RRWA
Rahway River
WATERSHED ASSOCIATION

Rahway River Watershed Association

2018 WATER QUALITY REPORT CARD

Jackson Pond, Clark, NJ

Acknowledgements

The Rahway River Watershed Association's water quality monitoring program has been a dream for many years, and we gratefully acknowledge the generous help and support of many individuals and organizations for their roles in bringing this program to life.

We heartily thank The Watershed Institute for financial support and sharing the varied and indispensable expertise of their staff, Kimber Ray, Nicholas Ho, and Erin Stretz. We thank the Great Swamp Watershed Association, especially Sandra LaVigne, for leading by example. We thank Kimberly Cenno, Bureau Chief of NJDEP Division of Water Quality Monitoring and Standards and her staff at the Bureau of Environmental Analysis, Restoration and Standards, Jack Pflaumer and Biswarup Guha for help with accessing historical data. A special thank you goes out to Patricia Ingelido, Katie Harrison, Amanda Lotto and Americorps Watershed Ambassadors Chelsea Moxley and Jennifer Helminski, as well as their Union County host, Betty Ann Kelly, Environmental Specialist at Union County Department of Parks and Recreation. These individuals trained our Stream Team, helped set up our ArcGis system and answered a million questions along the way. We also thank Michele Bakacs of Rutgers Cooperative Extension, and our intern Erica Najar, for their input and support of our program. Finally, we sincerely thank the many members and volunteers who attended these training sessions and adopted monitoring sites along the river without whose participation, there would be no data to report.

Thank you!

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Executive Director, RRWA
Cover Photo by Jacki Dickert

Table of Contents

2018 WATER QUALITY REPORT CARD

Introduction to the Rahway River Watershed

The Rahway River runs for 24 miles through Essex, Union, and Middlesex counties, draining 41 square miles of land in 24 municipalities, as shown on the watershed map.

There are numerous public water supply wells throughout the watershed, and the river itself is the drinking water source for residents in the City of Rahway.

The river runs through heavily-settled areas, with both current and legacy industrial sites, yet much of it is bordered by riverside parkland and stocked with fish.

Our water monitoring program is aimed at engaging residents as citizen scientists to become stewards of their local waterway.

The Rahway River has four main branches: East, West, South, and Robinson's, and numerous tributary streams, and the river's drainage area is divided into 10 sub-watersheds. The Rahway River Stream Team volunteers choose monitoring sites upstream and downstream on each branch or tributary. This provides data specific enough to localize sources of pollution caused by drainage of lawn fertilizers, motor oil, trash, animal waste, and other non-point source pollutants.

Water quality in the main stem and most of the branches of the Rahway River is often below the level that is appropriate for its use. By visiting their adopted sites twice a year, Stream Team volunteers provide data that can be used by the NJ Department of Environmental Protection to address problems with the quality and quantity of water in this system.

The Rahway River Watershed Association's Water Quality Monitoring Program

The Association is very excited to be deploying our pilot water quality monitoring program this year. All data contained in The 2018 Water Quality Report Card has been collected by staff

and volunteer citizen scientists. Three training sessions, given by NJDEP AmeriCorps Watershed Ambassadors, prepared our Stream Team to adopt and monitor locations along the river. Our method aligns with the NJDEP Habitat Assessment protocol. For a description of parameters used please refer to the "How Water Quality is Measured" section later in this report. Locations are scouted, chosen, named, adopted, and plotted on our ArcGis map. As data is collected, it will be added to our online account and available to the public.

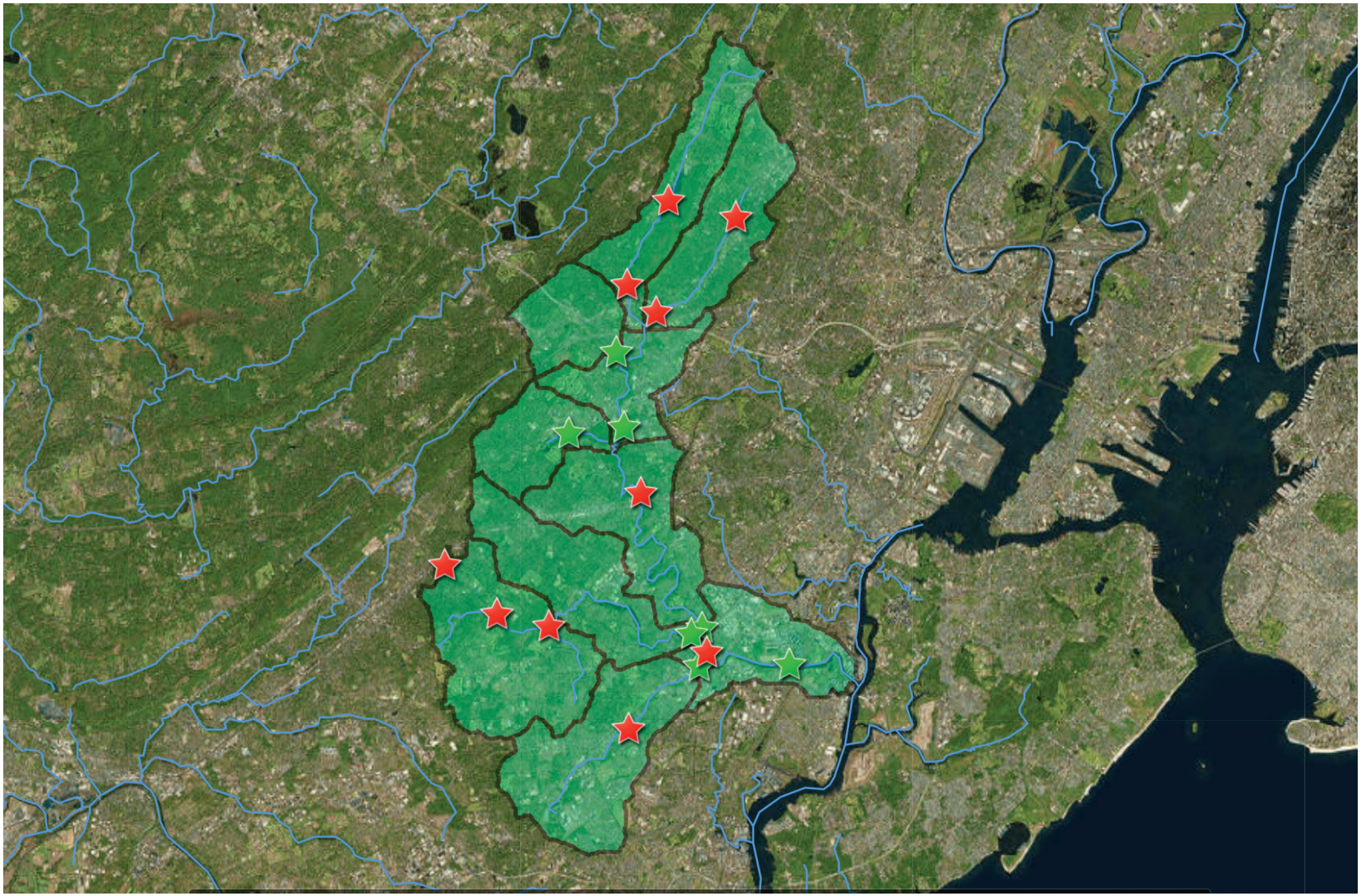
We are also including some legacy data in this report to provide a historical baseline for current and future data. As our program progresses and grows, we will be able to show trends in water quality and potentially identify problem areas.

Given this is our first year, monitoring locations and data collected are minimal. It will be several years before trends can be observed. As we grow into the program, upstream and downstream locations for each major branch and

tributary of the Rahway River will be sampled. This year we are performing Visual Assessments only. Next year we plan to add Macroinvertebrate sampling, and chemical analysis starting in 2020.

Add map of sampling locations (whole next page)

Map of Monitoring Locations along the Rahway River



Members of The Rahway River Waershed Association Stream Team in Action

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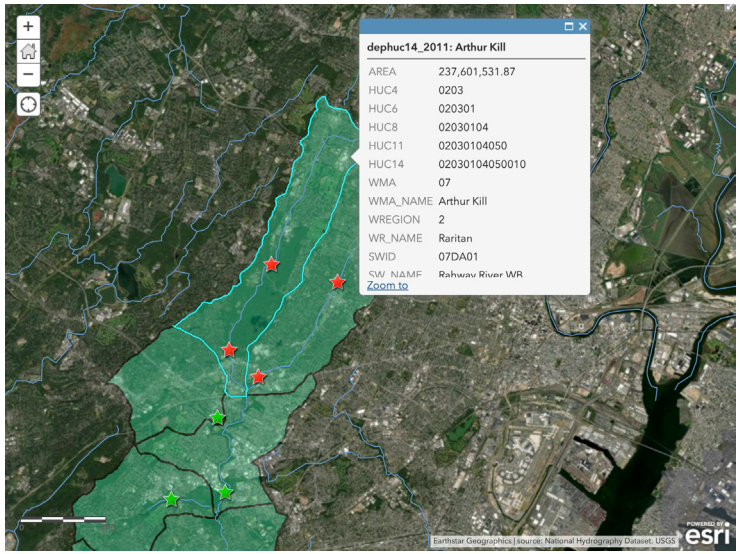
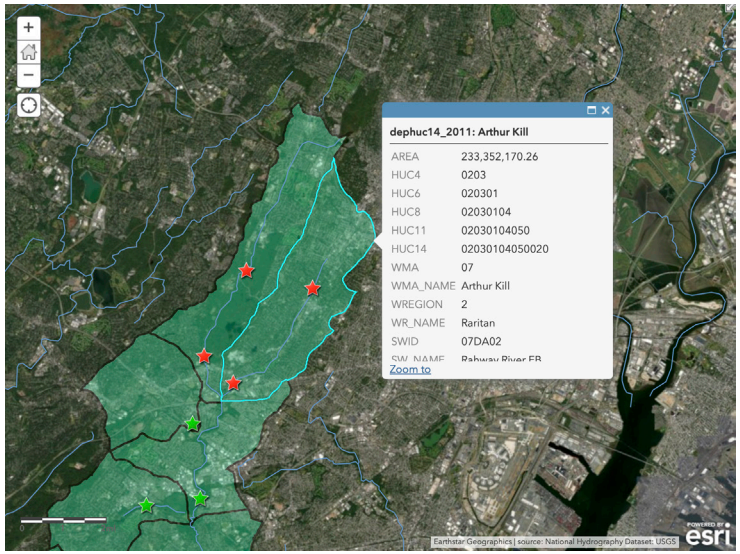


West Branch

Location: RRWA-010-DS

Date: 7/26/18
Water Quality Score: 119 (Sub-optimal)

Date: 10/26/18
Water Quality Score: 127 (Sub-optimal)

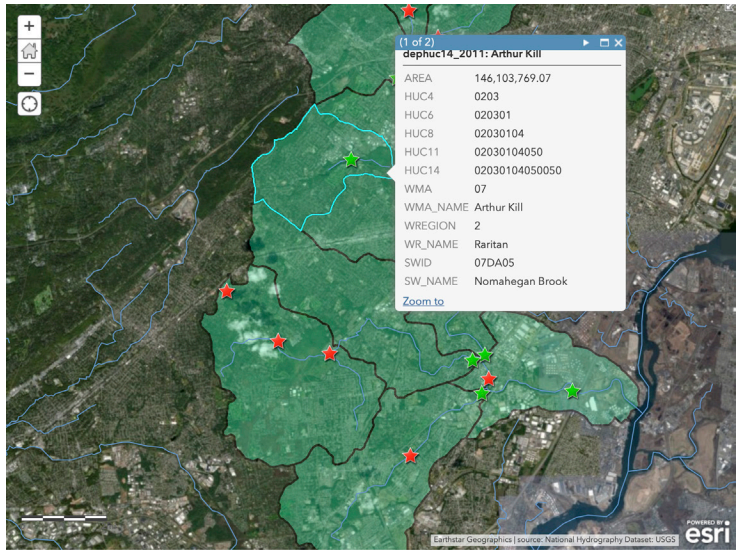


East Branch

Location: RRWA-020-DS

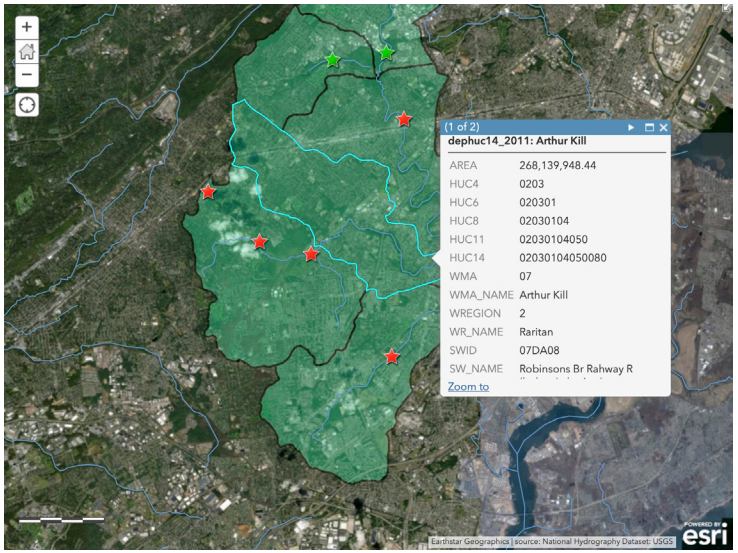
Date: 7/17/18
Water Quality Score: 103 (Sub-optimal)

Date: 11/7/18
Water Quality Score: 114 (Sub-optimal)



Nomahegan Brook

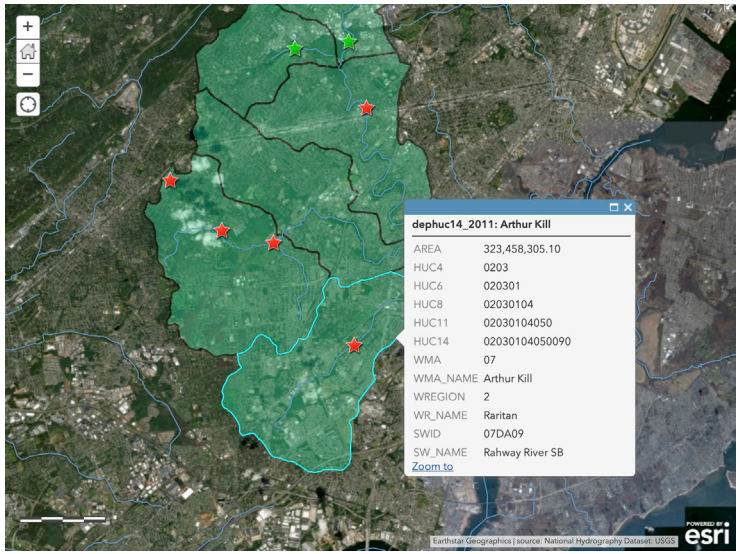
No data



Robinson's Branch

No data

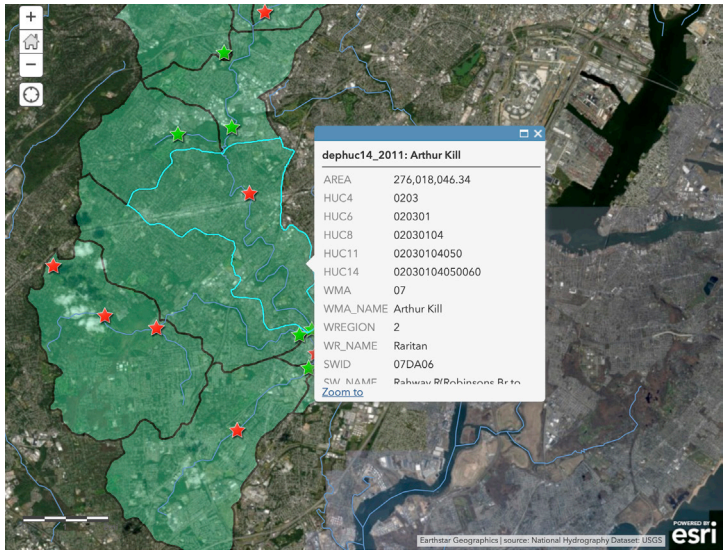
2018 WATER QUALITY REPORT CARD



South Branch

Location: RRWA-070-US

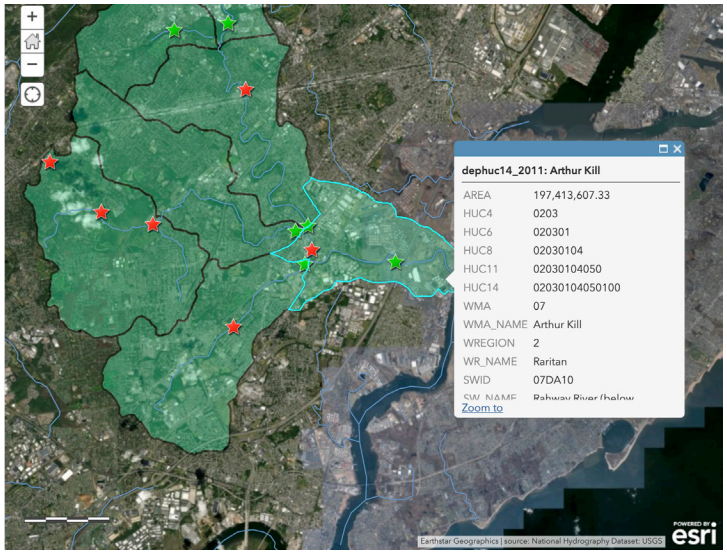
Date: 11/2/18
Water Quality Score: 122 (Sub-optimal)



Main Stem

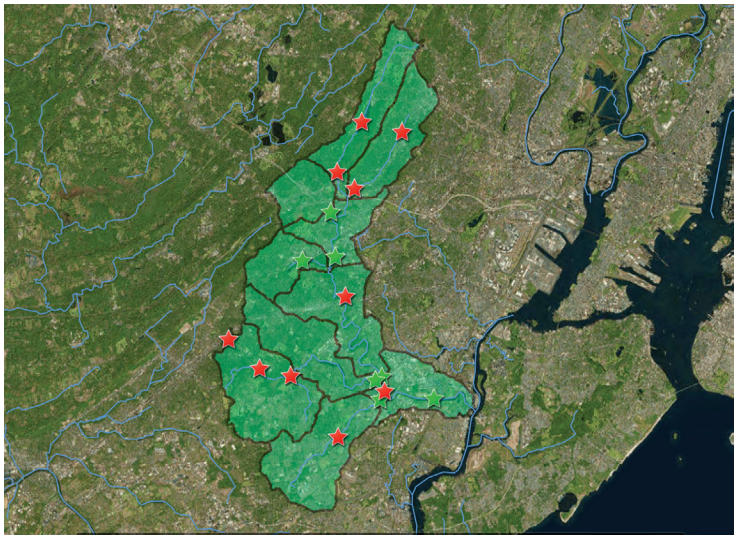
(From the intersection of the East and West Branches to the South Branch)

No data



Lower Rahway

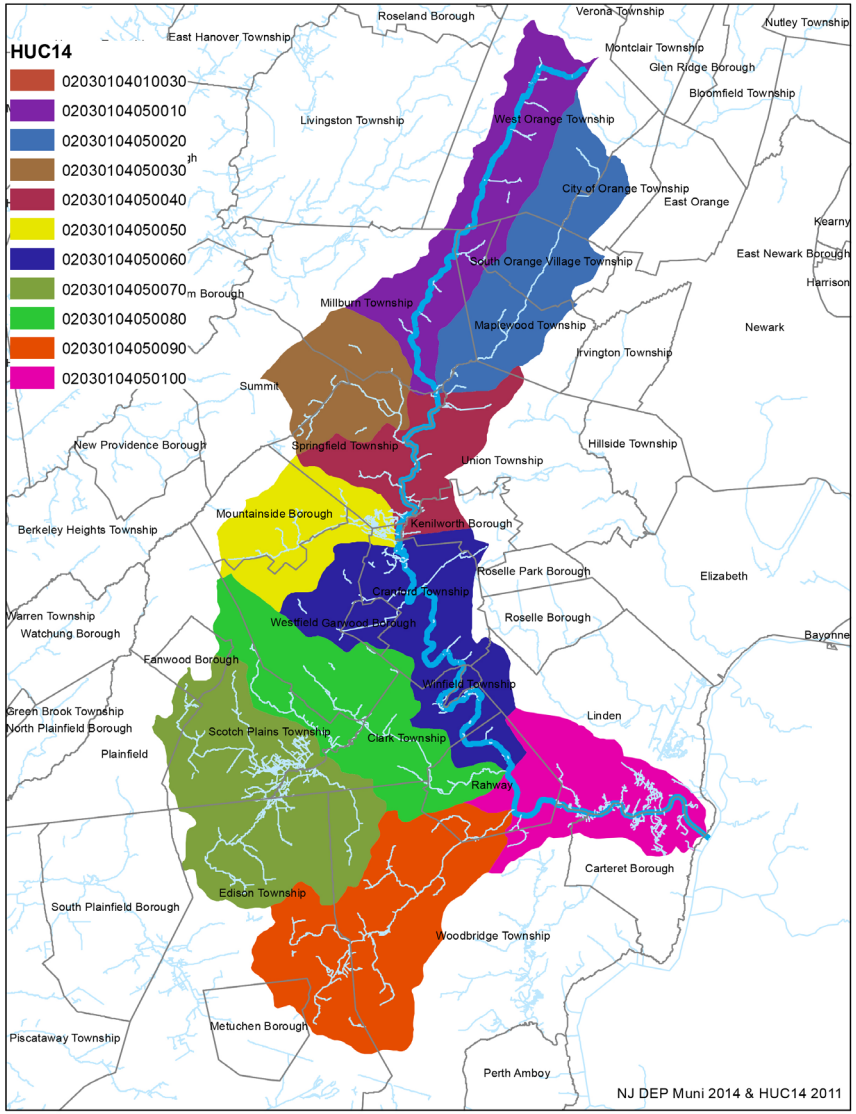
No Data



Entire Rahway River Watershed

There is insufficient data to provide an accurate score for the current status of water quality in the watershed, however based on preliminary findings and historical data, it would be safe to assume water quality could be considered sub-optimal in most, if not all, areas.

Legacy Report



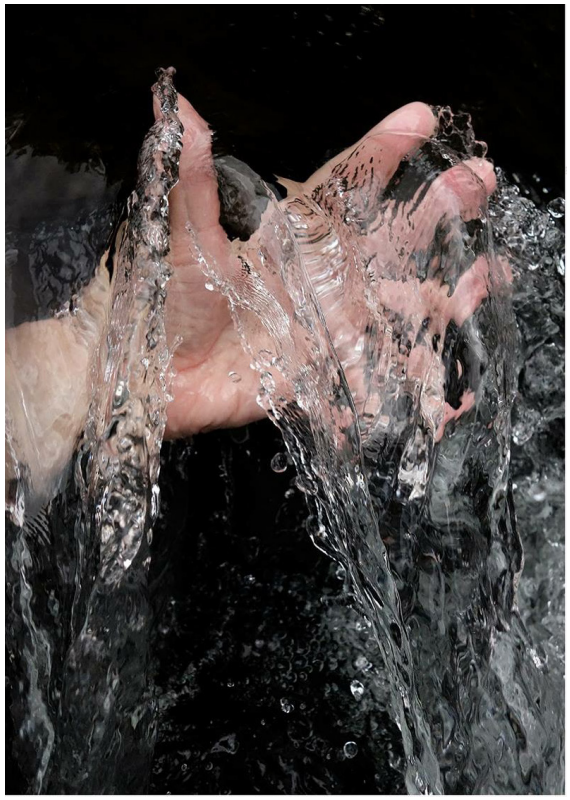
Water monitoring throughout New Jersey has been required since 1975 for compliance with the federal Clean Water Act. Since the beginning and on into the present, much of the water that flows into the Rahway River is polluted by fecal bacteria and phosphates. Both of these enter the river through storm drains when rain or melting snow carries pet waste and lawn fertilizer into the storm sewers. Regulating this storm water pollution is more challenging than correcting waste water pollution that comes out of a pipe. Waste water discharges are tightly regulated in New Jersey, but curing storm water pollution requires self-regulation of our own behavior. See our Water Quality Assessment Report for more informaiton.

Art can make you smart. Can you explain the point of these pictures?

How Water Quality is Measured

Visual Assessments are a way of determining the condition of a stream segment that cannot be easily measured quantitatively. A range of topics are covered, among others, tree canopy cover over the stream, the presence of suitable habitats for aquatic life, and nearby land uses which might impact water quality.

Water Clarity should be high to allow the plants living in the stream to thrive. Underwater plants serve many purposes in a stream ecosystem, from providing food for animals to oxygenating the water. However, plants need sunlight in order to thrive, and muddy, opaque water does not let light in. Additionally, poor water clarity frequently is a sign of excess sediment which can impact aquatic life by burying stream bottom habitat and making it harder for aquatic life to survive. To help improve water clarity, you can allow natural vegetation to grow along stream banks by planting trees and shrubs or simply reducing or eliminating mowing there. Taller vegetation acts as a filter, catching sediment before it enters the stream. If you have large areas of exposed soil due to construction, use silt fencing to keep it in place.



Water Temperature is critical because the fish, amphibians, and invertebrates that live in streams are cold-blooded, and the temperature of the stream can dictate whether they can survive and thrive. Different species of fish live best in different temperatures of water, and water that is consistently too hot or too cold for the native fauna will not support an ecosystem well. For example, trout are very sensitive to water temperature and cannot live in streams that are too warm. High water temperatures can also decrease dissolved oxygen levels, further negatively impacting aquatic life. To decrease water temperatures, trees and shrubs should be planted along streams to provide shade.

Conclusions

Much was learned as a result of our first year monitoring the water quality of the Rahway River. First off, it was great fun connecting with people from around the watershed for training and stream side assessments. Bonds were forged and relationships strengthened. This project has required input and participation from various individuals in a host of organizations and government agencies. Year one saw the creation of the RRWA ArcGis account, locations map of monitoring locations, and a new system for recording and presenting data. We are looking forward to continue our work in order to expose trends and locate possible problem areas along the river.

For the most part the project went off well and as planned. If there is anything to be learned, it would be that training sessions should be done early in the season and a start and end date for assessments should be offered. This would insure volunteers do their monitoring on a regular basis and in a timely manor. Consistency is important to provide enough ongoing data so that trends can eventually be determined. There were a few inconsistencies in data because of incomplete information or variations in parameters measured, including stream length and precision of monitoring location. This can be fixed by making sure the Stream Team is trained thoroughly and consistently.

As far as input and recording of assessment data, with the generous help of the NJDEP and the Watershed Institute, the RRWA is well on our way to developing a reliable method for storing, presenting and reporting water quality monitoring results using ArcGis. It will be rewarding to put a few more seasons under our belt so we will have the necessary data to identify trends, effect change and take action that will result in improvements in the quality of water in the Rahway River.

The RRWA is looking forward to growing our Stream Team and continuing to expand the program by including benthic macroinvertebrate and chemical monitoring in 2019 and beyond.