Great Swamp Watershed Association

2019 Water Quality Report Card
Keeping our waters clean for everyone

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Black Brook, White Bridge Rd
What GSWA Does

**Advocacy**
- Preserving open space
- Advocating for smart development
- Helping protect the waters of the Passaic River

**Under pinned with Water Quality**
- Visual Assessments
- *E. coli*
- Macroinvertebrate
- Chemical Monitoring
2019 Climate Effects

Rutgers State Office of Climatology Monthly Departures

**Temperature**

**Precipitation**

**NJ Monthly Temperature Departures (January 2019 – December 2019)**

Records based on observations dating back to 1856

- 4th warmest April
- 9th warmest September
- 5th warmest July
- 8th warmest October
- 5th warmest summer

**NJ Monthly Precipitation Departures (January 2019 – December 2019)**

Records based on observations dating back to 1856

- 9th wettest May
- 7th driest September

Month
2019 Water Quality Monitoring
Overview of parameters

- **Chemical Monitoring**
  - 4 times a year
  - Handheld meters
  - Lab analysis

- **Visual Assessments**
  - NJ DEP protocols
  - Spring and Fall
  - 22 sites

- **Bacteria Monitoring**
  - 21 sites
  - Five consecutive weeks July/Aug

- **Macroinvertebrate Sampling**
  - 12 sites

- **Microplastic Sampling**
  - 15 sites
Chemical Parameters

- pH
- Temperature
- Dissolved Oxygen
- Flow
- Nitrogen
  - Nitrate
  - Nitrite
  - Total Kjeldahl Nitrogen
  - Ammonia
- Phosphorus
  - Total Phosphorus
  - Soluble Reactive Phosphate
- Road Salt
  - Total Dissolved Solids
  - Sodium
  - Chloride
  - Conductivity
- Water Clarity
  - Turbidity
  - Total Suspended Solids
Chemical Findings in 2019

- Nutrient levels elevated during dry periods
- Passaic River below Millington gorge significant impacts moving downstream
- Dissolved oxygen impacted by warmer drier climate
- Road salts have seen a decrease overall
- Loantaka Brook-elevated salt numbers
Visual Assessments

- Twice a year
  - Spring and Fall
- Stream Team Citizen Scientists
- Now offering self-paced training on our web site
  - Parts 1 and 2
    - available
  - Part 3 and Self Quiz – Coming soon

Did you ever wonder how healthy the stream is that you like to walk along?

- Welcome to Part 1 of GSWA’s Stream Assessment Training Program
- Each part of the Assessment Program will cover a section of the NJDEP’s Habitat Assessment for High Gradient Streams – the form to follow can be downloaded here.
Visual Assessments 2019

- Wet weather and flooding in spring
- Increased erosion
  - Primrose Brook
  - Loantaka Brook
  - Great Brook
- Low water levels in the fall
  - Increased algae growth – Black Brook
E. Coli bacteria

- Indicator of fecal pollution
- Health implications
- Monitor sites watershed wide once yearly in summer over 5 weeks
- Sites selected represent areas where people or pets are likely to be in contact with water
- 2018 and 2019 Partnered with NJ DEP to collect samples in expanded areas along the Passaic
2019 Bacteria Results

- GSWA data
  - Weather had significant impact
  - Lower overall numbers
  - Third week significant rainfall
  - Spring Garden Brook
    - Follow up sampling for elevated numbers

- NJDEP Data
  - Continued joint sampling
  - Results pending
Results for Macroinvertebrates

- Overall averages went up
- Loantaka Brook
  - Significant decrease
- Silver Brook
  - Preliminary sampling
  - Diversity low
2019 Microplastics Pilot Study

- Worked with New Jersey City University for more in-depth analysis
  - Fenton Reaction Digestion of Organic Materials
  - Sub-sample – chemically analyzed to determine likely source of plastic
- Total of 17 sites
- Seven new locations (plus the Livingston site)
- Site selected upstream of locations with elevated numbers
2019 Microplastics Pilot Study

- Fewer large particles
- Increase in microfibers
- Low flow conditions
- Stormwater condition sampling postponed
Legislative Outreach

- Worked with Madison, Chatham, Morristown, Berkeley Heights
- Passed ordinances to reduce single use plastics
- Environmental Commissions
- Tabling and community outreach to educate the public
- Working with high school students
Moving Forward

- Continued downstream expansion
- Work with communities throughout the region on water quality issues
- Promote green infrastructure and smart development
- Protect and improve the waters all along the Passaic River
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- The Watershed Institute
- The Leavens Foundation
- Summit Area Public Foundation
- Allergan Foundation
- FirstEnergy Foundation

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Thank you!

- To GSWA staff
- To Stream Team Volunteers
- To generous donors
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