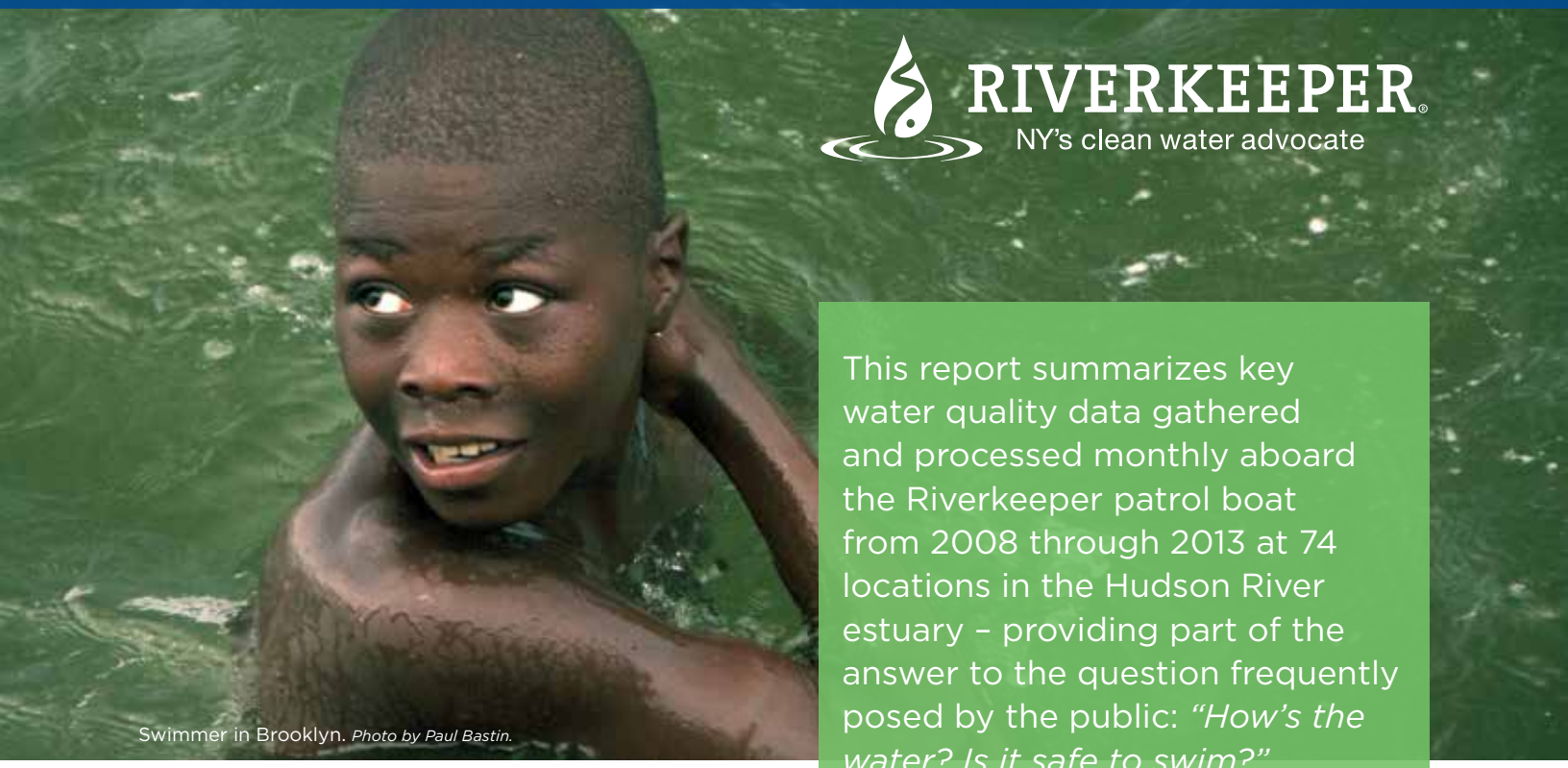
HOW'S THE WATER? 2014

Water Quality Monitoring, Fecal Contamination and Achieving a Swimmable Hudson River



Swimmer in Brooklyn. *Photo by Paul Bastin.*

RIVERKEEPER®
NY's clean water advocate

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EXECUTIVE SUMMARY

From New York Harbor to the Capital District, the Hudson River estuary serves as a public beach. Thousands participate in organized swim events, and thousands upon thousands more swim, boat, fish and play in the waters of the Hudson and its tributaries. *Yet, in most of the river, the frequency and location of water quality testing is insufficient to protect public health.*

This report summarizes key water quality data gathered and processed monthly aboard the Riverkeeper patrol boat from 2008 through 2013 at 74 locations in the Hudson River estuary – providing part of the answer to the question frequently posed by the public: *"How's the water? Is it safe to swim?"*

The Hudson River study is designed and conducted in partnership with scientists from CUNY Queens College and Columbia University's Lamont Doherty Earth Observatory.

Many areas will fail to meet criteria for safe recreation unless pollution is reduced, according to a reanalysis of our data using the EPA's new 2012 Recreational Water Quality Criteria – the first update in nearly 25 years to the tools states should use to protect people where they swim.

If New York implements EPA criteria as recommended, the public will benefit from better notification when water is contaminated, better regulation of pollution, and improved water quality. The EPA guidelines highlight the need for states to protect the public *not only at official swimming beaches, but throughout all our rivers and estuaries.* Importantly, the EPA recommends the use of three distinct water quality assessment tools to measure both the frequency and degree of fecal contamination.

(Continued inside)

In many locations on the Hudson, in dry weather, the water meets EPA-recommended safe-swimming guidelines. **But overall, 23% of Riverkeeper's water samples would have resulted in the closure of swimming areas if managed according to EPA guidelines – and more than half of our study sites (61%) failed to meet new EPA criteria for safe recreational water.** The failure rate is significantly higher in our tributaries, at sewage treatment plant outfalls and after rainfall.

Riverkeeper's Water Quality Program has energized a movement to make the Hudson River safe for swimming, and influenced key decisions to invest in public wastewater infrastructure. There has been significant progress on many of our Action Agenda goals in recent months, including:

- *More than $3 billion has been committed to public infrastructure projects to reduce sewage contamination* in New York City, the Capital District and Westchester County.
- In the Sewage Pollution Right to Know law's first year, publicly owned sewage treatment plants reported 1,600 discharge events – accounting for *hundreds of thousands of gallons of sewage dumped into our waterways*. This reporting is helping to identify where sewage infrastructure is most in need of upgrades and to better inform the public when and where contamination occurs.
- To better understand the contamination affecting Hudson River tributaries, *more than 60 citizen scientists working with Riverkeeper sampled 84 locations on seven tributaries in 2013* – 165 miles of water in all. Data from these citizen science projects are presented in this report for the first time.

In the coming year, the public will have the opportunity to contribute in several meaningful ways to this progress. New York State will propose its first update to safe-swimming standards in nearly 30 years, and complete the implementation of the Sewage Pollution Right to Know Law. The public's voice will be key to ensuring that both initiatives protect and inform people to the greatest extent possible.

Please visit riverkeeper.org/water-quality to read the full report, find data for each sampling site, and sign up to receive updates by e-mail.

SUMMARY OF OUR KEY FINDINGS

1. **Fecal contamination varies from location to location.**
   For instance, 55% of samples at the confluence of the Saw Mill River and the Hudson failed, while just 5% of samples nearby in the mid-channel failed.
   Importance: Localized problems often have local solutions.

2. **Fecal contamination varies over time at all locations.**
   Repeated testing demonstrates high water quality variability at many sites, showing that the risk to recreational users changes dramatically from day to day.
   Importance: Frequent testing, modeling and notification are needed to inform and protect the public.

3. **Sites vary in both the degree and frequency of fecal contamination.**
   Some study sites were frequently contaminated but the degree of contamination did not exceed acceptable levels by much. Then there are sites with infrequent contamination, but a high degree of contamination and therefore a large public health risk if people entered the water on the wrong day.
   Importance: Multiple water quality assessment tools are needed to protect public health.

4. **Rainfall is a common trigger of fecal contamination.**
   The failure rate at our Hudson River sample sites in dry weather was 12%, but rose to 34% after recent rain.
   Importance: We must better manage stormwater, sewer and septic systems, and agricultural practices.

5. **Shorelines and tributaries often have more fecal contamination.**
   The failure rate in tidal tributaries – 34% – and at sewage treatment plant outfalls – 30% – exceeded the mid-channel failure rate. The failure rate in non-tidal portions of tributaries was higher still.
   Importance: To protect the public, test in the full range of places where people use the water.

HUDSON RIVER TRIBUTARY CITIZEN SCIENCE DATA

Each month, Riverkeeper and our science partners sample 16 sites in the tidal portions of tributaries. At these tributary sites, 35% of samples exceeded the EPA-recommended guidelines for safe swimming from 2008-2013. The failure rate increases more than threefold after wet weather.[13]

To understand what is causing contamination in our streams, brooks and creeks, we have initiated several ongoing, multi-year studies in cooperation with citizen scientists to sample monthly in several tributary watersheds – the Sparkill Creek, Pocantico River, Wallkill River, Rondout Creek, Esopus Creek and Catskill Creek. (A seventh, the Sawyer Kill, was also sampled in 2012 and 2013.) In 2013, more than 60 citizen scientists helped sample 84 locations on more than 160 miles of water.

While the tributary studies were designed to yield data consistent with the Hudson River study, it is important to note that they are different studies.

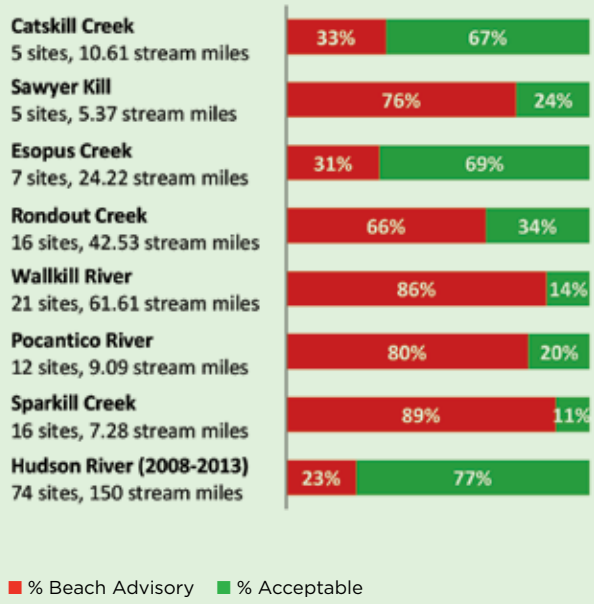
In the non-tidal portion of the tributaries where citizen scientists gather data for processing aboard the Riverkeeper patrol boat, we have documented a higher frequency of fecal contamination than we find in the Hudson, or in the tidal portion of the same tributaries. **Many of these tributaries are more contaminated than the Hudson River, and as such, they are a source of pollution to the river.**

The sources of contamination may be significantly different in some tributary watersheds than in the Hudson itself. Under-designed or unmaintained septic systems, wildlife, agricultural practices or contaminated sediment may be important factors. Low volume and flow may also play a role. While SSO discharges may be a significant source of contamination in some areas, there are few if any CSO outfalls on the non-tidal portions of these tributaries.

Local communities are using this information to find and stop illicit sewage discharges, drive investment in wastewater infrastructure, and notify the public about water quality conditions. We are planning new citizen science partnerships, and will continue to support local efforts to improve water quality.

Sampling began on some of these tributaries in 2010 (Esopus, Pocantico) and 2011 (Catskill, Sparkill). For a clear comparison, the chart below shows only data collected in 2012 and 2013, when monthly sampling was taking place on *all* of the tributaries listed. The tributary data presented here is for the non-tidal portion of these waterways. The tidal portions of tributaries are part of the Hudson River Estuary; samples in the tidal portion of the Catskill, Esopus and Rondout creeks are included within the Hudson River data.

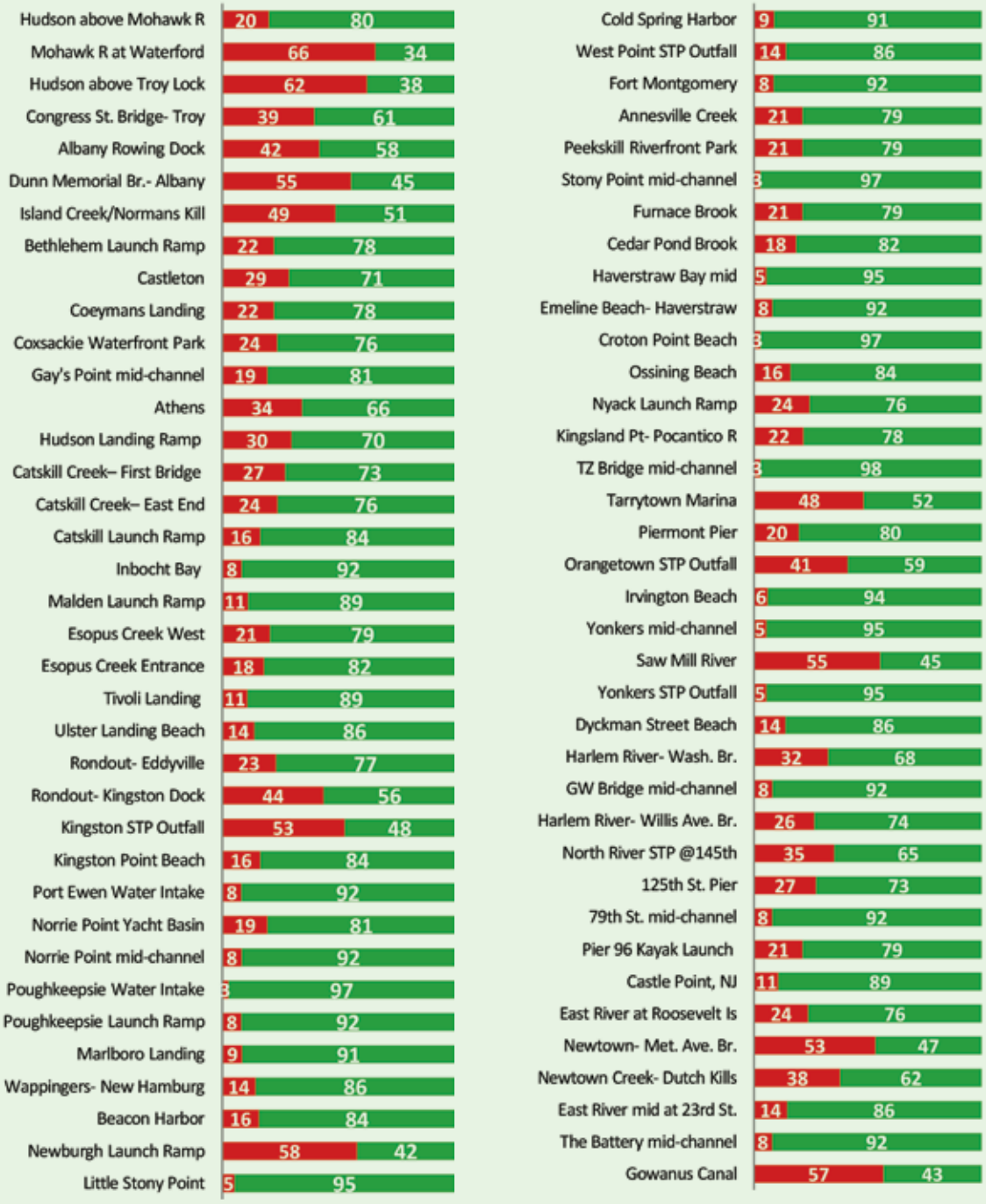
TRIBUTARY SAMPLING DATA



Visit www.riverkeeper.org/water-quality/citizen-data to view data for each site tested.

RIVERKEEPER'S HUDSON RIVER MONITORING RESULTS, 2008-2013

Red bars show the percentage of samples that would have resulted in closure of a swimming area managed according to EPA guidelines.



STP = Sewage Treatment Plant

■ % Beach Advisory ■ % Acceptable

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