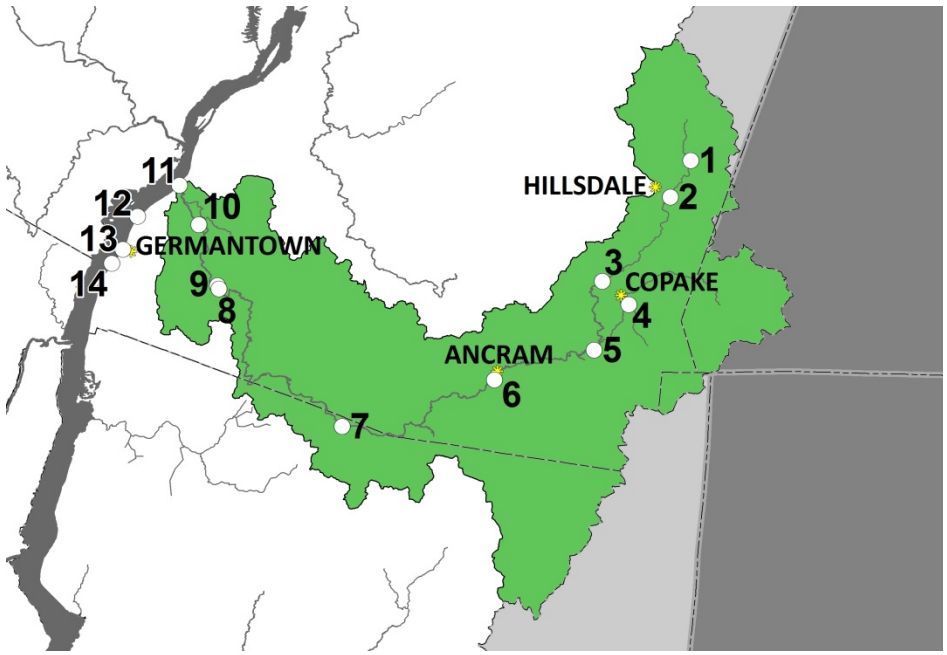
RIVERKEEPER
NY's clean water advocate

COMMUNITY WATER QUALITY MONITORING RESULTS

ROELIFF JANSEN KILL
2016



OVERVIEW

Riverkeeper and our partners have been testing the Hudson River and its tributaries for the fecal-indicator bacteria *Enterococcus* ("Entero") since 2006. Sources of fecal contamination may include sewage infrastructure failures, sewer overflows, inadequate sewage treatment, septic system failures, agricultural runoff, urban runoff, and wildlife.

In 2016, we began working with the Roe Jan Watershed Community (www.roejanwatershed.org) and the Bard Water Lab to conduct testing in the Roeliff Jansen Kill. Samples were collected monthly (May to October) at 14 watershed locations by Roe Jan Watershed Community members and local residents, and processed by the Bard Water Lab. A total of 84 samples were analyzed in 2016.

This water quality monitoring study is designed to learn about broad patterns and trends. The data can help inform choices about recreation in the creek, but cannot predict future water quality at any particular time and place.

All results will be available at www.riverkeeper.org/water-quality/citizen-data/roeliff-jansen-kill soon.

WATERSHED SNAPSHOT

These results are for non-tidal sites only.

As measured against the Environmental Protection Agency's recommended Beach Action Value for safe swimming:

12%
of Roeliff Jansen Kill samples failed.

As measured against the EPA's recommended geometric mean (GM, a weighted long-term average) criterion for safe swimming:

EPA GM threshold	Roe Jan GM
30	**24.8**
cells/100 mL	cells/100 mL

3 Best Sites

- Livingston- Above/Below Bingham Mills (#8, 9)
- Germantown- Sportsmen's Club (#10)
- Hillsdale- Collins St Extension (#1)

3 Worst Sites

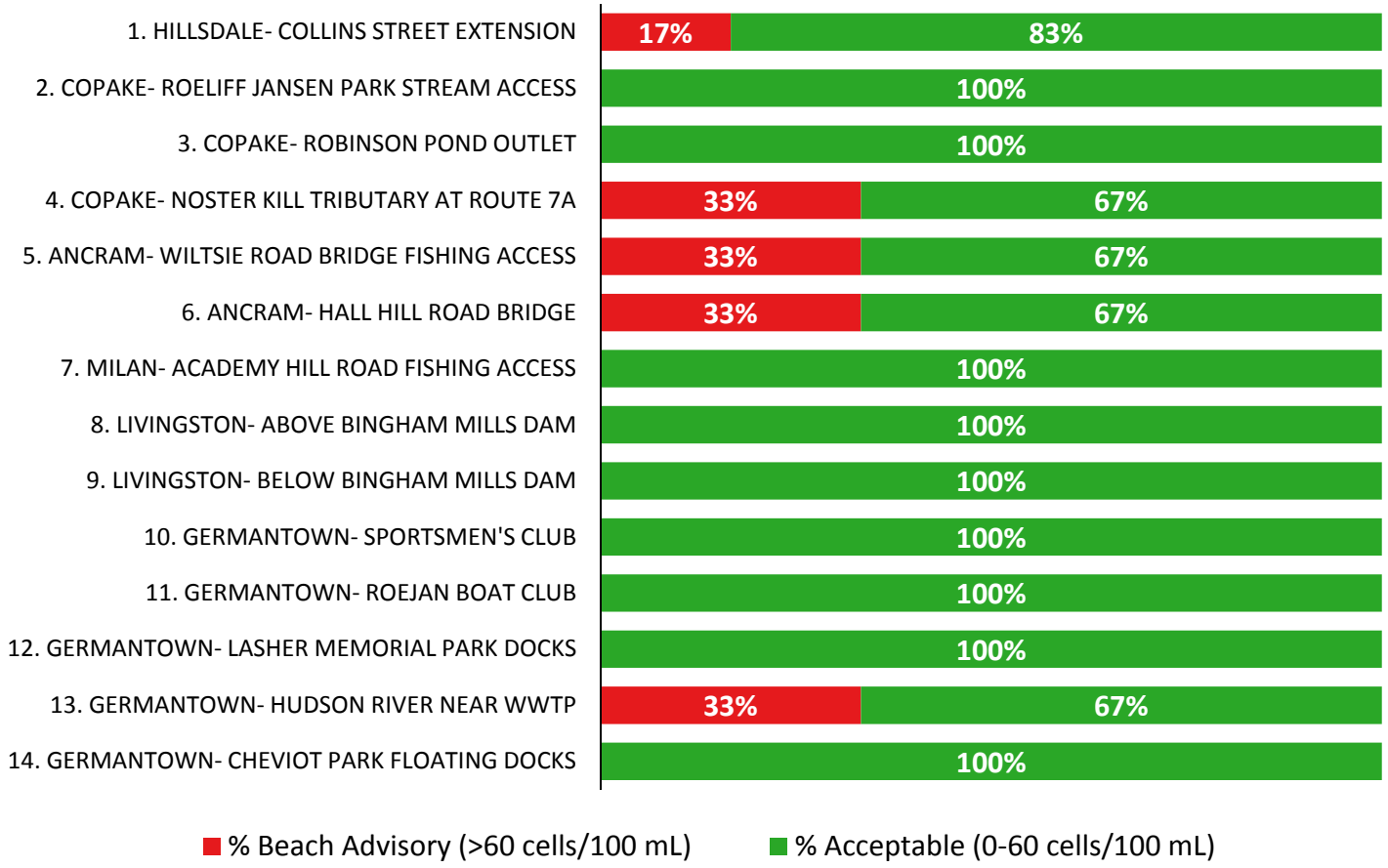
- Ancram- Hall Hill Road Bridge (#6)
- Copake- Noster Kill trib at Route 7A (#4)
- Ancram- Wiltsie Road Bridge fishing access (#5)

DAY-TO-DAY WATER QUALITY

Riverkeeper assesses water quality using the EPA's science-based 2012 Recreational Water Quality Criteria, which define recommended concentrations of Entero per 100 ml of water ("Entero count") consistent with "primary contact recreation." This includes swimming, bathing, water play by children and other activities where ingestion of water or full immersion of the body is likely.

In this figure, the red bar shows the percentage of samples at each sampling site that have exceeded an Entero count of 60, the EPA-recommended Beach Action Value. Above this level, the EPA recommends public notification, and possible temporary beach closure.

PERCENTAGE OF ROELIFF JANSEN KILL SAMPLES EXCEEDING EPA'S BEACH ACTION VALUE, 2016



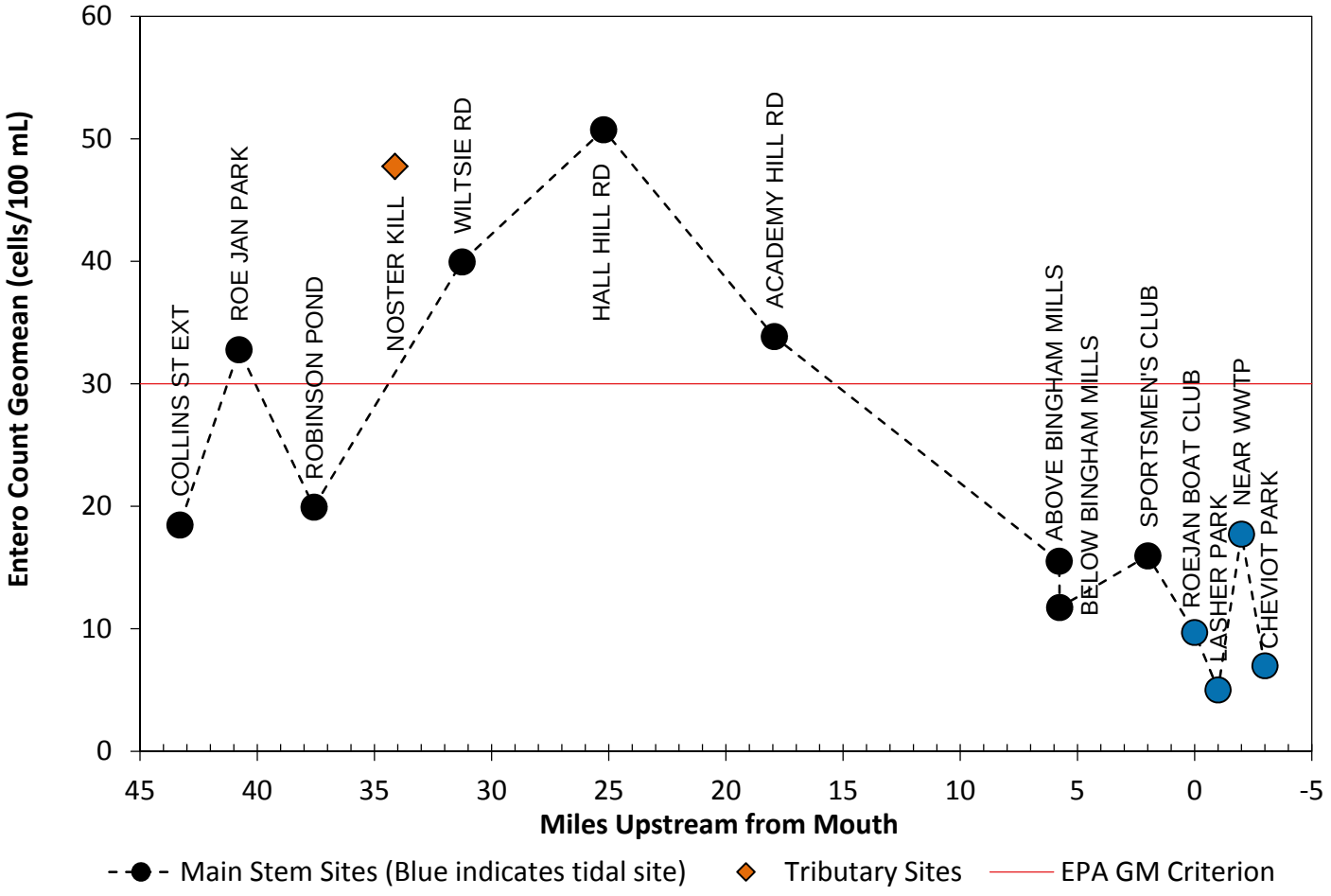
WHAT DO THESE RESULTS MEAN?

Comparing sample results to the BAV gives information about day-to-day water quality. Nearly all the times we sampled, at nearly all locations, water quality was suitable for swimming and other primary contact. Sites with multiple exceedances have intermittent fecal contamination problems.

WATER QUALITY OVER TIME

The Geometric Mean (GM) describes the maximum allowable average Entero count to protect swimmers' health, as measured over time at any given location. Water at a site with a high GM has a high average level of contamination. To avoid exposure to chronic contamination, the GM, a weighted average, should not exceed 30. EPA recommends weekly sampling. Over time, monthly sampling should reveal similar information. If a site's GM exceeds 30, steps should be taken to reduce contamination.

GEOMETRIC MEANS AT ROELIFF JANSEN KILL SAMPLING LOCATIONS, 2016



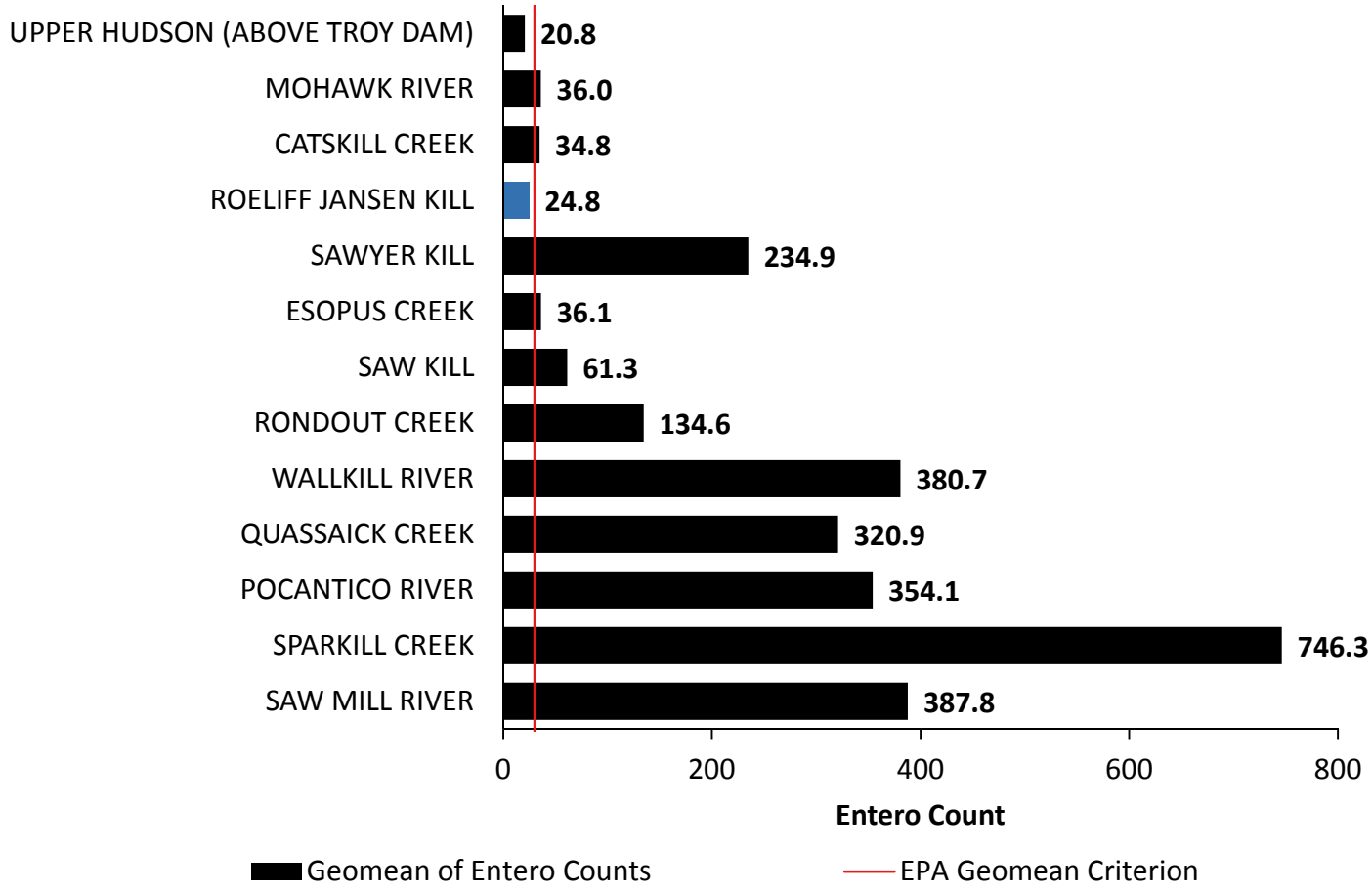
WHAT DO THESE RESULTS MEAN?

The average water quality at Roeliff Jansen Kill sampling sites varied from source to mouth. The GM (this figure) gives us information about long-term water quality, and points out different problems than the BAV (page 2). Sites with GMs over the threshold have chronic fecal contamination, rather than intermittent spikes. More sampling is needed, including wet weather samples (see page 5) to better understand contamination patterns in the Roe Jan watershed.

HOW DOES THE ROE JAN COMPARE WITH OTHER HUDSON TRIBUTARIES?

Overall, our sampling data shows that water quality in tributaries is worse than in the Hudson River Estuary, and that tributaries are contamination sources to the Hudson. Average water quality varies among tributary watersheds. The figure below shows the Geometric Mean (weighted long-term average) of all sample results for all non-tidal sites within each watershed studied to date. Date ranges vary.

GEOMETRIC MEANS OF ALL SAMPLES FROM NON-TIDAL SITES IN ALL TRIBUTARIES SAMPLED, 2010-2016



All samples were processed by Riverkeeper except as follows. Mohawk River samples processed by SUNY Cobleskill and Riverkeeper. Roeliff Jansen Kill and Saw Kill samples processed by Bard Water Lab. Quassaick Creek samples processed by EnviroTest. Pocantico River (2016), Sparkill Creek (2016), and Saw Mill River samples processed by The Sarah Lawrence College Center for the Urban River at Beczak.

WHAT DO THESE RESULTS MEAN?

The Roe Jan's overall contamination level is among the best Riverkeeper and partners have measured. Most sites meet EPA's criteria for day-to-day and long-term water quality (pages 2& 3). Where contamination is present in dry weather, sources should be identified. However, without samples taken after rainy weather, we lack an important part of the picture (see next section).

STORMWATER AND FECAL CONTAMINATION

In combined sewer systems, heavy rains trigger releases of untreated sewage directly into waterways. Even in systems that separate stormwater and wastewater, infiltration of rain into the wastewater system leads to infrastructure failures during wet weather. Surface runoff can also deliver fecal contamination to streams. Our sampling results show that Entero counts increase after rain. None of the Roe Jan samples collected in 2016 were taken after significant rain, so the existing data summary is a partial picture of conditions in watershed. Wet weather samples will likely increase GMs, and may not affect all sites equally.

COMMUNITY SCIENCE HAS IMPACT

In 2015, Riverkeeper submitted community monitoring data to the NYS DEC, to ensure that it factored into the state's water quality assessment and regulation. These data will help DEC determine where to target its routine monitoring of diverse water quality parameters, set to take place in the Hudson Valley in 2017-2018. The data also resulted in new listings of fecal contamination in the statewide water quality inventory, and more yet to be released. These listings will give affected municipalities more competitive standing for when applying for federal and state water quality improvement grants. Riverkeeper's data and advocacy contributed to the establishment of the NY Water Grants program, which has allocated $400 million for community infrastructure grants available since 2015.

WHAT YOU CAN DO

Riverkeeper's water quality sampling program relies on scores of samplers to collect water samples. But the data is only a starting point. Documenting problems is the first step, but solutions require many people working locally. You can organize stream walks, test water flowing from outfalls, contact those responsible for our infrastructure, and spread the word. Reach out to your local municipality, or work with your CAC/ECC or watershed group. Riverkeeper has resources for support, but we need your help!

NEXT STEPS FOR RIVERKEEPER

In 2016, Riverkeeper sampled or supported 16 tributary and shoreline sampling projects, in addition to our longstanding Hudson River Estuary monitoring project. With our organizational partners, we sampled 411 locations over 795 river miles, from Lake Tear of the Clouds to NY Harbor. In addition to Entero, we and our partners measured wastewater tracers (sucralose and caffeine); micropollutants such as pharmaceuticals, pesticides and industrial compounds; and parameters related to wastewater pollution, like nutrients and dissolved oxygen. In 2017, Riverkeeper will continue working with our network to monitor water quality in even more streams, and will collaborate with researchers on several Entero source tracking projects. This work is made possible by many funders, including the NYS Environmental Protection Fund through the Hudson River Estuary Program of NYSDEC.

For more information visit www.riverkeeper.org/water-quality/citizen-data