fish or seafood. Not only can everyday plastics leech harmful chemicals into the environment when exposed to the elements (e.g., harsh temperatures, sunshine, wind, water), but items such as automotive waste and household appliances often contain toxins which are also introduced to the environment. For each of these metrics the higher their impact (i.e. more trash, more severe dumpsites) the lower the SCI score.
Anyone can help reduce instream trash and dumpsites! It's one of the easiest ways you can help improve the quality of local streams. To learn about all the work DOEE is doing to keep trash out of our streams and about initiatives you can participate in, please visit Trash Free DC!
Welcome to the DATA EXPLORER!
To learn about the many metrics used to calculated the Stream Condition Index, select a 'Metric' from the left hand side of the screen.
OK
Illegal dumpsite instream and
to Fort Dupont Tributary
K Day Trash clean-up in Popes Branch, organized by the Anacostia Riverkeepers
Impact of Dumpsites
Severe: Active and/or threatening. Material may be
Stream Dumpsite Summary
Waiting for dcgis.maps.arcgis.com...

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- Macroinvetebrates (AL)
- E. coli (HH)
- Trash and Dumpsites (HH)
- Effective Impervious Area (H)
- Conductivity (WQ)
- Dissolved Oxygen (WQ)
- pH (WQ)
- Total Nitrogen & Phosphorus (WQ)
- Turbidity (WQ)
- Water Temperature (WQ)

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Illegal dumpsite instream and next to Fort Dupont Tributary

Community members and neighbors participating in the annual MLK Day Trash clean-up in Popes Branch, organized by the Anacostia Riverkeepers.
(Photo credit: Anacostia Riverkeepers)

Impact of Dumpsites

Severe: Active and/or threatening. Material may be considered toxic or threatening to the environment (concrete, petroleum, empty 55-gallon drums) or site is extremely large (>8000 sq ft).

Moderate: Dumpsite is large (>200 sq ft) but does not appear to be actively used and does not contain toxic material.

Minor: Dumpsite is small (<200 sq ft), material is non-toxic and does not appear likely to move downstream during high flow.

Stream Dumpsite Summary

Stream	Dumpsite SCI Score	Dumpsite SCI Grade	# of Dumpsites	Weighted Impact of Dumpsite(s)
Battery Kemble Creek	10	A	0	n/a
Broad Branch	8	B	1	Minor
Dalecarlia Tributary	10	A	0	n/a
Dumbarton Oaks	10	A	0	n/a
Fenwick Branch	10	A	0	n/a
Fort Chaplin Tributary	10	A	0	n/a
Fort Davis Tributary	1	F	2	Minor
Fort Dupont Tributary	4	F	5	Minor
Fort Stanton Tributary	10	A	0	n/a

Amount of Trash	Score
Absent	10
	9
	8
Minor	7
	6
	5
Moderate	4
	3
	2
Extensive	1

Stream Trash Summary

Stream	Trash Score	Trash Grade
Battery Kemble Creek	7.3	C
Broad Branch	7.4	C
Dalecarlia Tributary	9.3	A
Dumbarton Oaks	6.6	D
Fenwick Branch	7	C
Fort Chaplin Tributary	2.5	F
Fort Davis Tributary	4.4	F
Fort Dupont Tributary	7.3	C

Data Explorer | SCI Watershed Ex

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Select a SCI Metric from the list below

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- Fish (AL)
- Habitat (AL)
- Mainstem Connectivity (AL)
- Macroinvetebrates (AL)
- E. coli (HH)
- Trash and Dumpsites (HH)
- Effective Impervious Area (H)
- Conductivity (WQ)
- Dissolved Oxygen (WQ)
- pH (WQ)
- Total Nitrogen & Phosphorus (WQ)
- Turbidity (WQ)
- Water Temperature (WQ)

Category: Human Health
Metric: *E. coli*

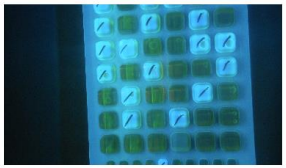
E. coli is a bacteria that lives in the digestive system of birds and mammals (including humans!). The presence of *E. coli* is used to indicate fecal contamination and the potential presence of pathogens. It is a common water quality metric that is used to judge the safety of a waterbody for swimming, boating, and other recreational activities. Exposure to fecal contamination and pathogens can cause gastrointestinal illness with symptoms such as diarrhea, vomiting, stomachache, or nausea.

The SCI score is based on the percent of samples that exceed the District's E. coli single sample maximum standard (410 MPN) and the severity of those exceedances. The more frequent and severe the bacterial pollution is the lower the SCI score.

Field staff collecting a water sample from Hickey Run for *E. coli* analysis in the laboratory. (Photo Credit: LimnoTech)

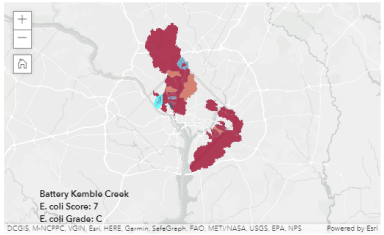
Lab preparing to run E. coli analysis using Colilert, Quanti-Tray method

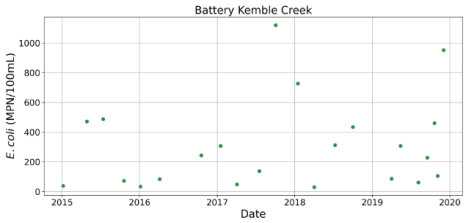
E. coli glows under UV light using the Colilert analysis method.



Select a stream from the list below to view data collected at that location.

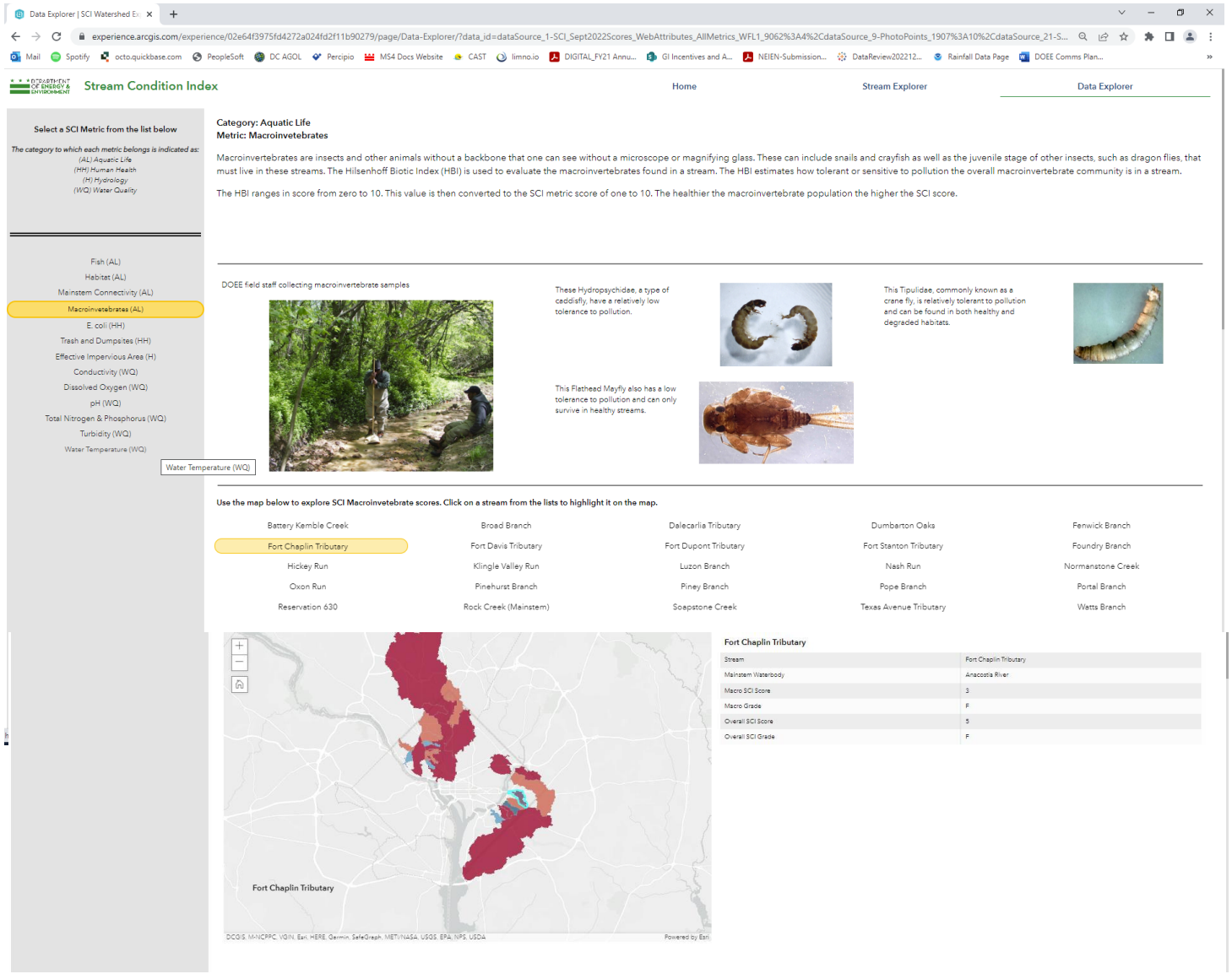
Battery Kemble Creek	Broad Branch	Dalecarlia Tributary	Dumbarton Oaks	Fenwick Branch
Fort Chaplin Tributary	Fort Davis Tributary	Fort Dupont Tributary	Fort Stanton Tributary	Foundry Branch
Hickey Run	Klingle Valley Run	Luzon Branch	Nash Run	Normanstone Creek
Oxon Run	Pinehurst Branch	Piney Branch	Pope Branch	Portal Branch
Reservation 630	Rock Creek (Mainstem)	Soapstone Creek	Texas Avenue Tributary	Watts Branch





WQ_Data_ecoli

Stream	Monitoring Location ID	Activity Start Date	Result Value	Result Unit
Battery Kemble Creek	TBK01	4/2/2018, 8:00 PM	30	MPN/100mL
Battery Kemble Creek	TBK01	1/4/2016, 7:00 PM	34	MPN/100mL
Battery Kemble Creek	TBK01	1/5/2015, 7:00 PM	39	MPN/100mL
Battery Kemble Creek	TBK01	4/3/2017, 8:00 PM	48	MPN/100mL
Battery Kemble Creek	TBK01	8/5/2019, 8:00 PM	61	MPN/100mL
Battery Kemble Creek	TBK01	10/19/2015, 8:00 PM	72	MPN/100mL
Battery Kemble Creek	TBK01	4/4/2016, 8:00 PM	84	MPN/100mL
Battery Kemble Creek	TBK01	4/1/2019, 8:00 PM	86	MPN/100mL
Battery Kemble Creek	TBK01	11/4/2019, 7:00 PM	105	MPN/100mL
Battery Kemble Creek	TBK01	7/17/2017, 8:00 PM	138	MPN/100mL
Battery Kemble Creek	TBK01	9/16/2019, 8:00 PM	228	MPN/100mL
Battery Kemble Creek	TBK01	10/17/2016, 8:00 PM	244	MPN/100mL
Battery Kemble Creek	TBK01	1/16/2017, 7:00 PM	308	MPN/100mL
Battery Kemble Creek	TBK01	5/13/2019, 8:00 PM	308	MPN/100mL
Battery Kemble Creek	TBK01	7/9/2018, 8:00 PM	313	MPN/100mL
Battery Kemble Creek	TBK01	10/1/2018, 8:00 PM	435	MPN/100mL



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