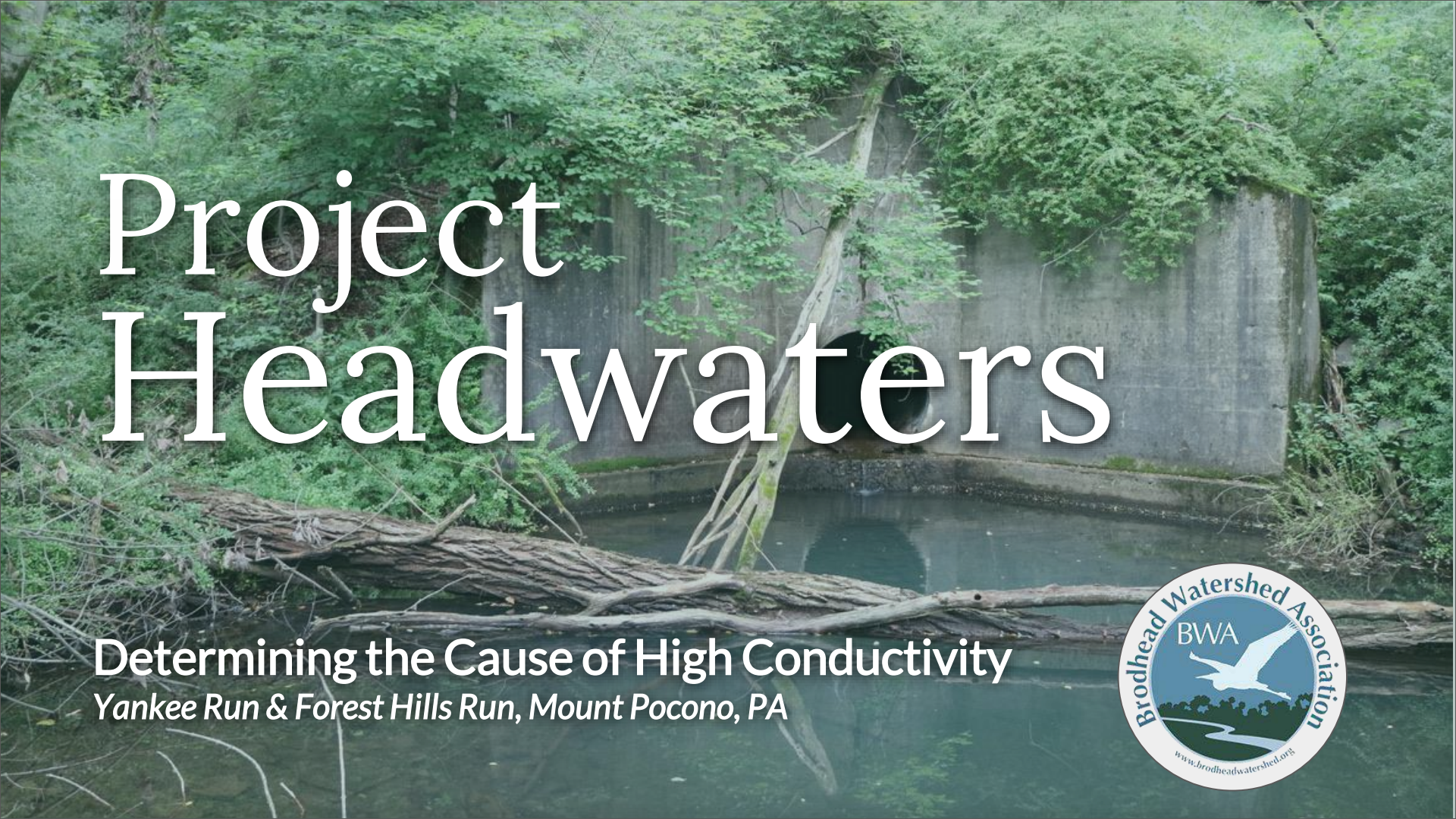

Project
Headwaters
Determining the Cause of High Conductivity
Yankee Run & Forest Hills Run, Mount Pocono, PA
Brodhead Watershed Association
BWA
www.brodheadwatershed.org

Winter 2021 to Present

Goal:

- Determine analytes in highest EC/Cl- areas
- Determine if chloride caused high conductivity
- Report trustworthy data to DEP

How:

- Collect data at various flow regimes
- Analyse the data

SITE SELECTION *Yankee Run,* µS/cm | mg/L

Site 1
595 | 145

Site 2
n/a

Site 3
393 | 86

Site 4
460 | 86

Site 5
660 | 159

Site 6
428 | 76

Site 7
1255 |259

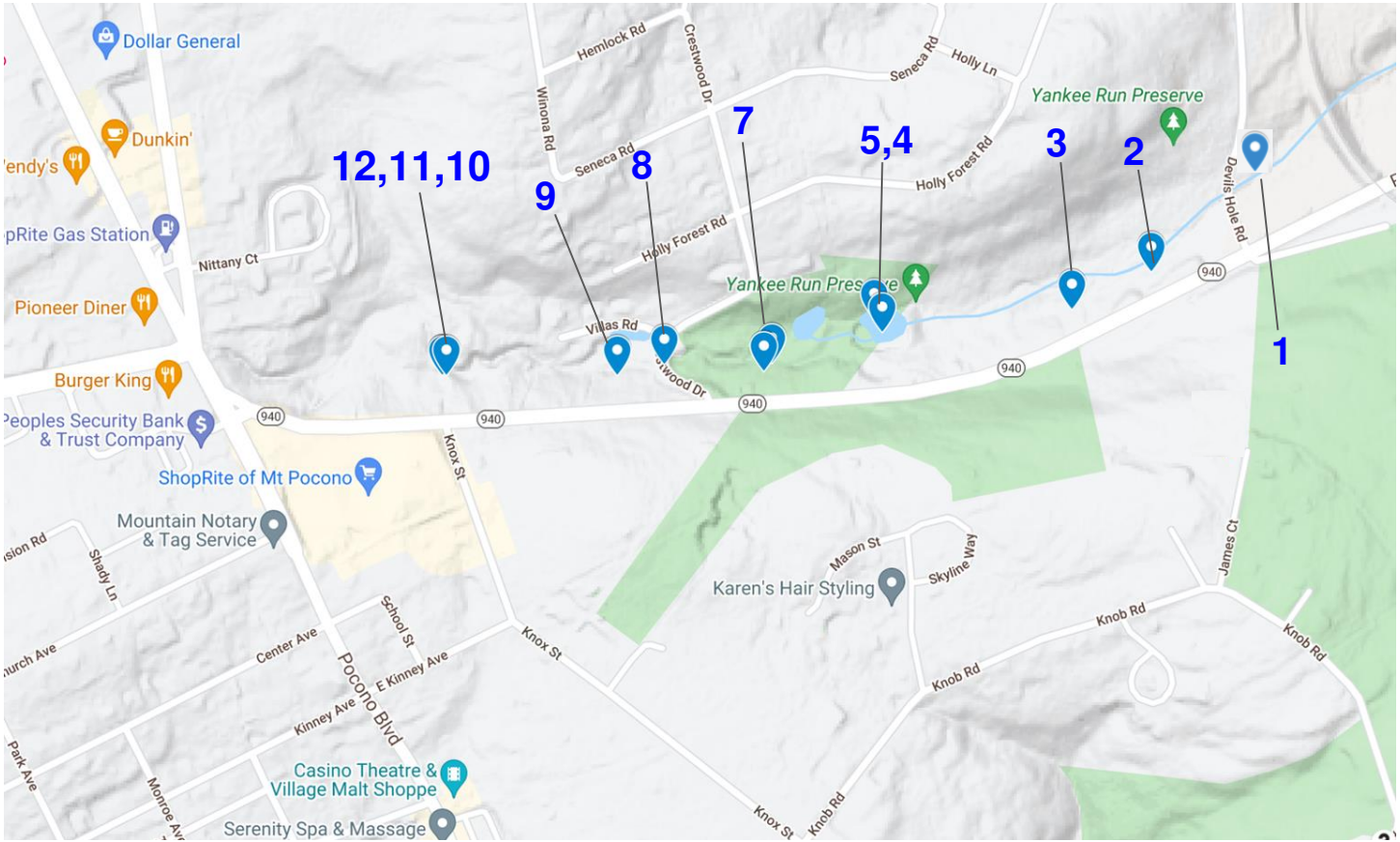
Site 8
1745 | 397

Site 9
1233 | 279

Site 10
1935 | 455

Site 11
1552 | 346

Site 12
n/a



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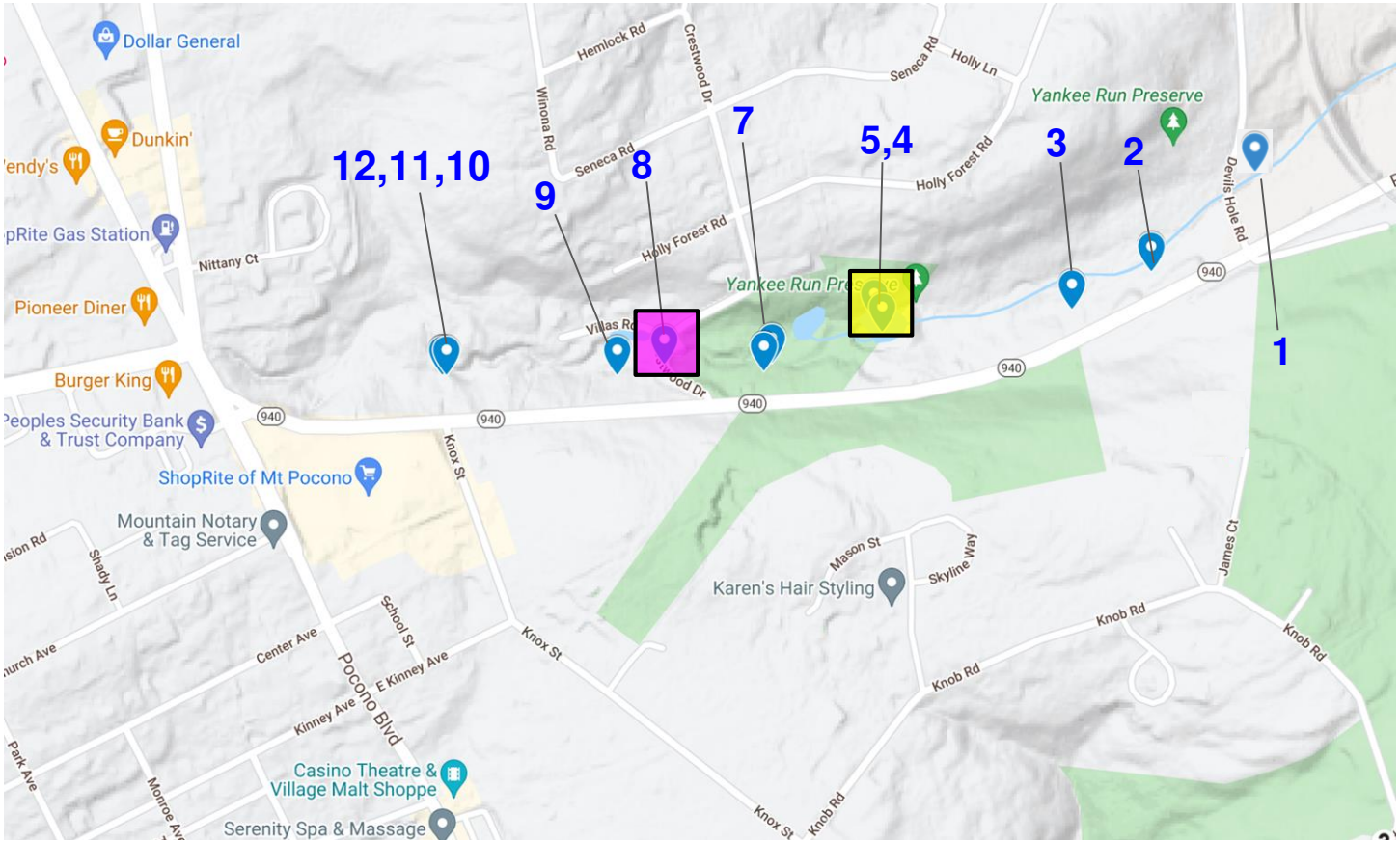


SITE SELECTION ***Forest Hills Run*** µS/cm | mg/L

Site 1
Stream
517 | 105

Site 2
Above: 526 | 125
Tributary: 768 | 190
Below: 527 | 122

Site 3
Above: 526 | 125
Tributary: 698 | 167
Below: 538 114

Site 4
Spring
687 | 176

Site 5
Storm Pipe
878 | 219

Site 6
Swamp
784 | 197

Site 7
Above: 530 | 127
Tributary: 629 | 154
Below: 559 | n/a

Site 8
Origin of previous site
677 | n/a

Site 9
Above: 410 | 71
Tributary: 729 | 177
Below: 534 | 97

Site 10
Culvert beneath RR
Origin of previous iste
684 | 176

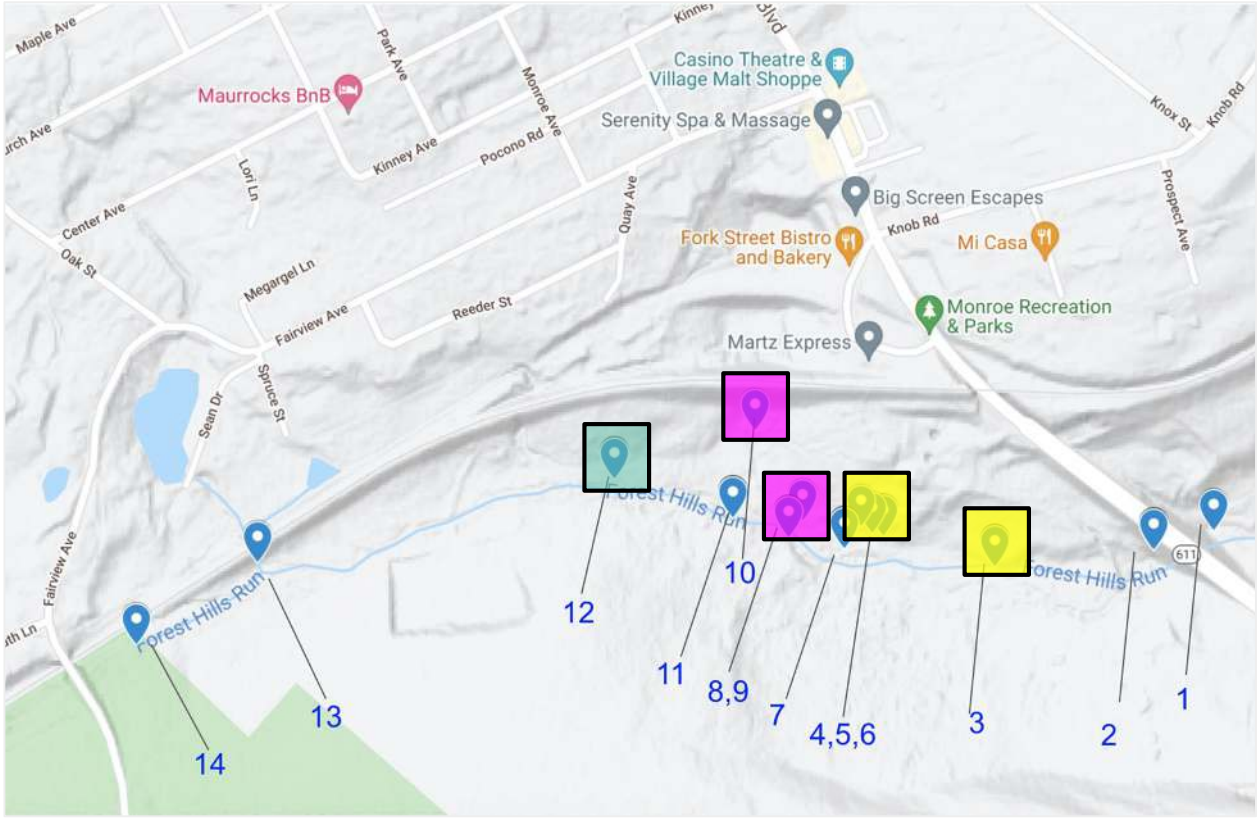
Site 11
Above: 355 | 59
Tributtary: 562 | 135
Below: 384 | n/a

Site 12
Above: 303
Tributary: 118
Below: 303

Site 13
Culvert beneath RR
402 | 82

Site 14
Tributary: 417 | n/a

SITE SELECTION *Forest Hills Run* µS/cm | mg/L



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Tributary: 417 | n/a

Summer 2021

6/30/2021

Full-screening. **Low flow.**

8/2/2021

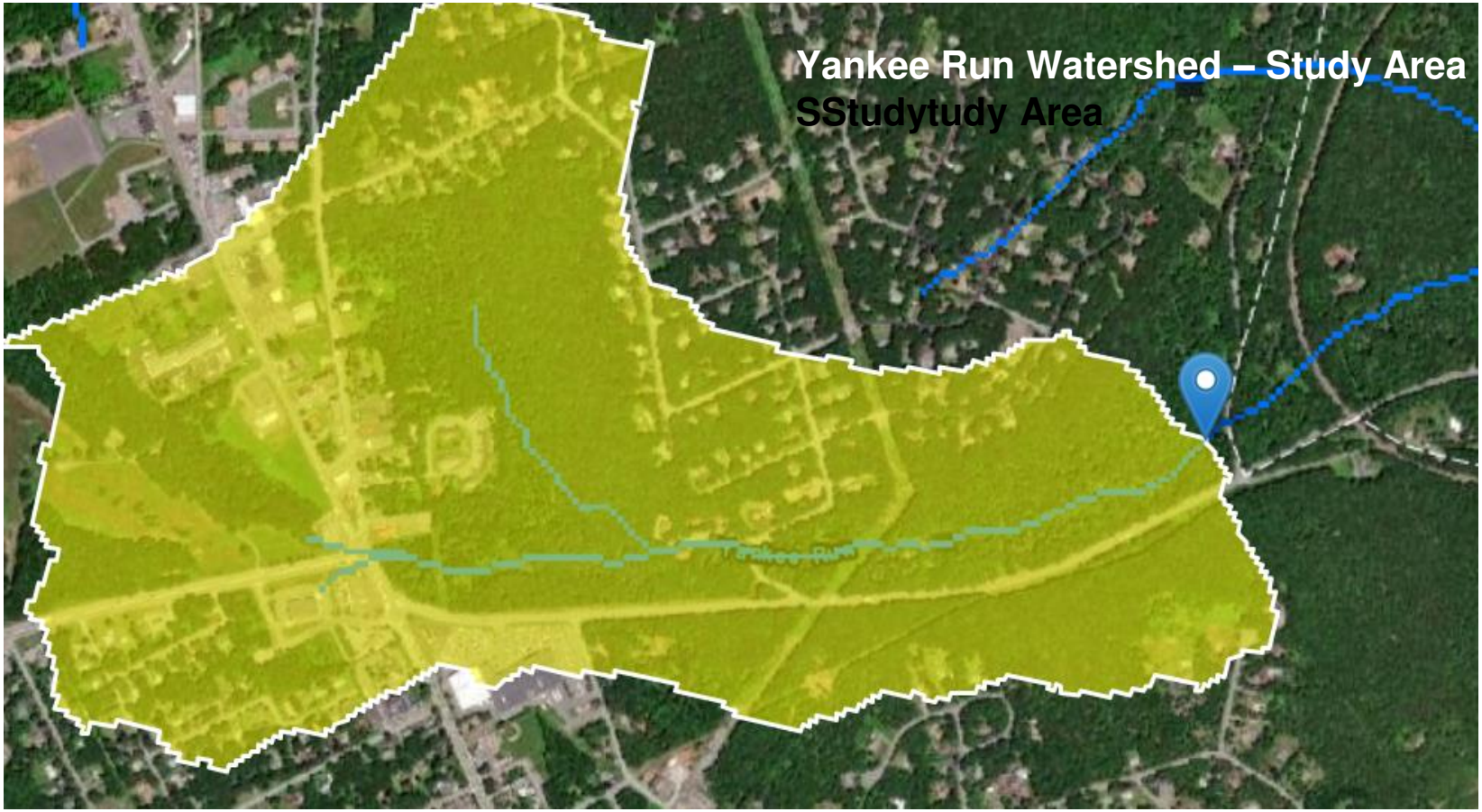
Chloride and metals. **Low flow.**

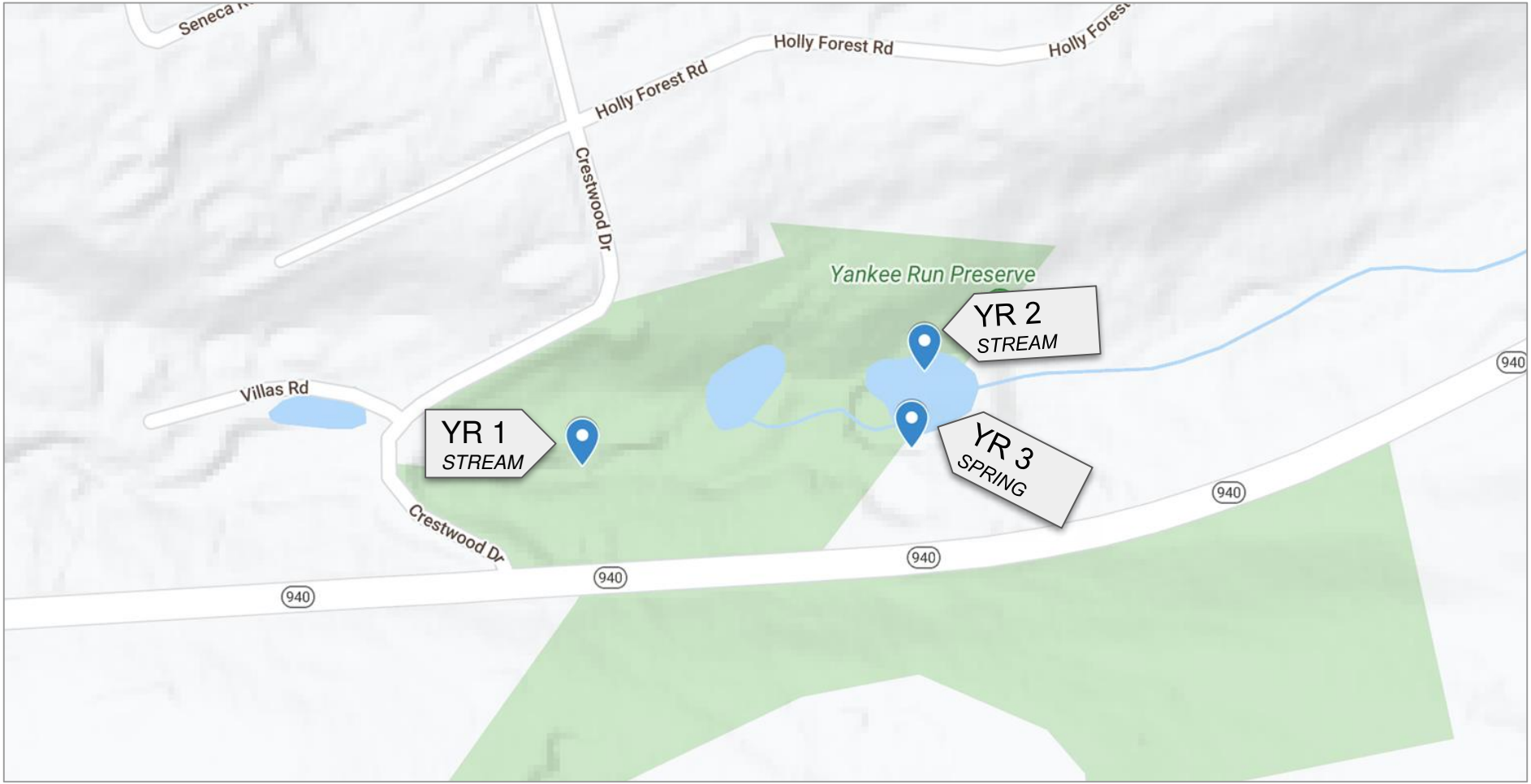
8/23/2021

Chloride and metals. Tropical storm Henri.
Very high flow.

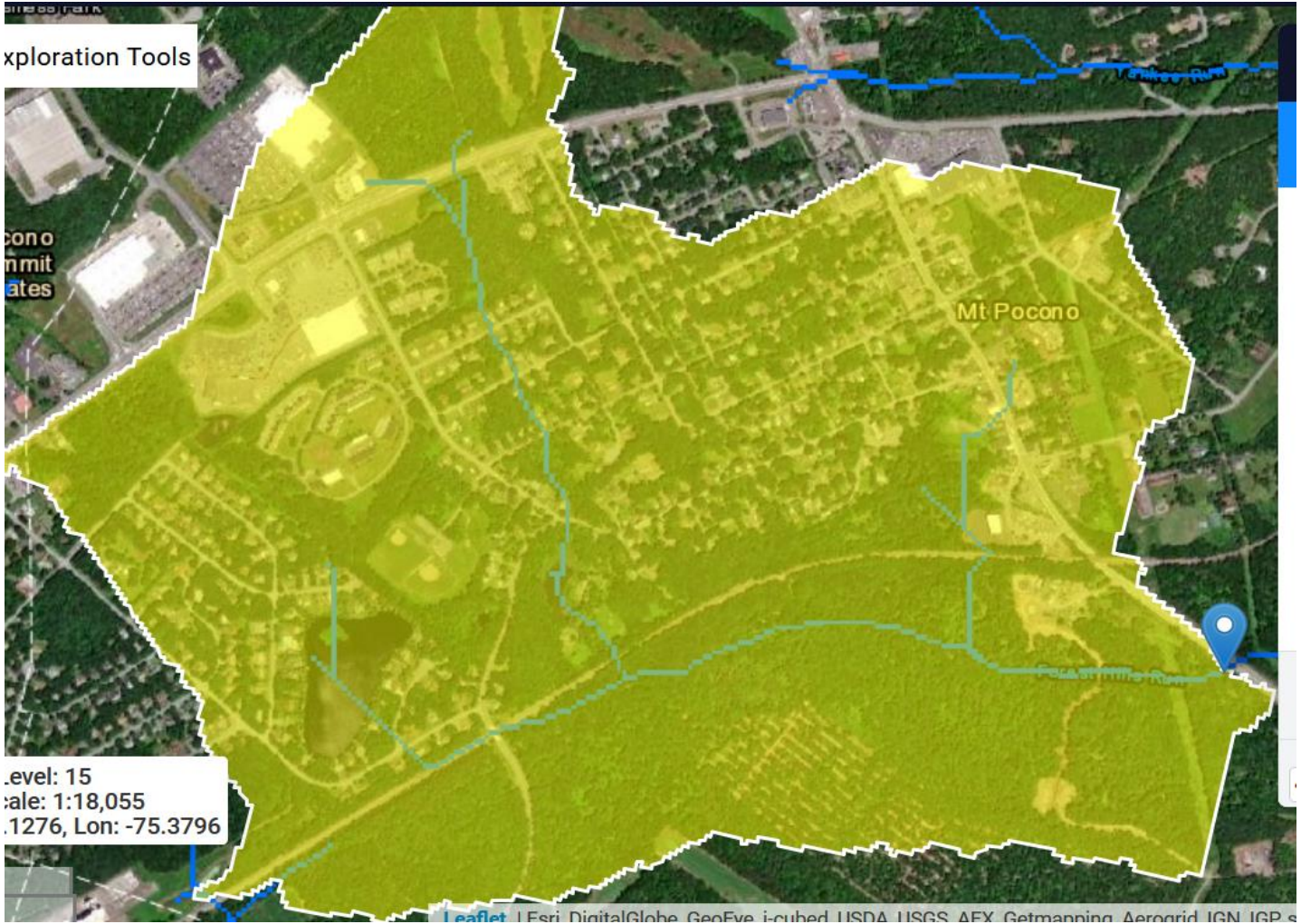
9/7/2021

Full screening. Hurricane Ida.
Medium flow.


Yankee Run Watershed – Study Area
SStudytudy Area

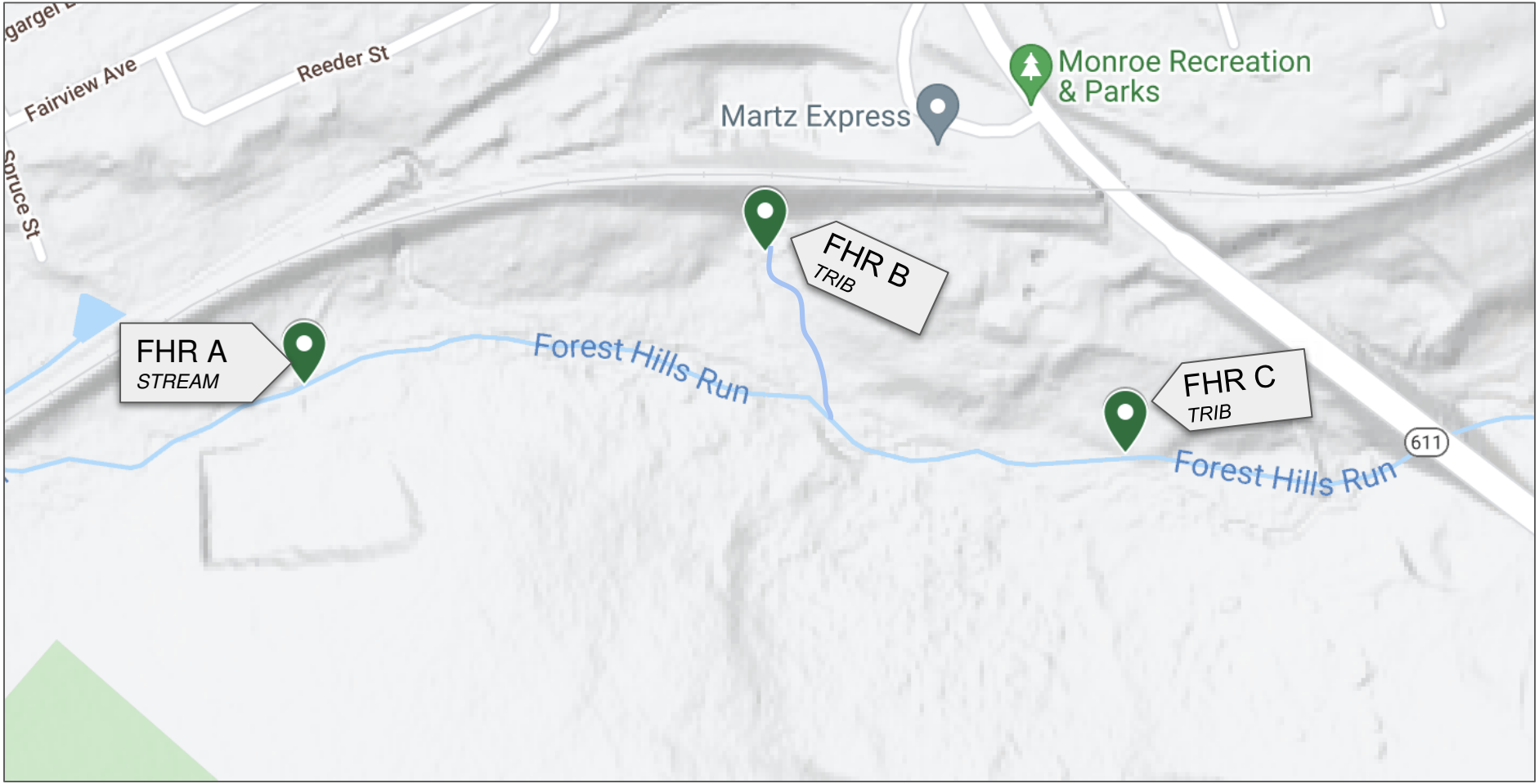


YANKEE RUN - Study Sites



Forest Hills Run watershed

Study Area

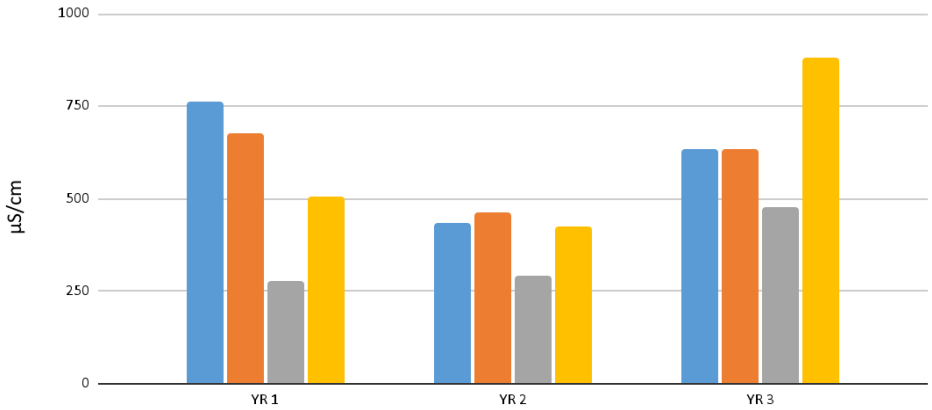


FOREST HILLS RUN – Study Sites

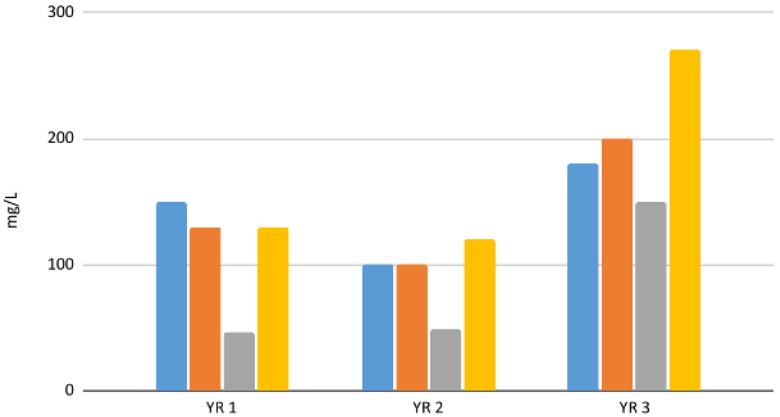

Results
Summer 2021

YANKEE RUN

Field-Measured Conductivity



Laboratory Chloride



Monroe County Water Quality EC

Max: **280 uS/cm**

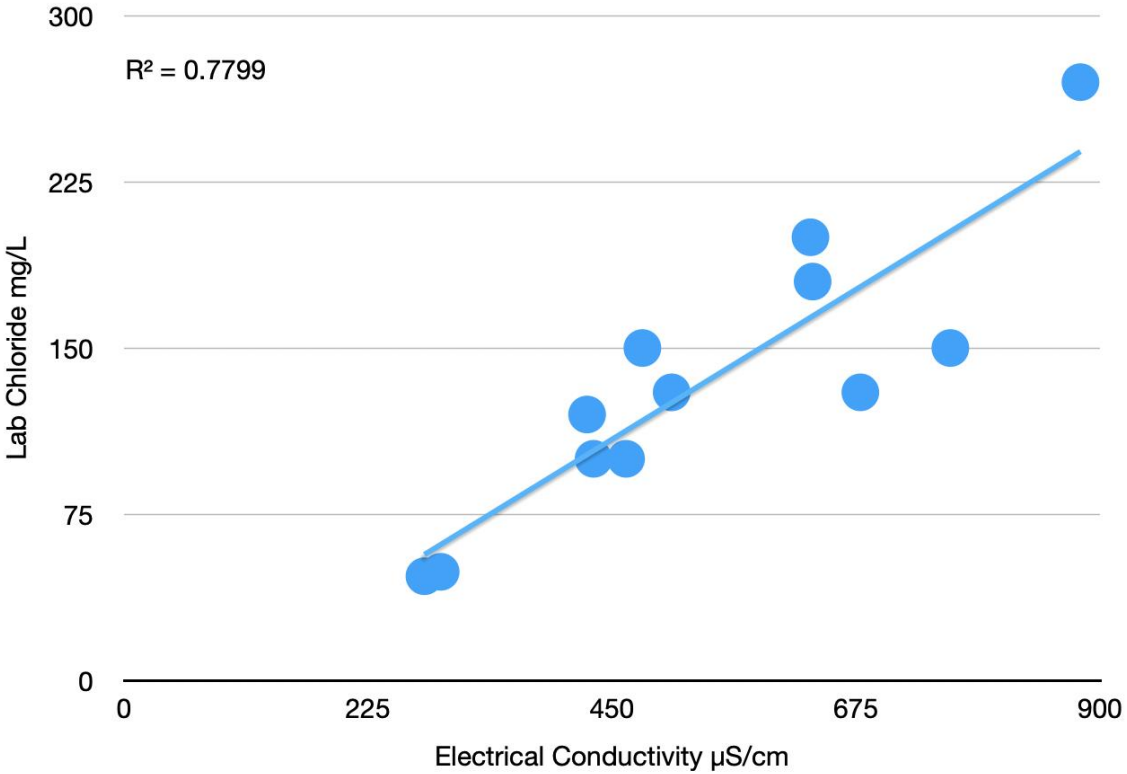
Average: **114 uS/cm**

Yankee Run EC

Max: **882 uS/cm**

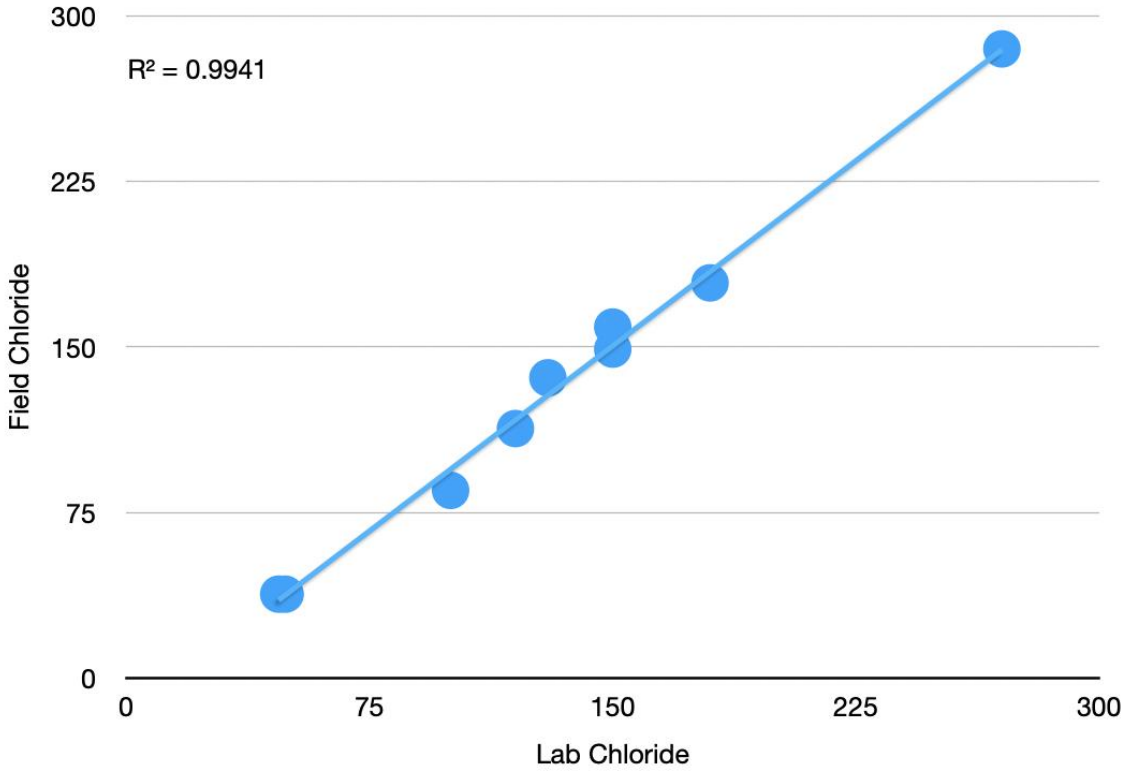
Average: **539 uS/cm**

YANKEE RUN Lab Chloride v. EC



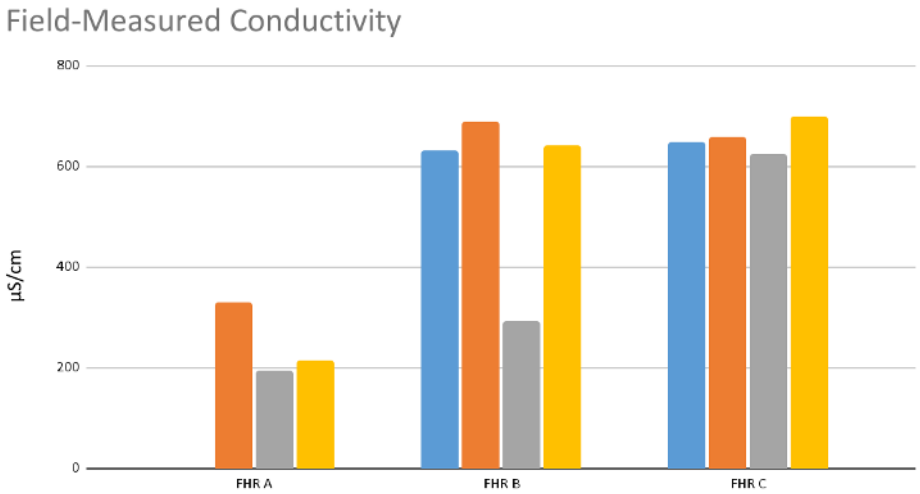
$R^2 = .7799$

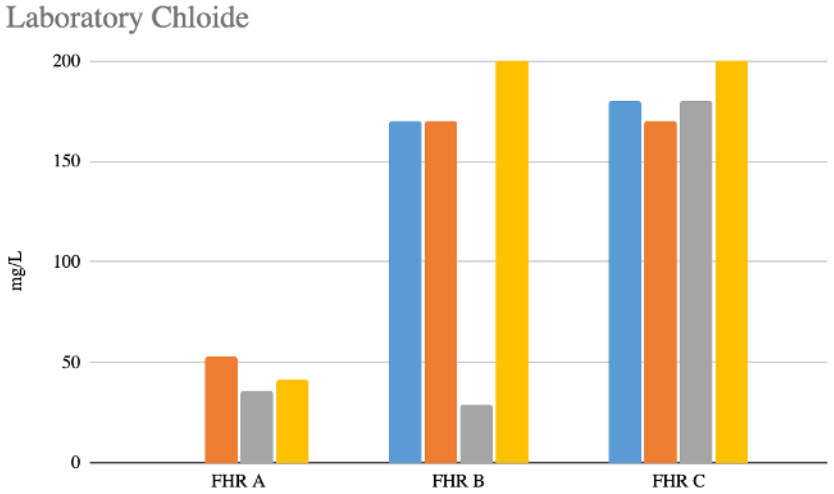
YANKEE RUN Field Chloride v. Lab Chloride



$R^2 = .9941$

FOREST HILLS RUN





6/30/2021 L
8/2/2021 L
8/23/2021 VH
9/7/2021 M

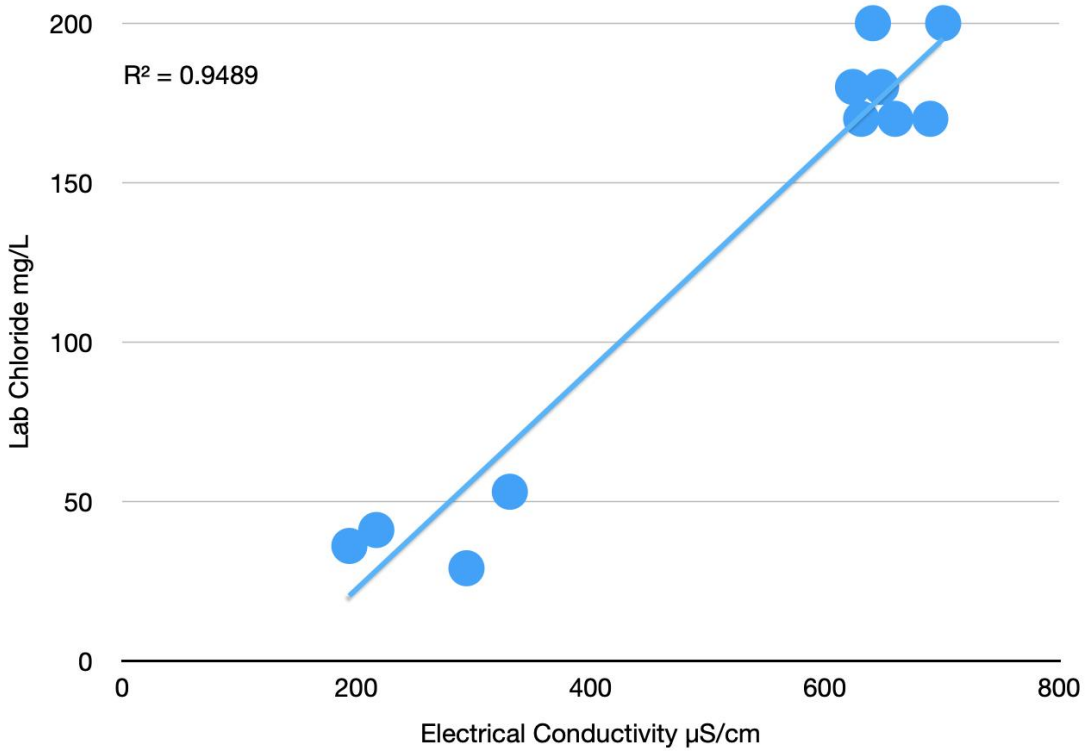
Monroe County Water Quality EC

Max: **280 uS/cm**
Average: **114 uS/cm**

Forest Hills Run EC

Max: **701 uS/cm**
Average: **512 uS/cm**

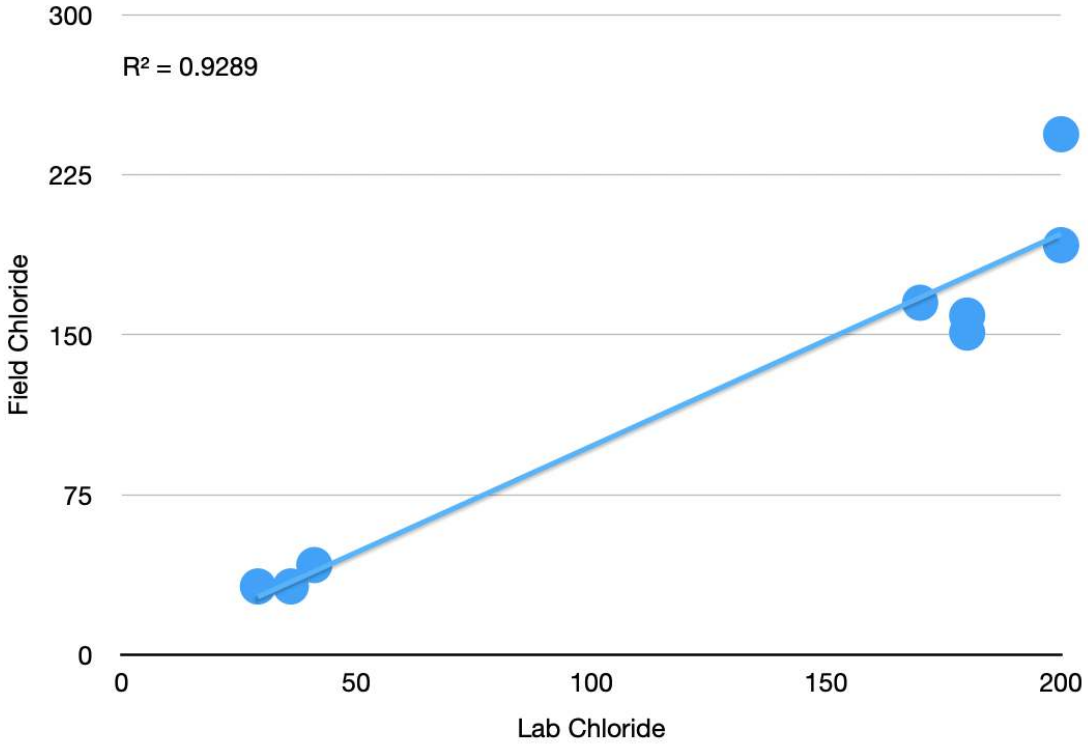
FOREST HILLS RUN Lab Chloride v. EC



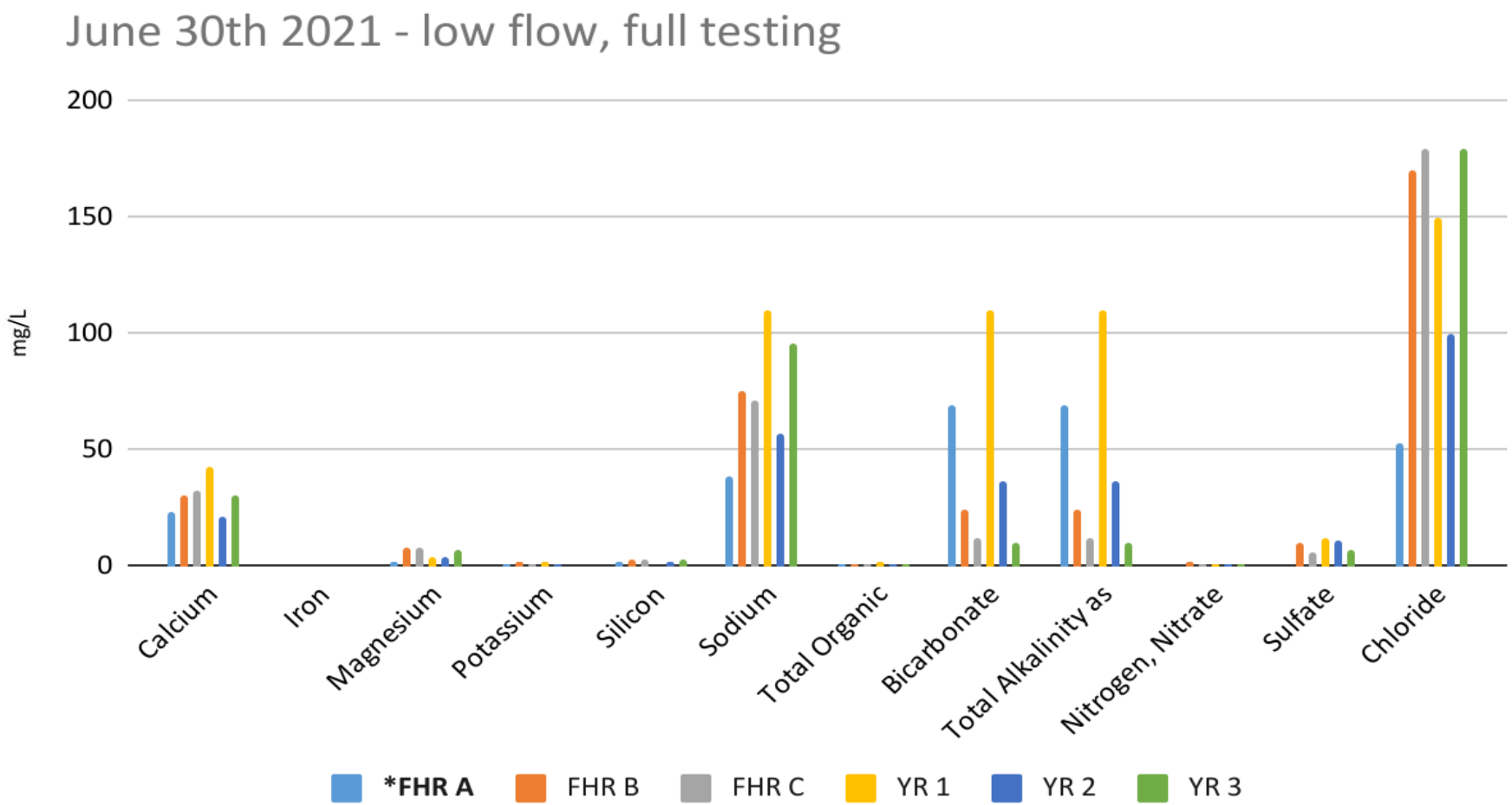
$R^2 = .9489$

FOREST HILLS RUN

Field v. Lab Chloride

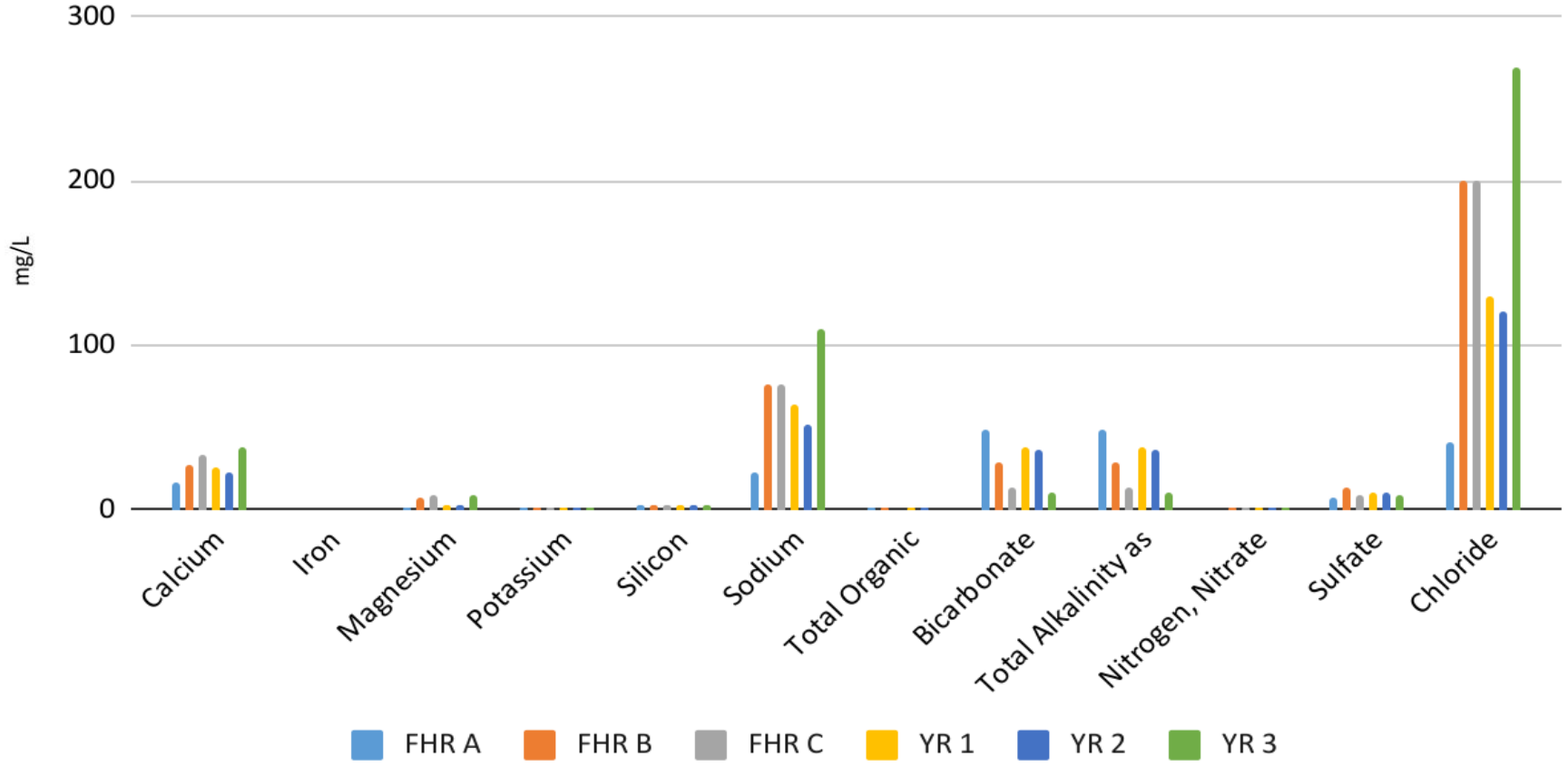


$R^2 = .9289$



*FHR A collected on **08/02/2021** under similar flow conditions

Sept. 7, 2021 - medium-high flow, full testing



SUMMARY OF PRELIMINARY FINDINGS

- Lab reports show elevated Chloride, Calcium and Sodium.
- Study suggests strong correlation between field conductivity and laboratory chloride
- Study suggests strong correlation between field and lab chloride
- EC and Cl- much higher than 2020 Monroe County Water Quality (MCWQ) average for 40 sites.
    - Highest is Cherry Valley, a high-alkalinity source
    - 2nd highest is Forest Hills Run