




2009-2023 Potential Pathogens and Total Phosphorus **FULL REPORT**

Water Quality Monitoring (WQM) Program

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DATA PARAMETERS INCLUDED IN THIS REPORT

This report shows lab data parameters on the sites of specific concern (see below: [ALL SITES LOCATION MAP](#)). Monthly baseline monitoring data is reported in the Surface Water Integrated System (<https://dnrx.wisconsin.gov/swims/login.jsp>) and can be seen on the Surface Water Data Viewer (<https://dnrm.wisconsin.gov/H5/?Viewer=SWDV>).

Lab testing is run by Leuther Lab LLC, AgSource Lab and the Wisconsin State Lab of Hygiene (WSLH).

Lab data is sent every end of the season to the Laboratory Coordinator of the Wisconsin Department of Natural Resources (DNR).

Escherichia coli (E. coli):

- Pollution indicator of fecal pathogens (i.e., *Salmonella* and *Cryptosporidium*).
- Lives in warm blooded animal feces, and certain strains cause serious or even lethal digestive problems in humans.
- Human and hog feces carry over one million *E. coli* per gram.
- The safety standard for rivers is below 126 cfu/100mL. 750cfu/100ml requires a swimming advisory to be posted, and 1,000 cfu/100mL mandates closing of public beaches.
- *170,000 E. coli colony forming units (cfu) were found in 2019, over 1,300 the times the standard!*

Total Phosphorus (TP):

- Pollution indicator nutrient.
- Low levels of TP (up to 0.075 mg/L) are naturally found in surface waters, but high amounts cause “eutrophication”:
Excess algae and plant growth ➡ Death and decomposition ➡ Oxygen levels drop dramatically
➡ Die-off of fish and other aquatic organisms
- The most widespread water pollutant in Wisconsin due to soil erosion, manure lagoons and septic systems, detergents and runoff from farmland or lawns.
- *The highest TP result was seen in 2019: 4.22 mg/L, 56 times the standard!*

Background (heterotrophic) bacteria:

- Depend on other organisms or decomposed organic matter to survive.
- Some of the parasitic species can cause cholera and tetanus; *E. coli* also belongs to this group.
- *91,000,000 cfu/100 mL background bacteria found in just one sample in 2019! Over 50,000/100mL is considered high background bacteria.*

Staphylococcus aureus (S. aureus):

- Water quality and MRSA (Methicillin Resistant *S. aureus*) indicator bacteria.
- MRSA is a very dangerous and infectious bacteria that may seriously affect skin, respiratory system, blood, create toxicity shock, and more. It has been linked to pig and dairy CAFO's.

Precipitation: can create large pulses of water that move quickly over and through the ground, carrying nutrients and pathogens from manure sources, agricultural fields, lawns, septic systems, etc., into surrounding water bodies and groundwater. Nutrient runoff contributes to the eutrophication of aquatic ecosystems.

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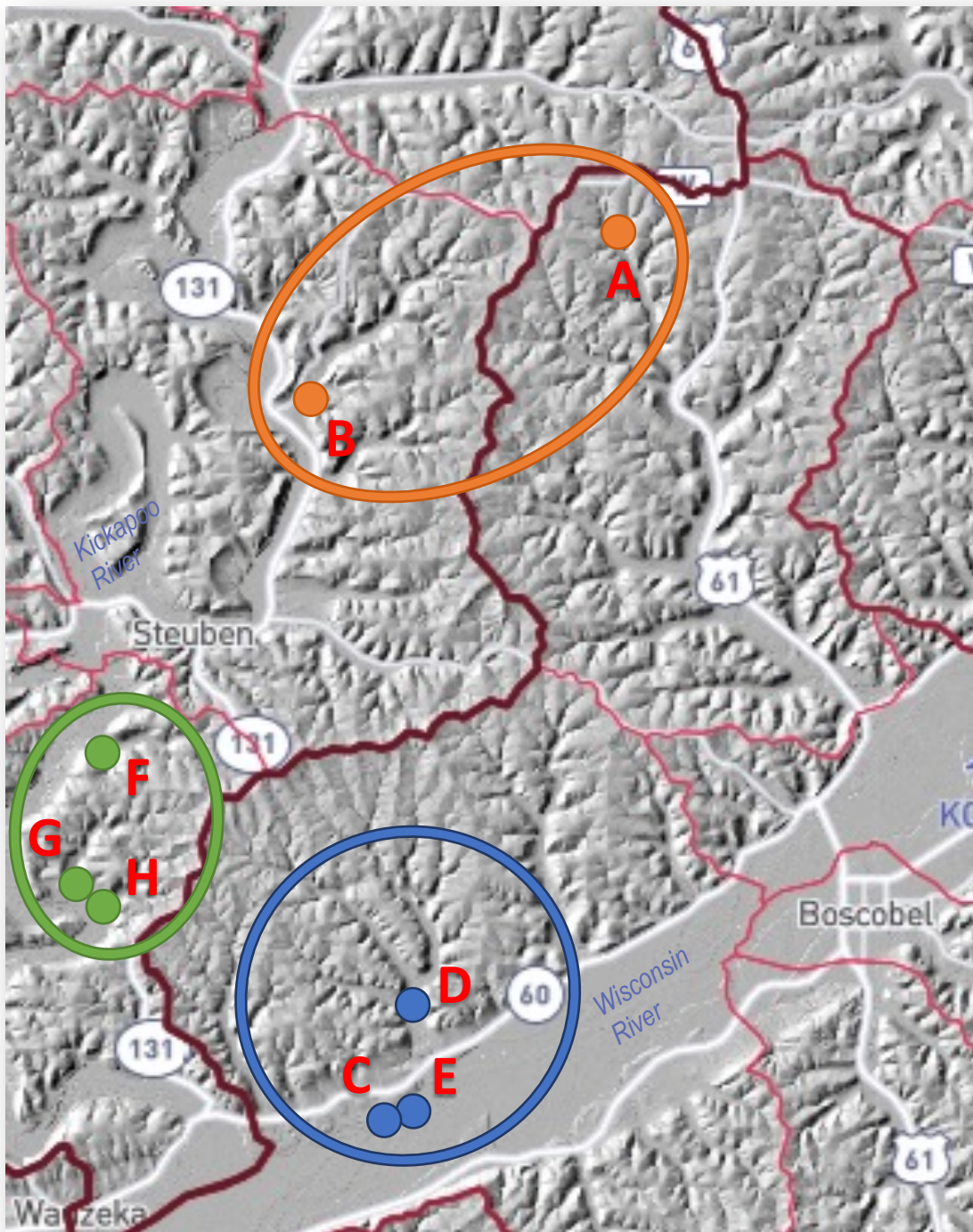
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ALL SITES LOCATION MAP

Crawford County



ZONE 1 (Scott & Haney Townships):

- A. Station A: #10044917 (Richland Creek), **impaired***
- B. Station B: #10044132 (Shaw Hollow Creek-Kickapoo River - Taylor Ridge Rd. bridge)

ZONE 2 (Wauzeka Township):

- C. Station #10032119 (WI River Tributary, 0.5 mi SE of STH 60 and Knob Ln Intersection), **impaired***
- D. Station #10032123 (Boydton Creek)
- E. Station #10052569 (Unnamed 5035112 at Spring), **impaired***

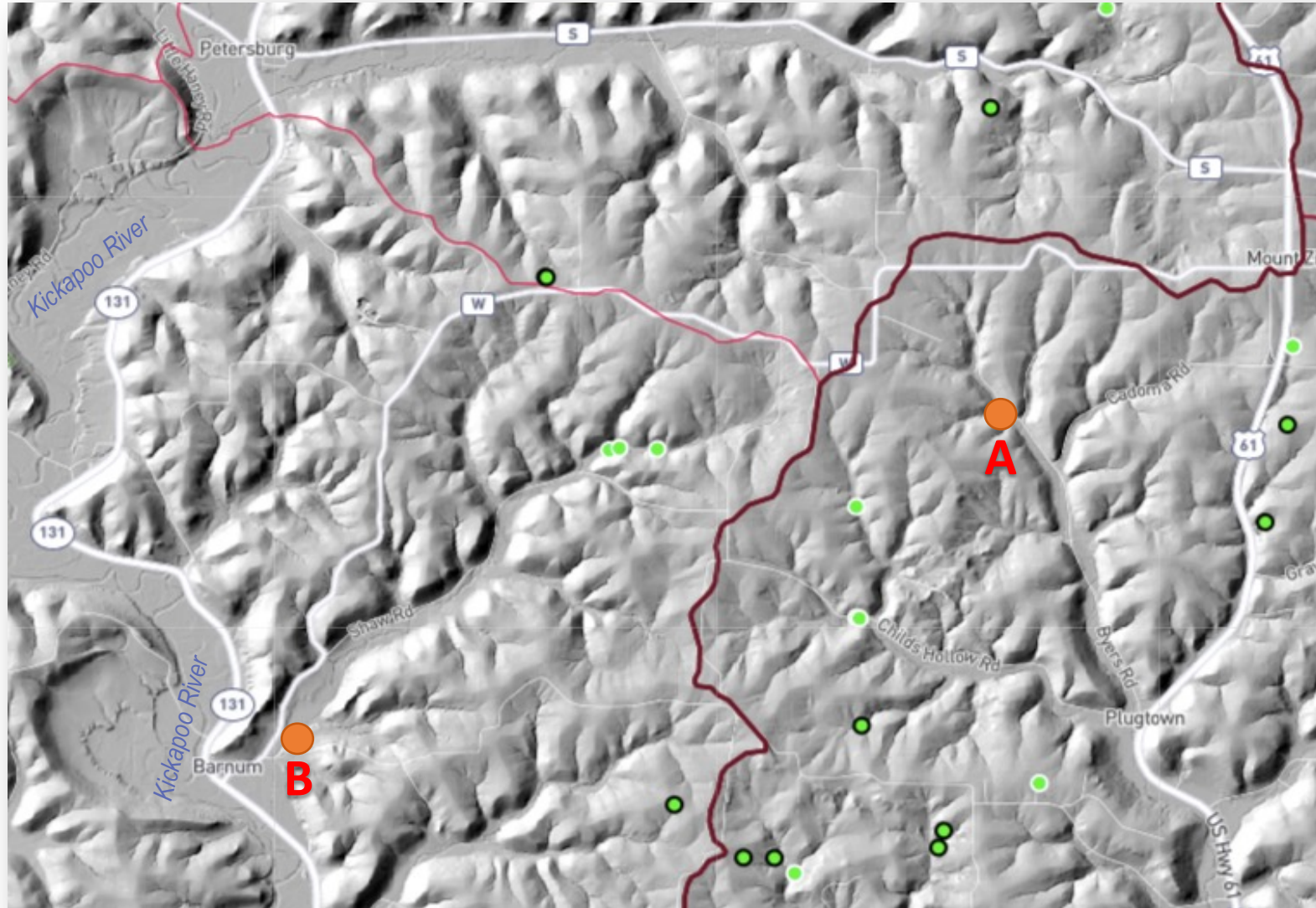
ZONE 3 (Marietta Township):

- F. Station #10052670 Unnamed (5034616)
- G. Station #10052671 Unnamed (5034666)
- H. Pending: Station #10052699 Spring to Kickapoo River

***Impaired (for high Total Phosphorus):** Waters that do not meet WQS (Water Quality Standards) are placed on Wisconsin's Impaired Waters List - also known as the 303(d) list-, under Section 303(d) of the CWA (Federal Clean Water Act).

- Watershed boundary
- Sub-watershed boundary

ZONE 1: Site location map



- Watershed boundary
- Sub-watershed boundary
- Possible sinkhole*
- Probable sinkhole*

* As identified by CSP's Karst Landscapes and Groundwater Susceptibility Survey of Crawford Co.

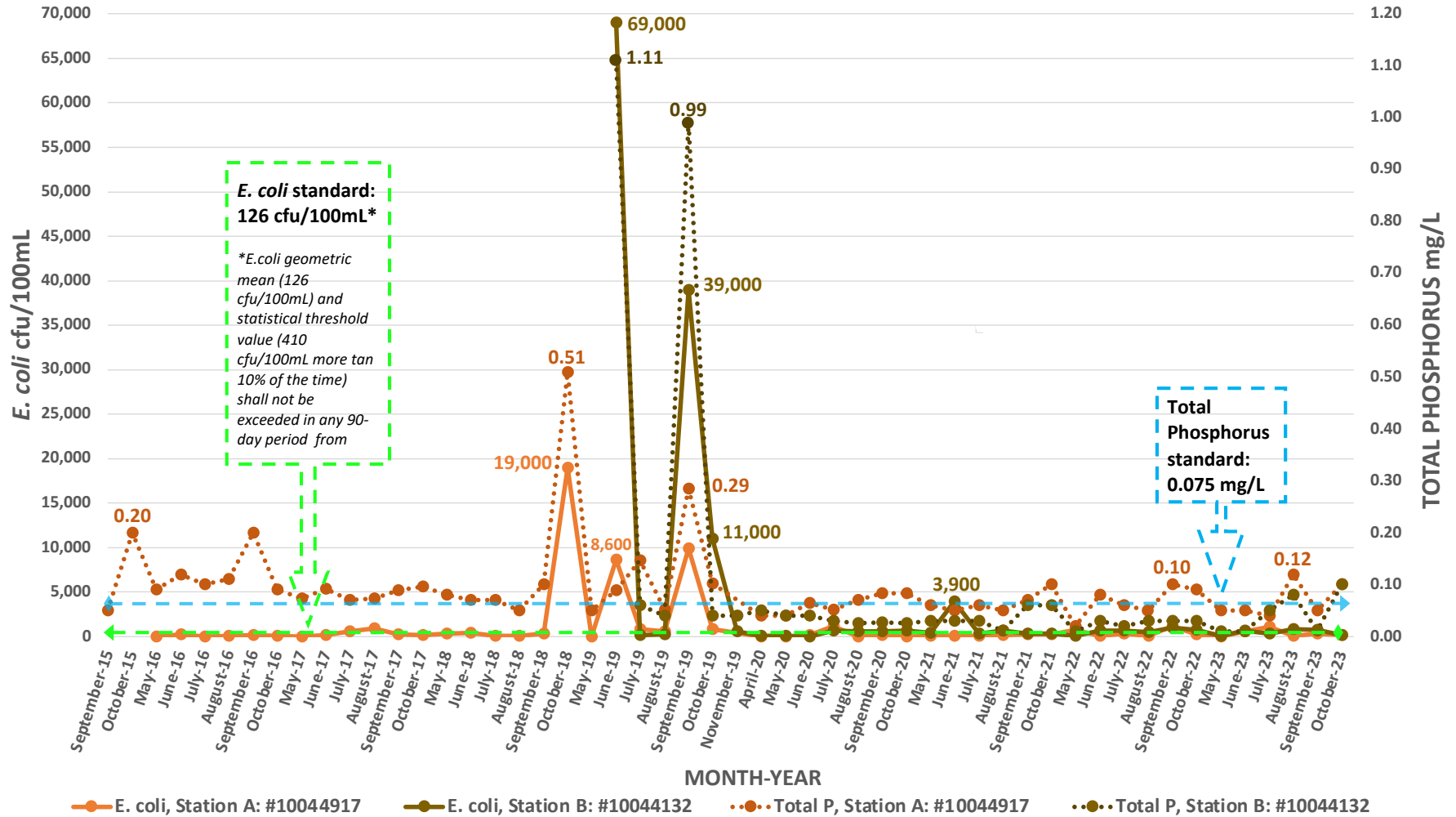
ZONE 1: *E. coli* & Total Phosphorus results, 2015 - 2023



ZONE 1: *E. coli* AND TOTAL PHOSPHORUS RESULTS, 2015-2023

STATION A: #10044917 (Richland Creek)

STATION B: #10044132 (Shaw Hollow Creek - Kickapoo River - Taylor Ridge Rd. bridge)



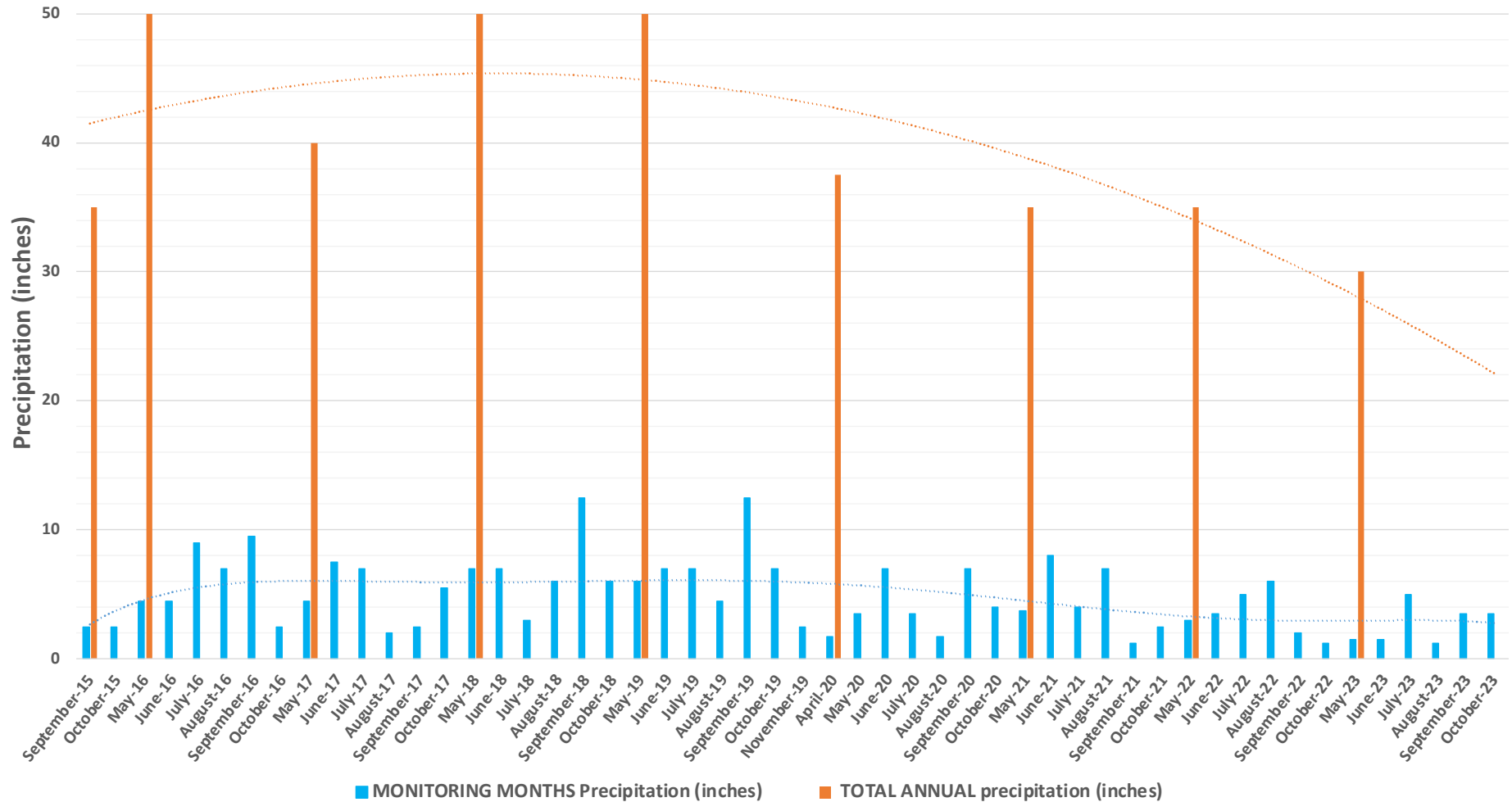
ZONE 1: Monitoring Months Average Precipitation & Total Annual Precipitation (inches), 2015 - 2023



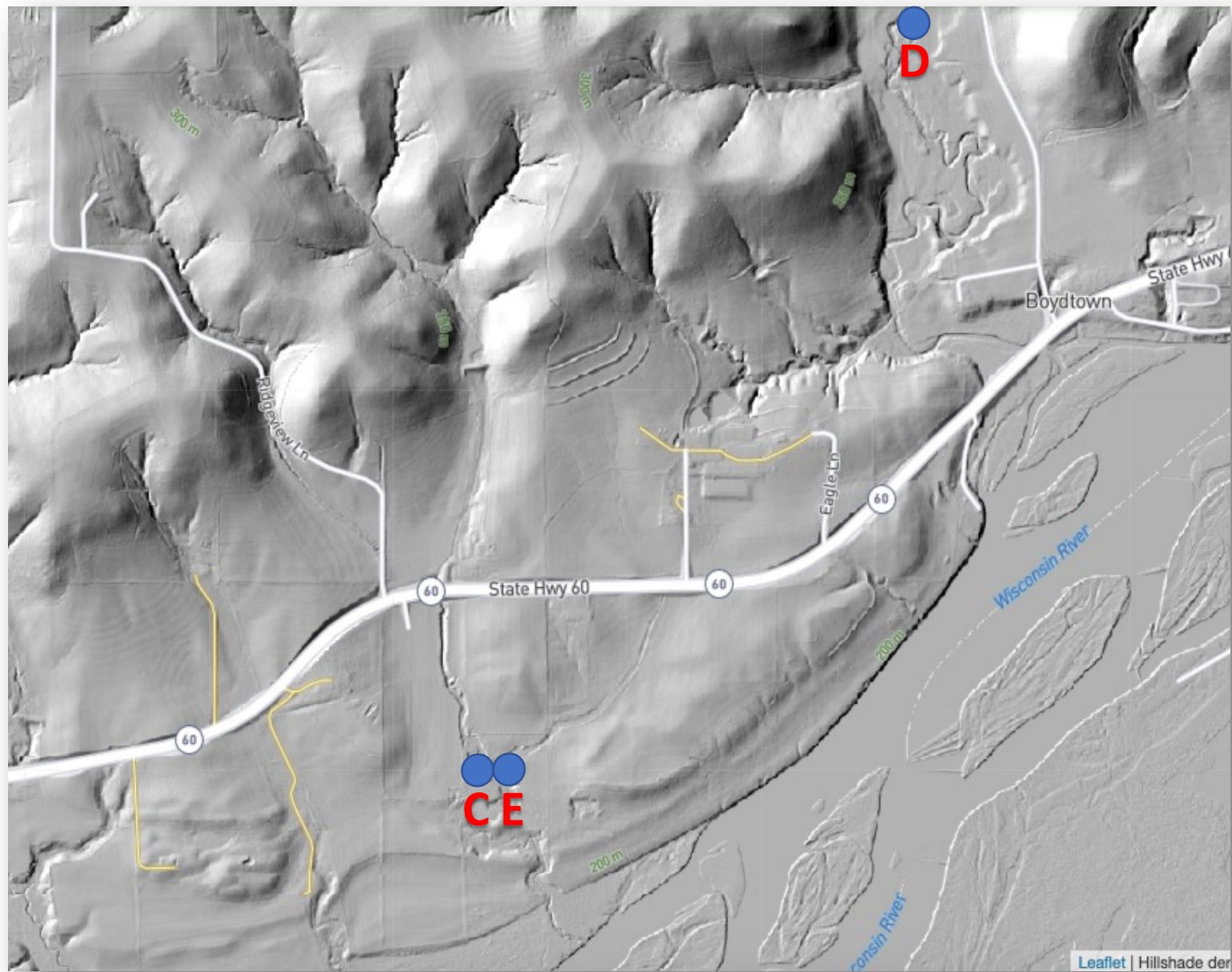
ZONE 1: MONITORING MONTHS AVERAGE PRECIPITATION and TOTAL ANNUAL PRECIPITATION, 2015 -2023

STATION A: #10044917 (Richland Creek)

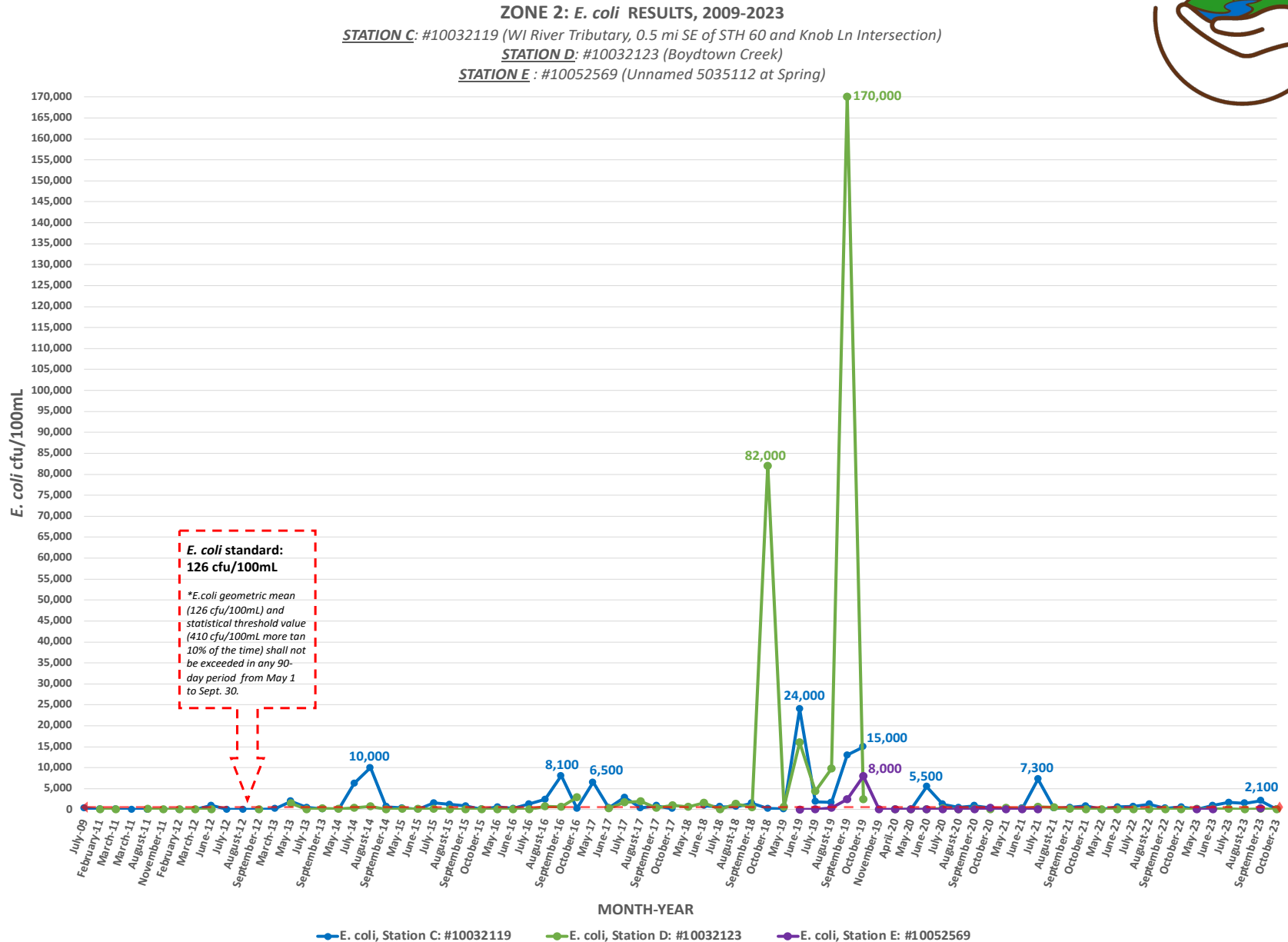
STATION B: #10044132 (Shaw Hollow Creek - Kickapoo River - Taylor Ridge Rd. bridge)



ZONE 2: Site location map



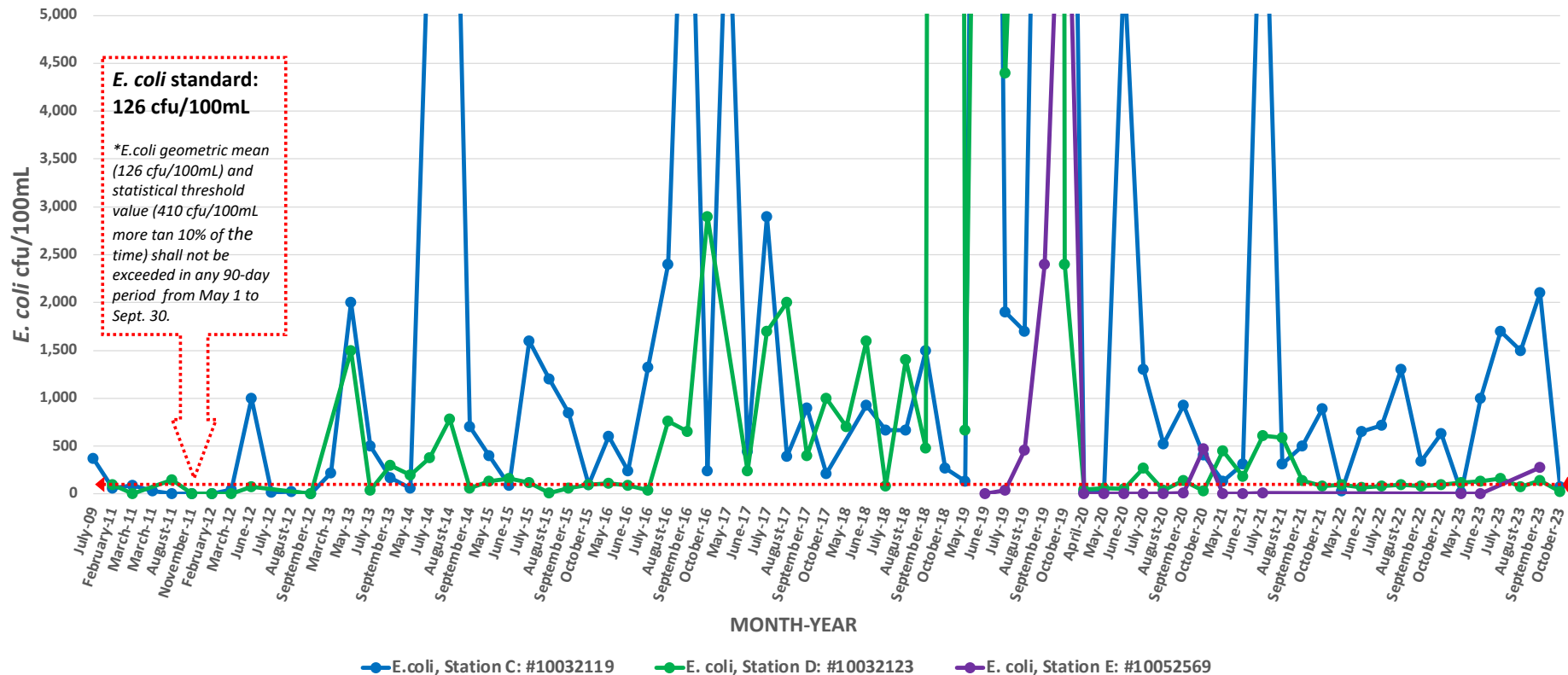
ZONE 2: *E. coli* results (0 up to 170,000 cfu/100mL), 2009 - 2023



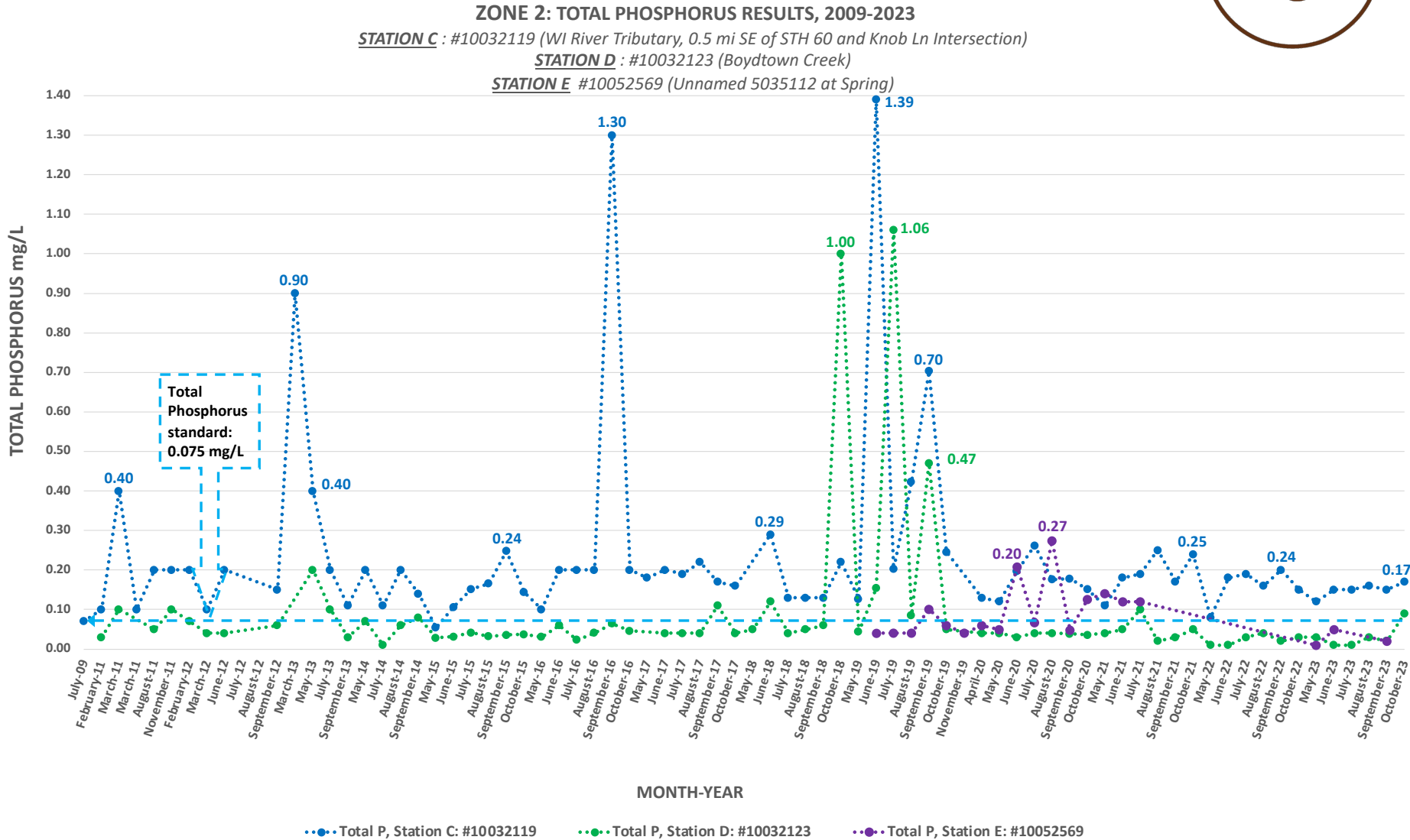
ZONE 2: *E. coli* results (0 up to 5,000 cfu/100mL), 2009 - 2023



ZONE 2: *E. coli* RESULTS, 2009-2023
STATION C: #10032119 (WI River Tributary, 0.5 mi SE of STH 60 and Knob Ln Intersection)
STATION D: #10032123 (Boydton Creek)
STATION E: #10052569 (Unnamed 5035112 at Spring)



ZONE 2: Total Phosphorus results, 2009 - 2023



ZONE 2: Monitoring Months Average Precipitation & Total Annual Precipitation (inches), 2009 - 2023

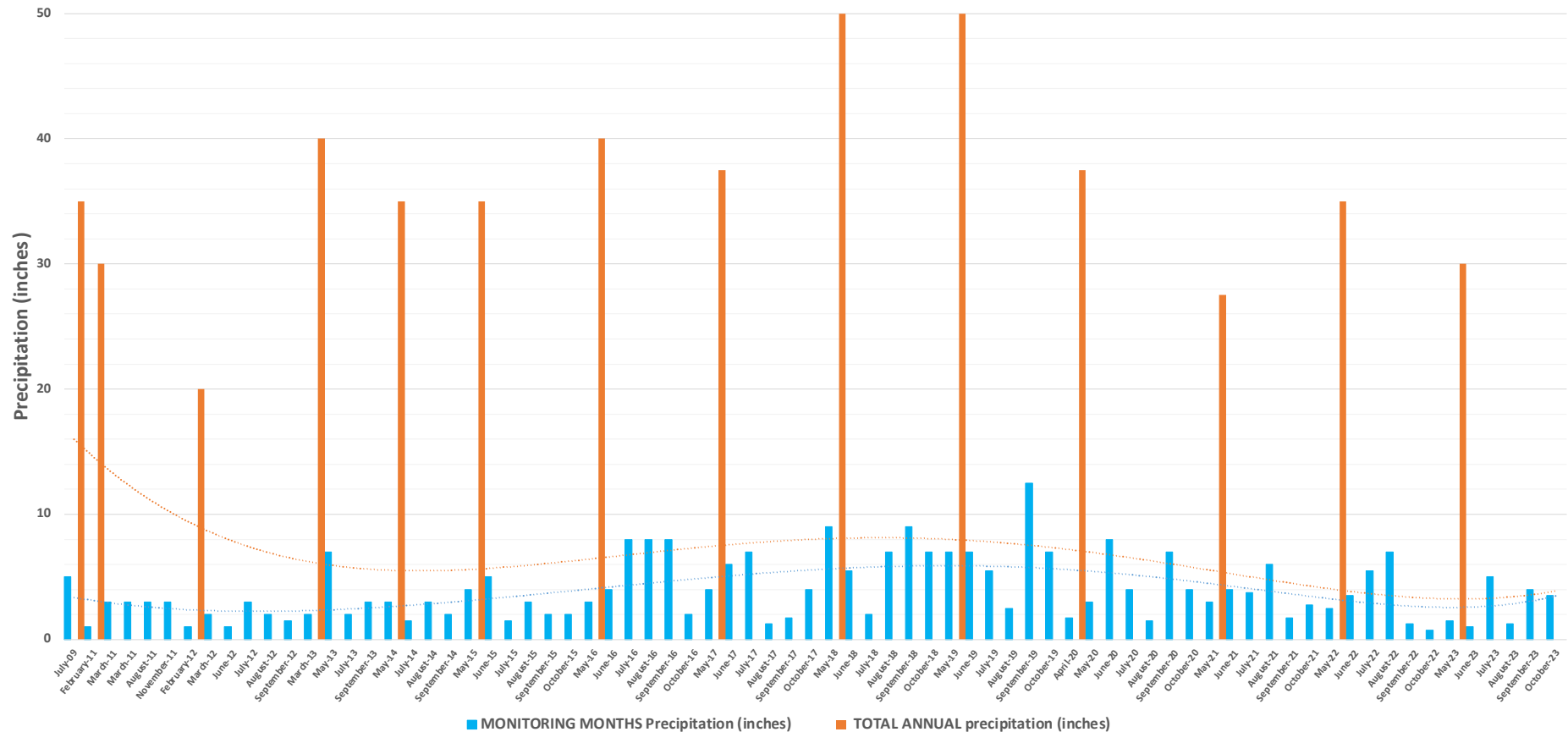


ZONE 2: MONITORING MONTHS AVERAGE PRECIPITATION and TOTAL ANNUAL PRECIPITATION, 2009-2023

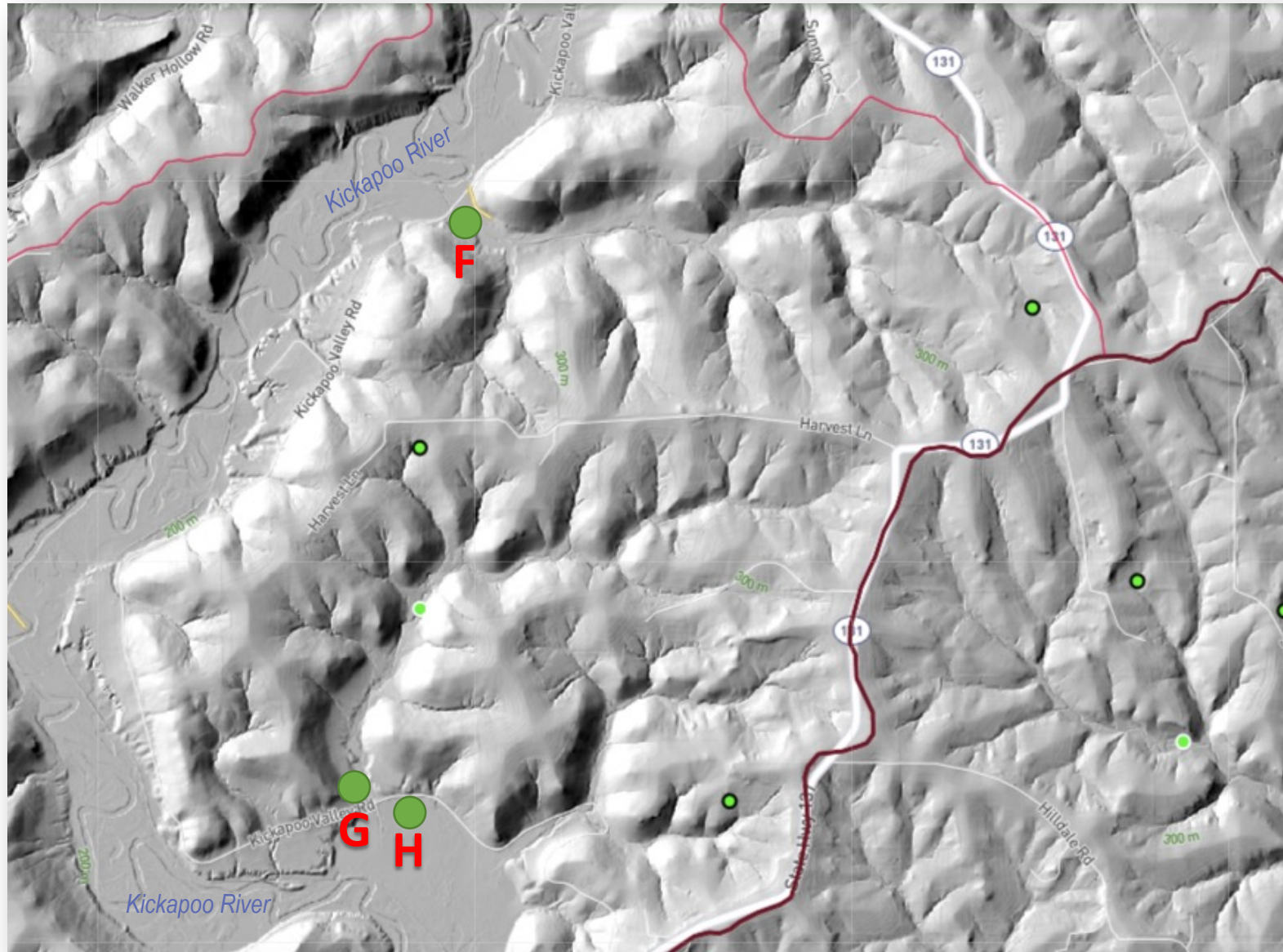
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STATION E: #10052569 (Unnamed 5035112) at



ZONE 3: Site location map



- Watershed boundary
- Sub-watershed boundary
- Possible sinkhole*
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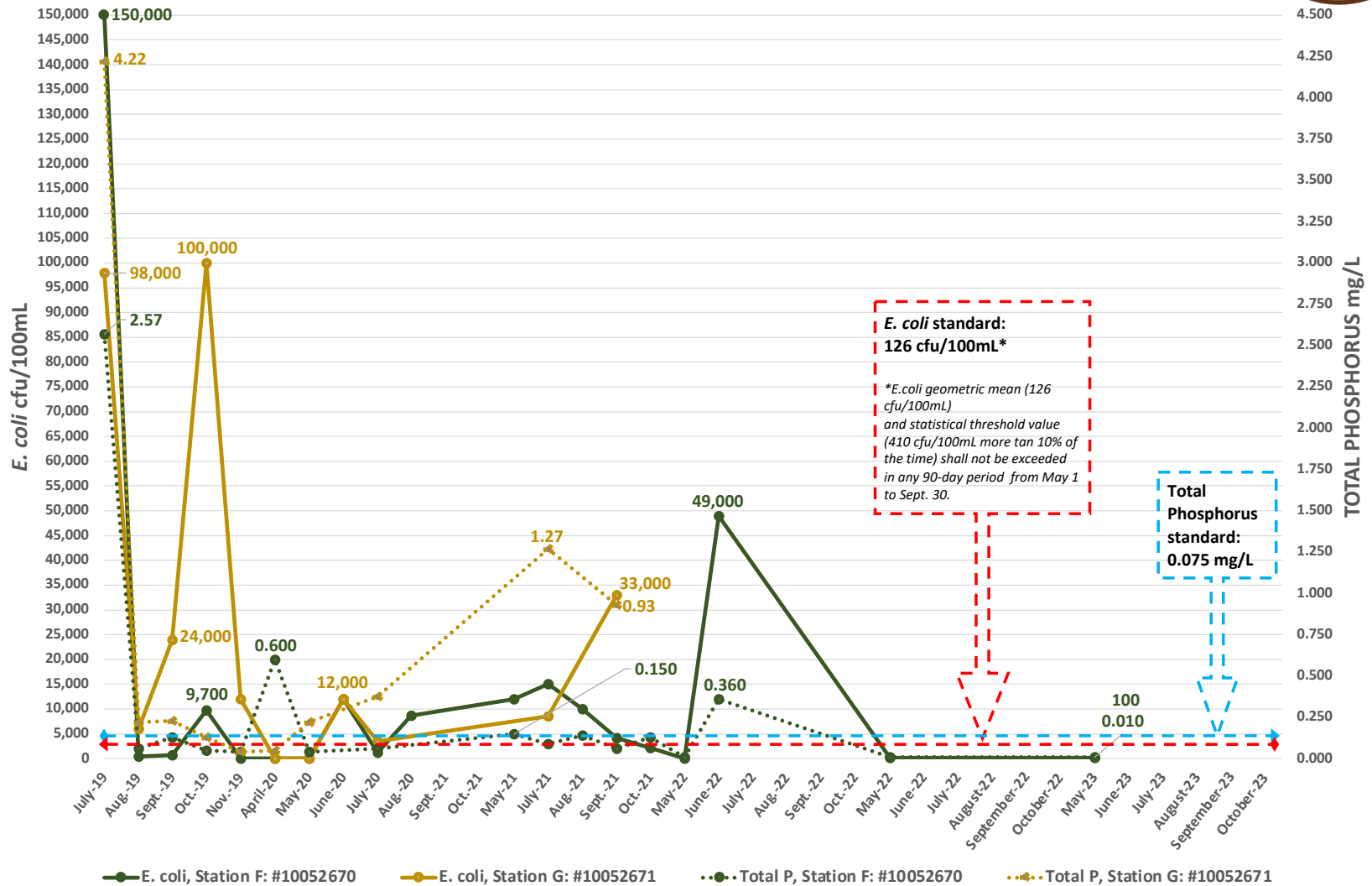
ZONE 3: *E. coli* and Total Phosphorus results, 2019 - 2023



ZONE 3: *E. coli* AND TOTAL PHOSPHORUS RESULTS, 2019-2023

STATION F: #10052670 Unnamed (5034616) at Kickapoo Valley Road

STATION G: #10052671 Unnamed (5034666) at Kickapoo Valley Road



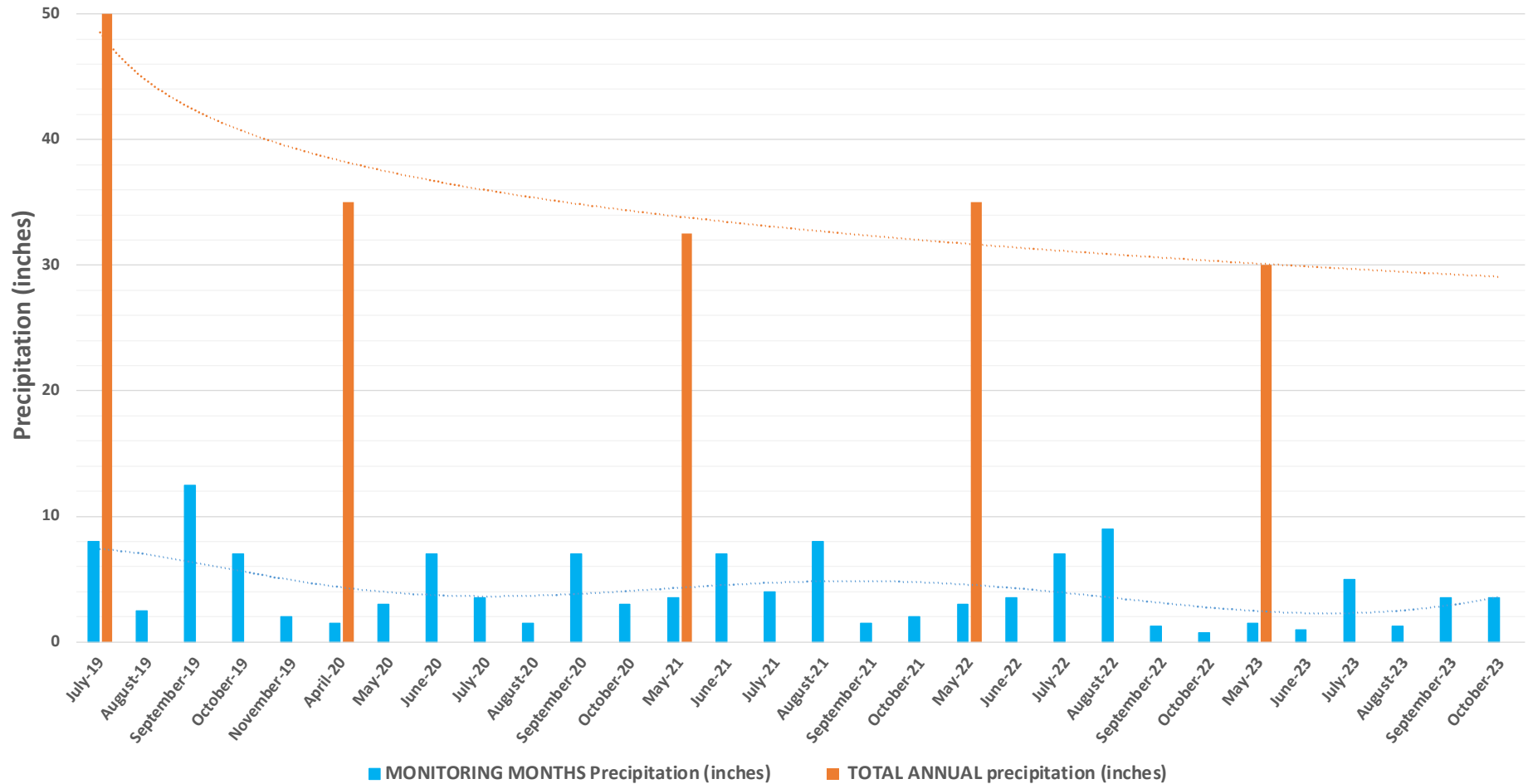
ZONE 3: Monitoring Months Average Precipitation & Total Annual Precipitation (inches), 2019 - 2023



ZONE 3: MONITORING MONTHS AVERAGE PRECIPITATION and TOTAL ANNUAL PRECIPITATION, 2019-2023

STATION F: #10052670 Unnamed (5034616) at Kickapoo Valley Road

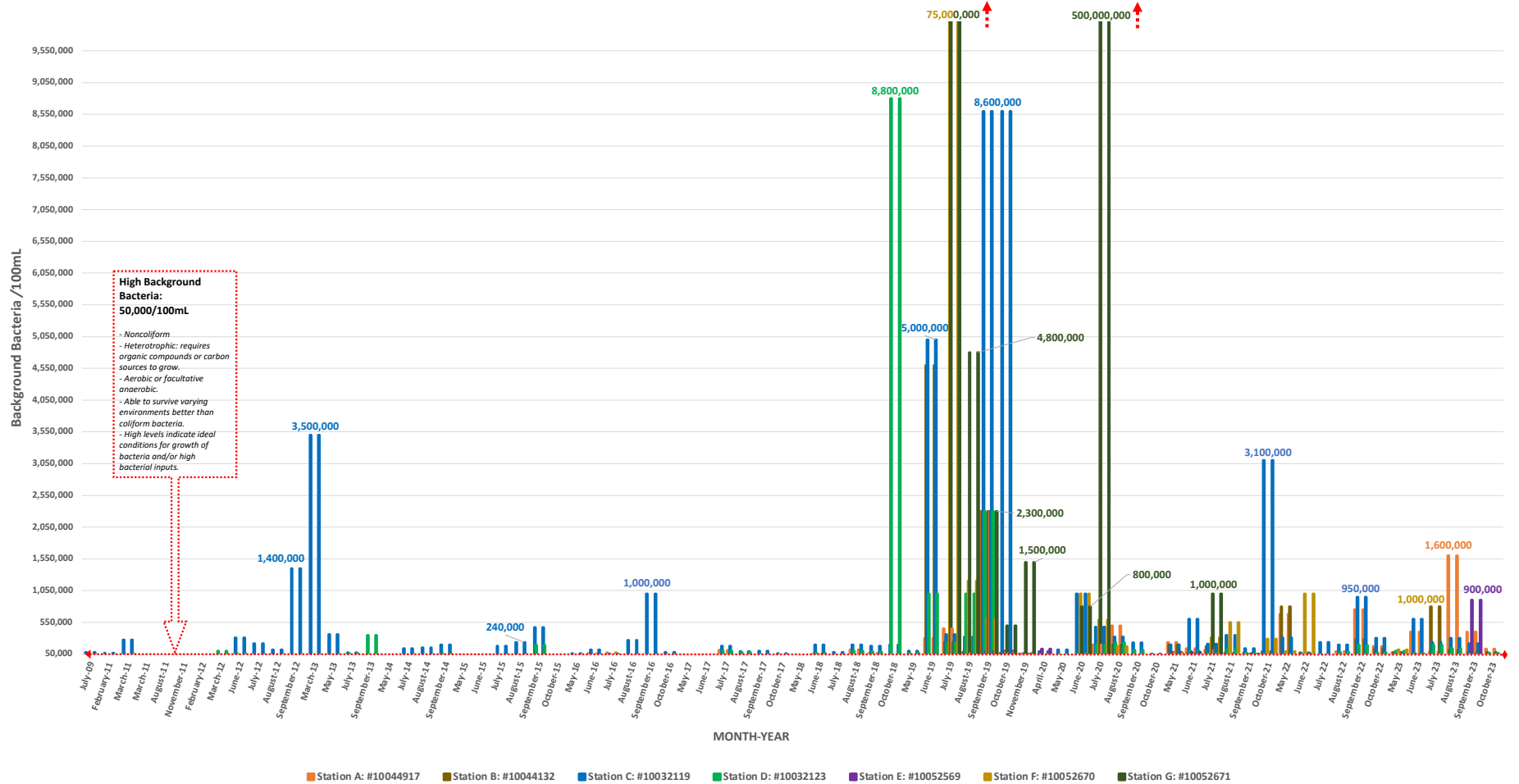
STATION G: #10052671 Unnamed (5034666) at Kickapoo Valley Road



ZONES 1-3: Background Bacteria results (>50,000/100mL), 2009 - 2023



BACKGROUND BACTERIA RESULTS (>50,000), 2009-2023
ZONE 1: Station A: #10044917 (Richland Creek); Station B: #10044132 (Shaw Hollow Creek-Kickapoo River - Taylor Ridge Rd. bridge)
ZONE 2: Station C: #10032119 (WI River Tributary, 0.5 mi SE of STH 60 and Knob Ln Intersection); Station D: #10032123 (Boydtown Creek); Station E: #10052569 (Unnamed 5035112 at Spring)
ZONE 3: Station F: #10052670 Unnamed (5034616) at Kickapoo Valley Road; Station G: #10052671 Unnamed (5034666) at Kickapoo Valley Road



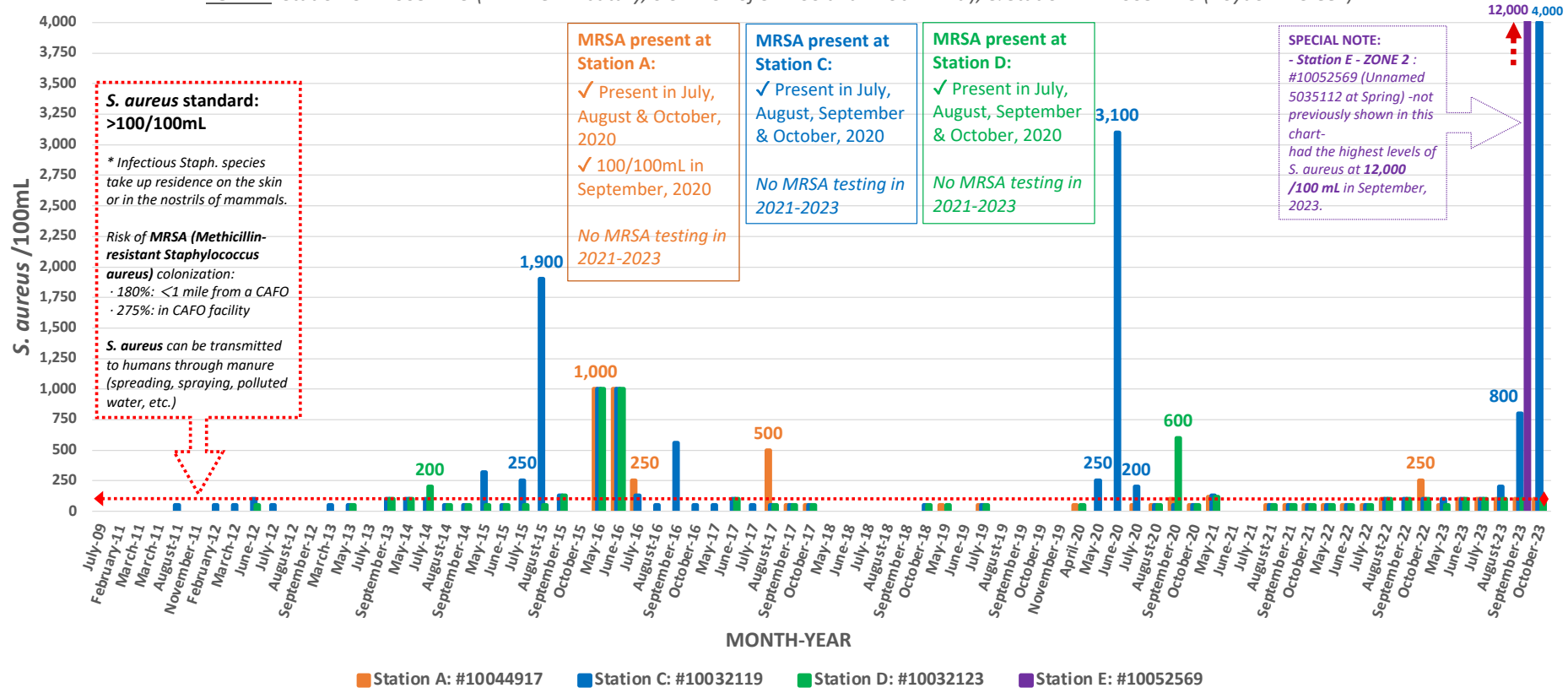
ZONES 1&2: *Staphylococcus Aureus* (& MRSA when present and/or tested for), 2009 - 2023



Staphylococcus aureus RESULTS (and MRSA when present and/or tested for), 2009-2023

ZONE 1: Station A: #10044917 (Richland Creek)

ZONE 2: Station C: #10032119 (WI River Tributary, 0.5 mi SE of STH 60 and Knob Ln Int.); & Station D: #10032123 (Boydown Creek)



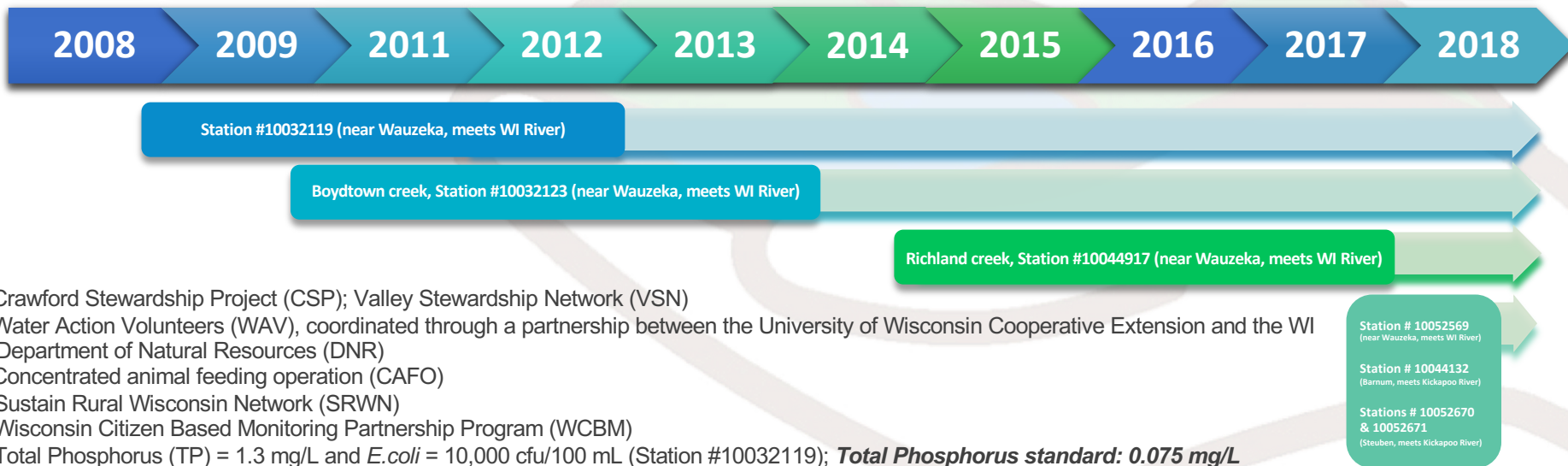
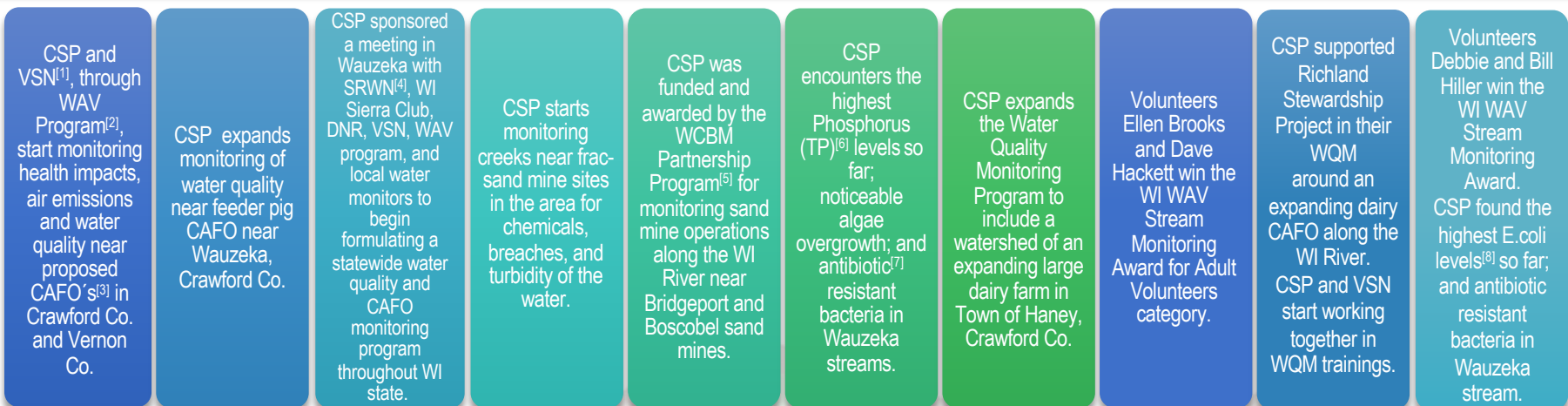


SOME REFERENCES

- [CSP Surface Water Monitoring Program](#)
- [The Phosphorus Rule](#)
- [Water Condition Lists](#)
- [Water Condition Viewer](#)
- [Impaired Water Search](#)
- [CSP Regional Karst Geology Viewer](#)
- [Livestock-Associated Methicillin and Multidrug Resistant Staphylococcus aureus Is Present among Industrial, Not Antibiotic-Free Livestock Operation Workers in North Carolina](#)



WATER QUALITY MONITORING (WQM) PROGRAM TIMELINE 2008 - 2018



^[1] Crawford Stewardship Project (CSP); Valley Stewardship Network (VSN)

^[2] Water Action Volunteers (WAV), coordinated through a partnership between the University of Wisconsin Cooperative Extension and the WI Department of Natural Resources (DNR)

^[3] Concentrated animal feeding operation (CAFO)

^[4] Sustain Rural Wisconsin Network (SRWN)

^[5] Wisconsin Citizen Based Monitoring Partnership Program (WCBM)

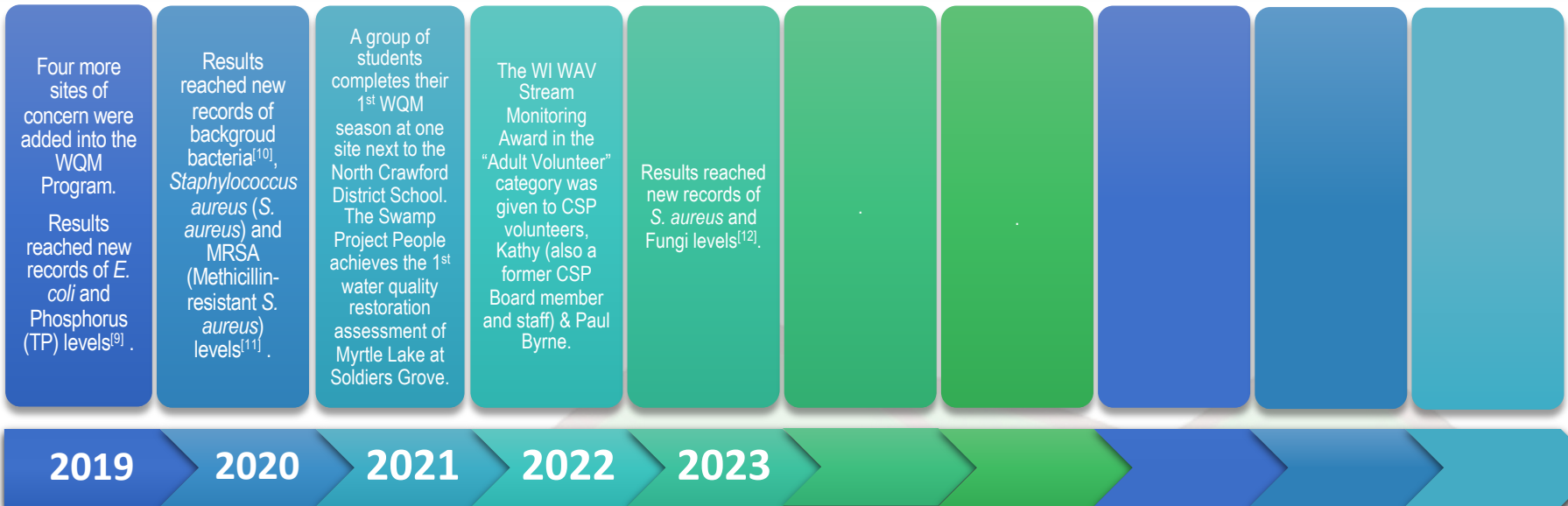
^[6] Total Phosphorus (TP) = 1.3 mg/L and *E.coli* = 10,000 cfu/100 mL (Station #10032119); **Total Phosphorus standard: 0.075 mg/L**

^[7] Chloramphenicol: an antibiotic banned or restricted in U.S. meat. Can cause plasmatic anemia in humans.

^[8] *E. coli* = 82,000 cfu/100 mL (Station #10032123) and 19,000 cfu/100 mL (Station #10044917); ***E. coli* standard: 126 cfu/mL**



WATER QUALITY MONITORING (WQM) PROGRAM TIMELINE 2019 - 2023



Sites of concern:

1. Station #10032119 (Wauzeka Twp., meets WI River)
2. Boydtown creek, Station #10032123 (Wauzeka Twp., meets WI River)
3. Richland creek, Station #10044917 (Wauzeka Twp., meets WI River)
4. Spring, Station #10052569 (Wauzeka Twp., meets WI River)
5. Shaw Hollow creek, Station # 10044132 (Haney Twp., meets Kickapoo River)
6. Station #10052670 (Marietta Twp., meets Kickapoo River)
7. Station #10052671 (Marietta Twp., meets Kickapoo River)

^[9] *E. coli* = 170,000 = cfu/100 mL (Station #10032123); and, Total Phosphorus (TP) = 4.22 mg/L (Station # 10052671)

^[10] Background Bacteria = 500,000,000/100 mL (Station # 10052671); **High Background Bacteria: 50,000/100mL**

^[11] *S. aureus* = 3,100/100 mL (Station #10032119); and, MRSA = 100/100 mL (Station #10044917); ***S. aureus* and MRSA standard: <100/100mL**

^[12] *S. aureus* = 800/100 mL, and Fungi = >20,000/100 mL (Station #10032119); *S. aureus* = 12,000/100 mL, and Fungi = 36,000/100 mL (Station #10052569)