

How's the Water?

Riverkeeper's Water Quality Monitoring Results



Southeast NY Stormwater Conference

Dan Shapley
Water Quality Program Manager



HOW'S THE WATER?

- About Riverkeeper
- About Our Water Quality Studies
- Major Findings
- Potential Sources
- What We Can Do





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NY's clean water advocate

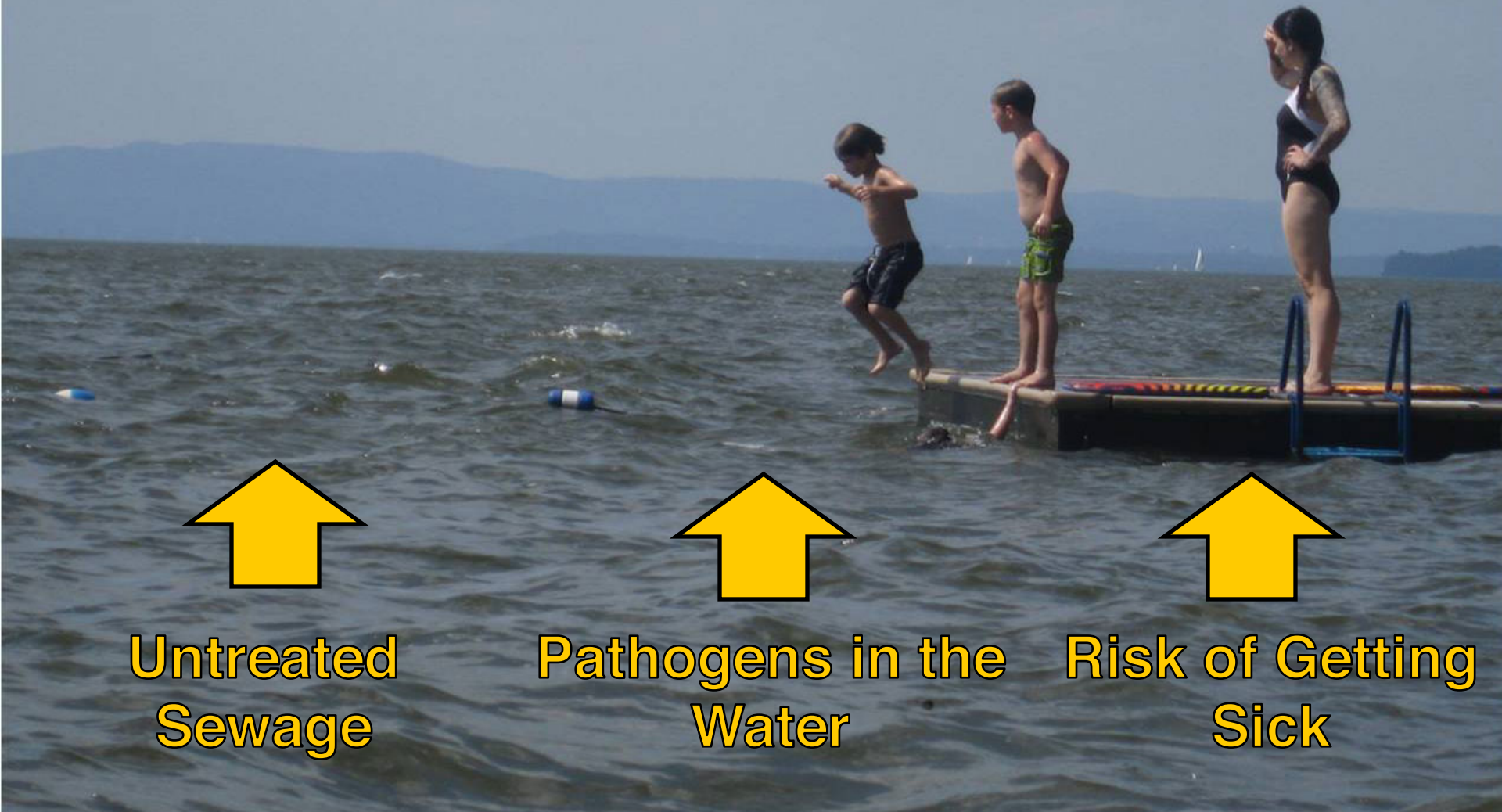


WHAT MAKES WATER UNSAFE FOR SWIMMING?



RIVERKEEPER.
NY's clean water advocate

WHAT MAKES WATER UNSAFE FOR SWIMMING?



Untreated
Sewage



Pathogens in the
Water



Risk of Getting
Sick

WHERE WE TEST

Hudson River Estuary

74 locations

150 miles

2008-present

CUNY Queens &
Lamont-Doherty Earth Observatory
of Columbia University

Tributaries & Waterfronts

217 locations

430 miles

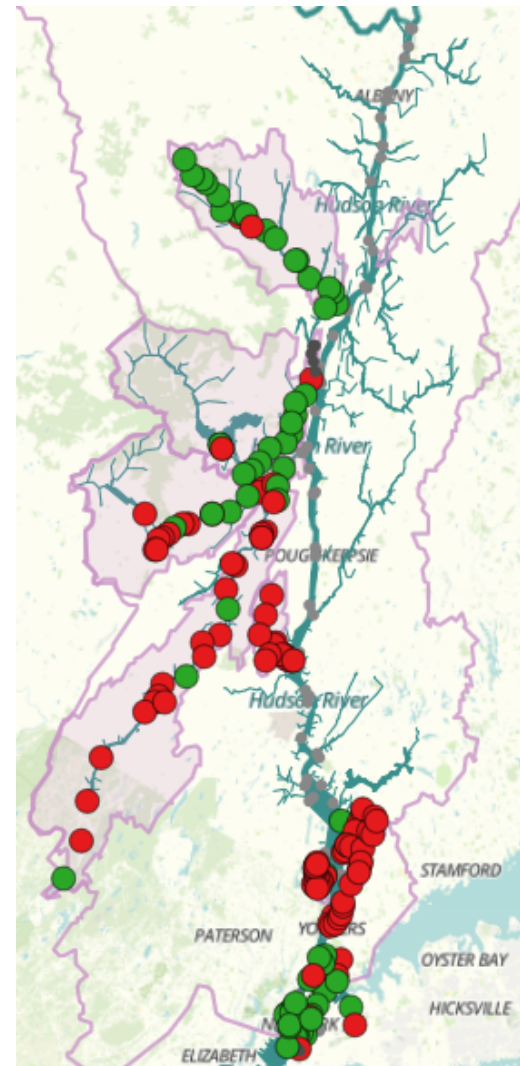
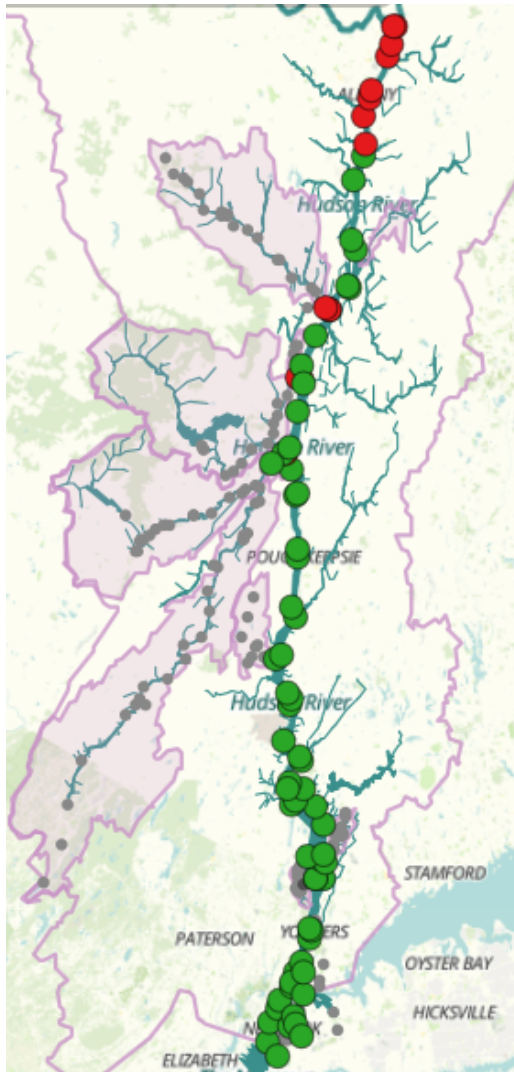
2012-present

20+ sampling partners, including
town advisory councils, watershed
groups, boathouses & universities\

130+ individuals

riverkeeper.org/water-quality

WHERE WE TEST



HOW WE TEST



WHAT WE TEST FOR

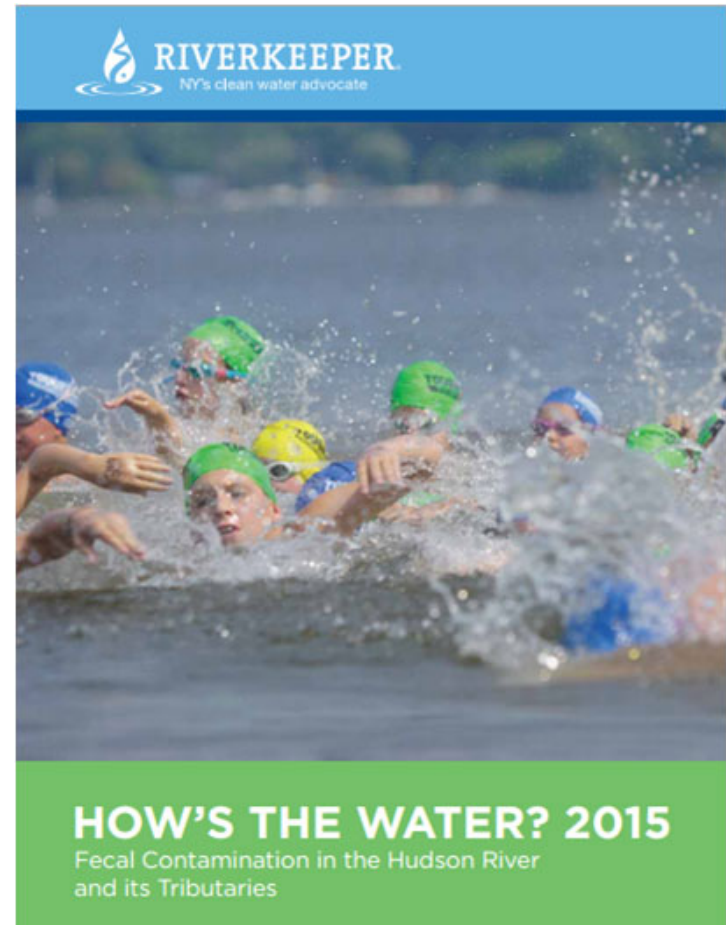
Enterococcus

- Found in warm-blooded animals
- Not usually harmful
- Indicates harmful pathogens are likely present
- EPA-recommended methods, guidelines and criteria



Riverkeeper Studies are ...

... the most extensive surveys of fecal contamination in the Hudson River Estuary and Watershed



Riverkeeper Studies are not...

sufficient to tell you if it is safe to swim...

at the moment you want to swim ...

at the place you want to swim

Riverkeeper Studies are not...

sufficient to tell you if it is safe to swim...

at the moment you want to swim ...

at the place you want to swim

...nor exactly what may make it unsafe.



MAJOR FINDINGS

Water quality varies

Contamination is often greater in tributaries

Rain often increases contamination

MAJOR FINDINGS

Water quality varies

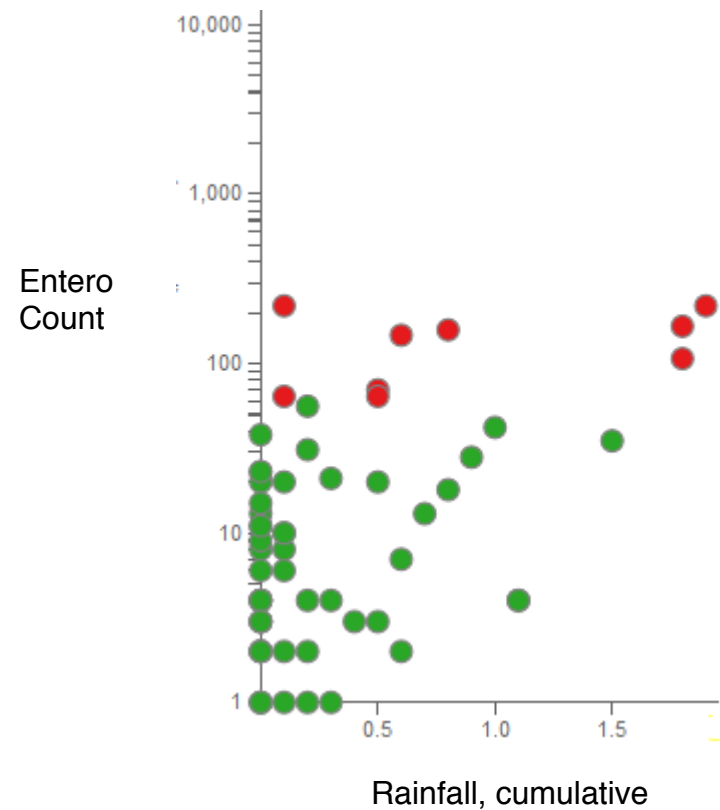
(in more ways than one)

Water Quality Varies

- over time at all locations
- from location to location, in both frequency and degree

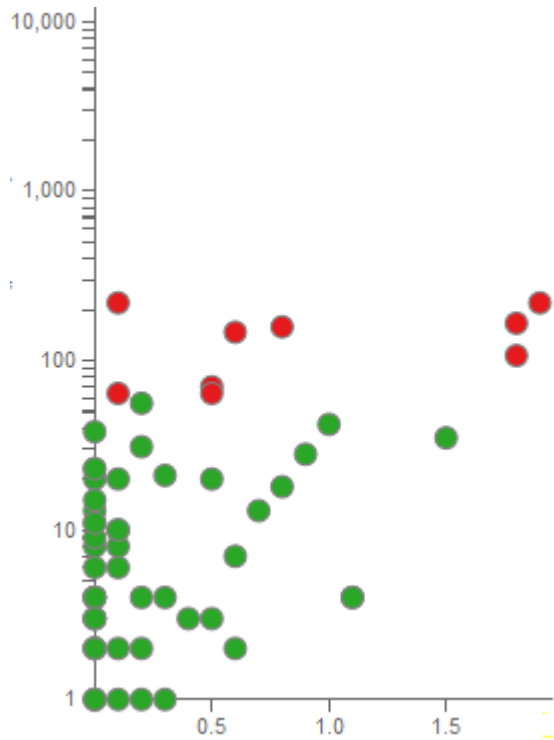
Water Quality Varies

Kingston Point Beach



Water Quality Varies

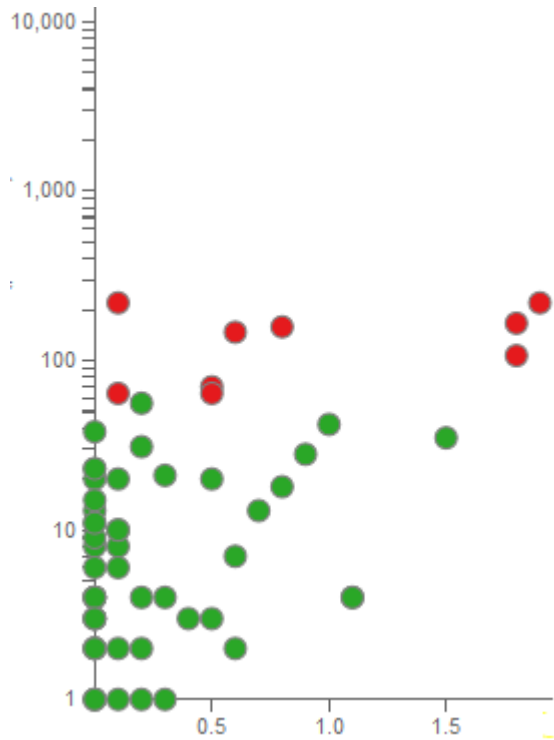
Kingston Point Beach



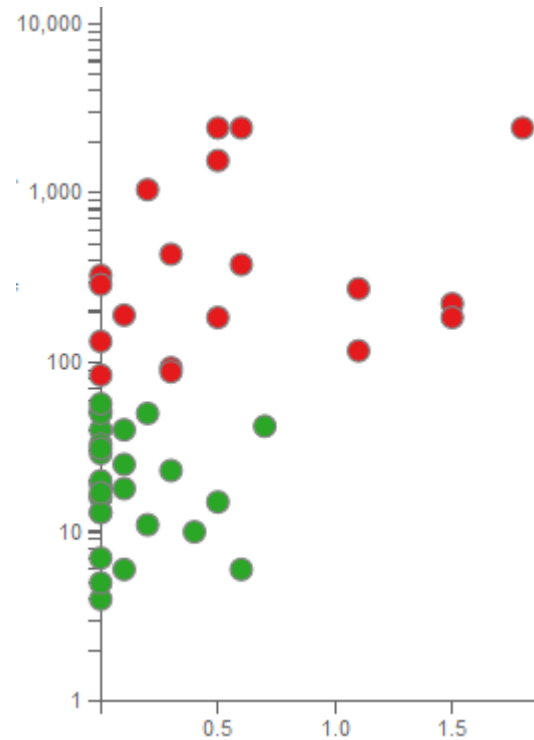
Contamination Varies Over Time at Every Location

Water Quality Varies

Kingston Point Beach



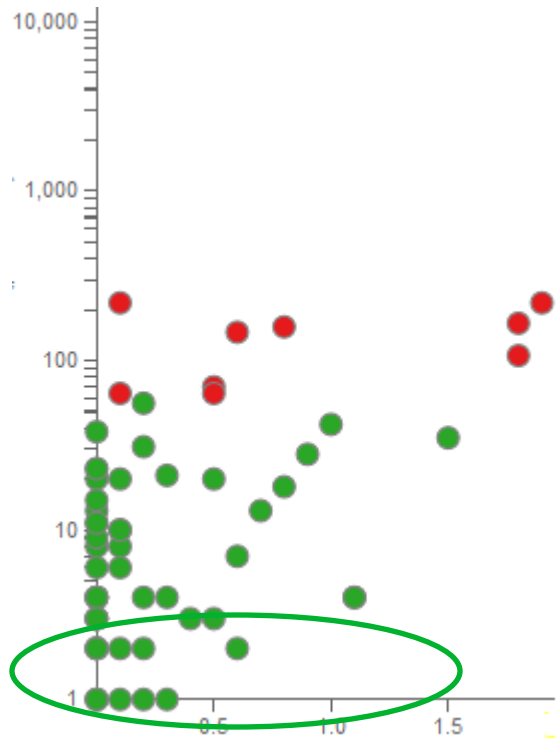
Rondout Creek Public Dock



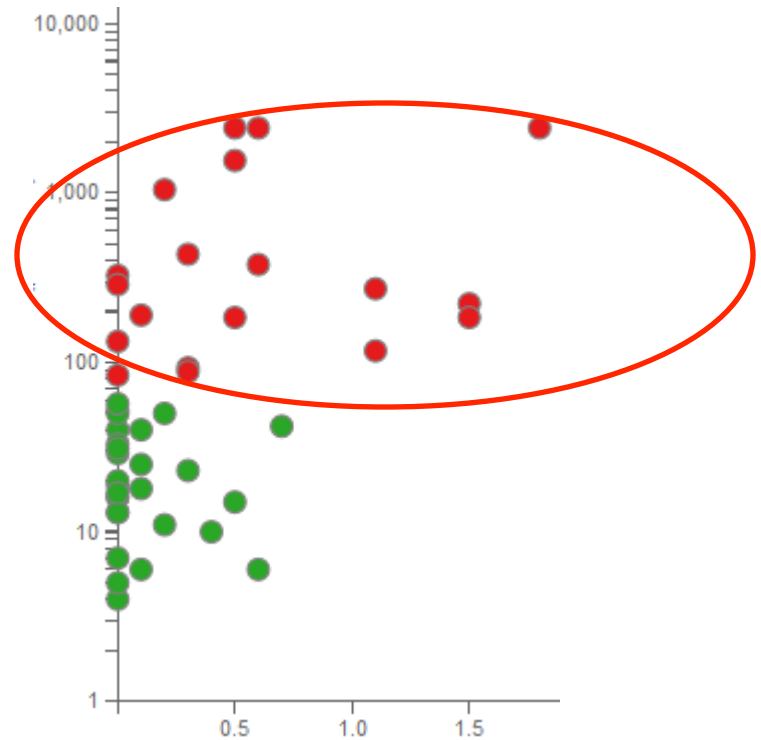
Contamination varies from location to location, in both frequency and degree

Water Quality Varies

Kingston Point Beach



Rondout Creek Public Dock





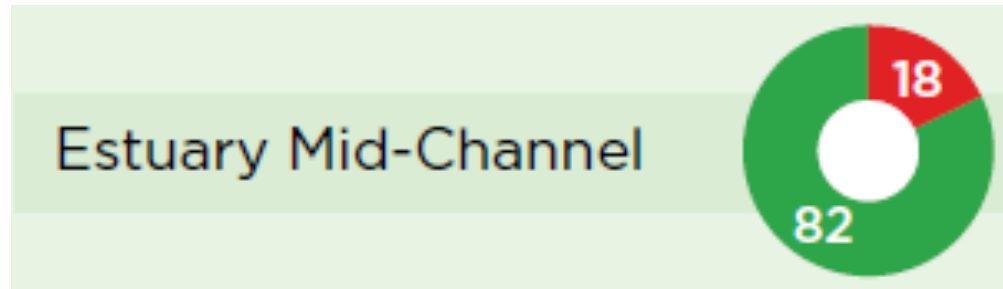
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NY's clean water advocate

MAJOR FINDINGS

Water quality varies

Contamination is often greater in tributaries
(but contamination varies by tributary)

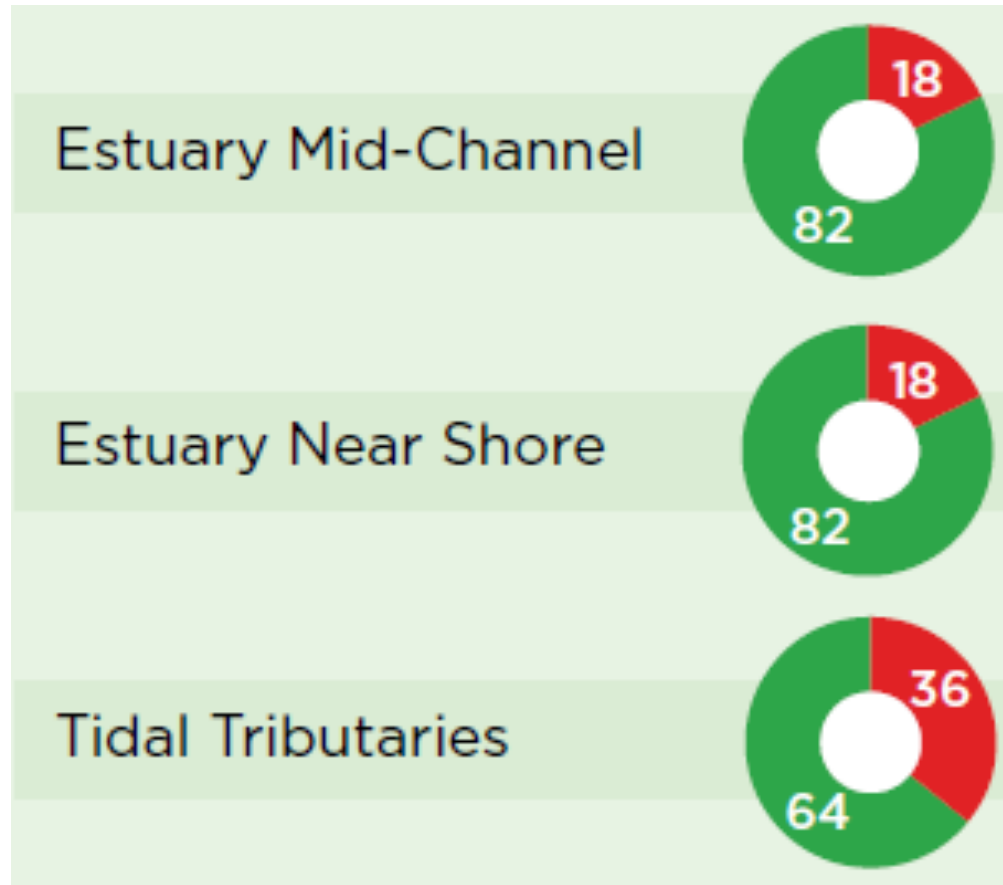
Contamination is greater in tributaries



Contamination is greater in tributaries



Contamination is greater in tributaries



Contamination is greater in tributaries

(but varies by tributary)

Site	# Samples	BAV	
Hudson River Estuary	3,203	23%	77%
Catskill Creek*	157	34%	66%
Esopus Creek*	150	33%	67%
Rondout Creek*	293	68%	32%
Wallkill River*	377	87%	13%
Sparkill Creek*	288	95%	5%
Pocantico River*	220	87%	13%

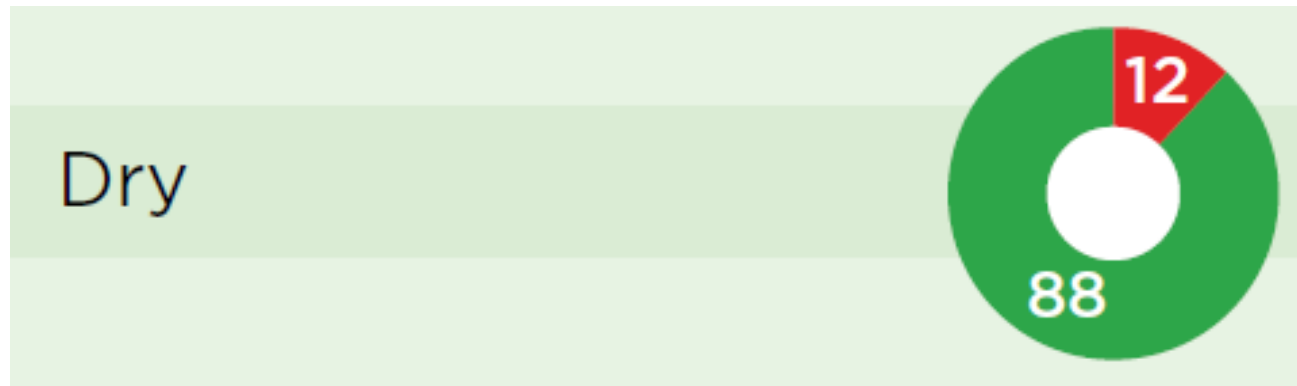
MAJOR FINDINGS

Water quality varies

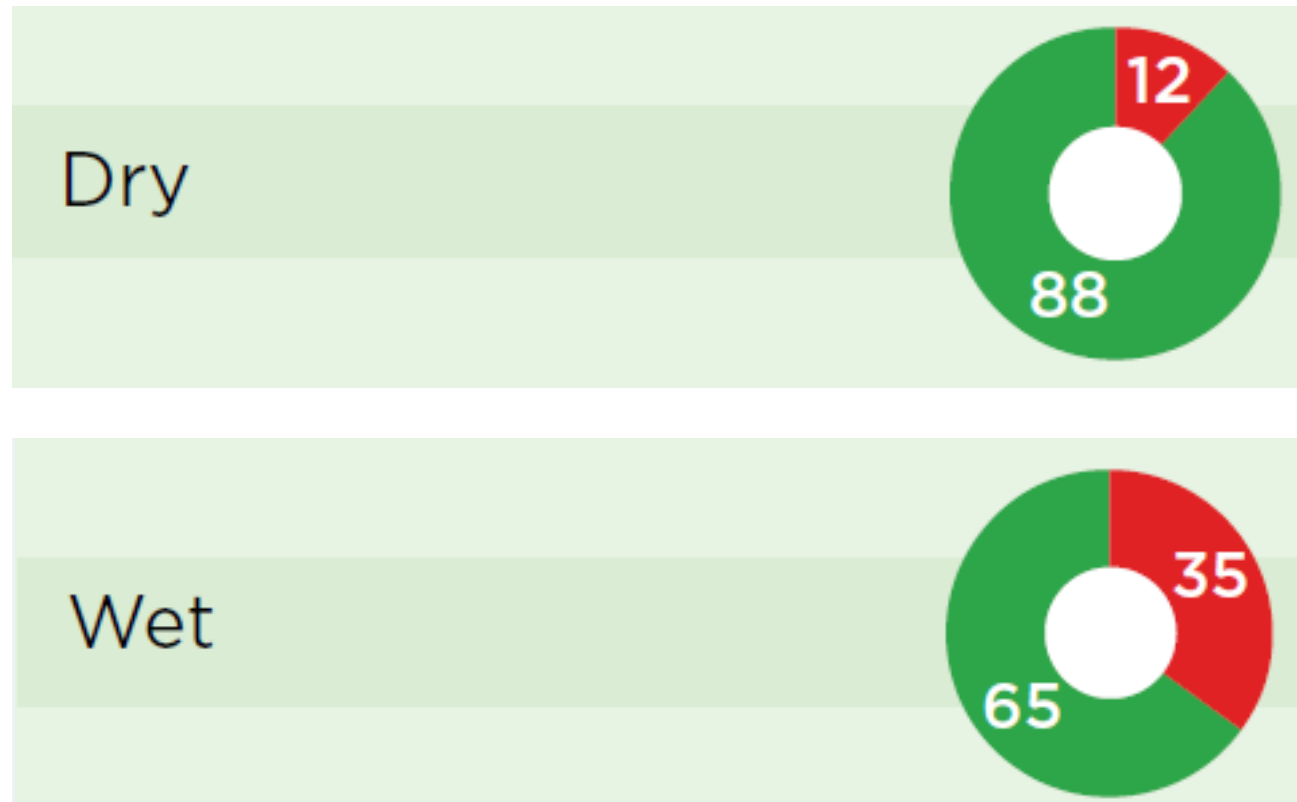
Contamination is often greater in tributaries

Rain often increases contamination
(some places more than others)

Rain Increases Contamination



Rain Increases Contamination

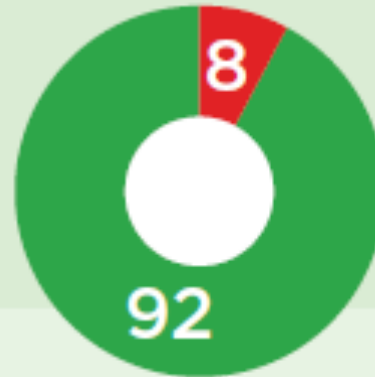


Rain Increases Contamination

(some places more than others)

Mid Channel

Dry

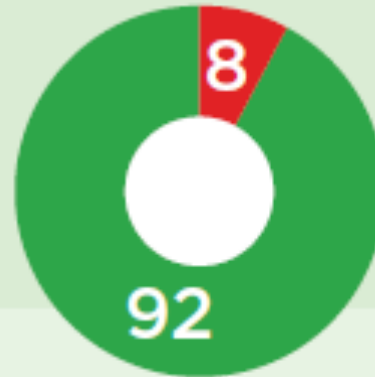


Rain Increases Contamination

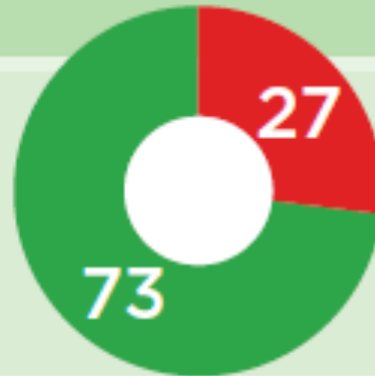
(some places more than others)

Mid Channel

Dry



Wet



Rain Increases Contamination

(some places more than others)

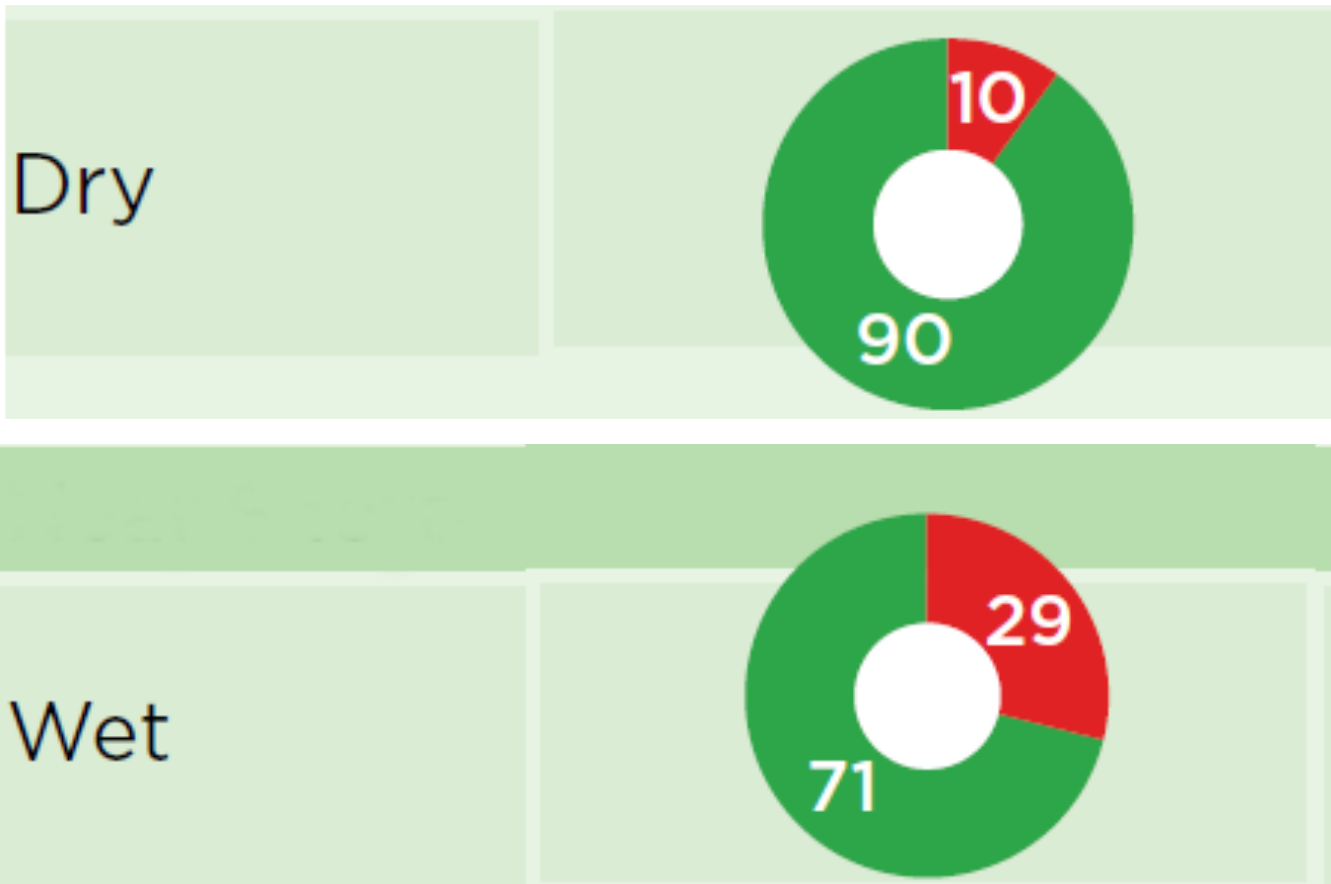
Near Shore



Rain Increases Contamination

(some places more than others)

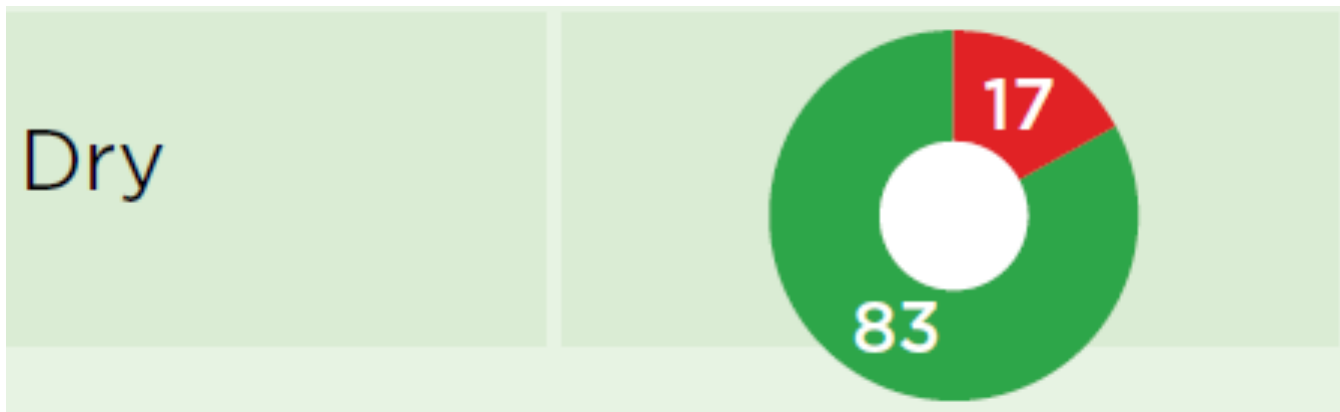
Near Shore



Rain Increases Contamination

(some places more than others)

Tidal Tributaries

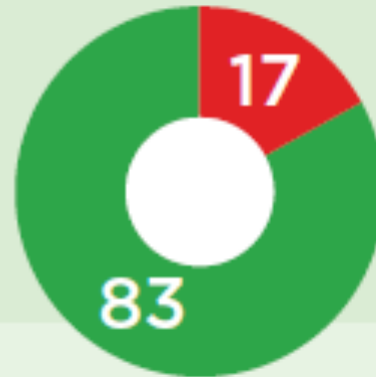


Rain Increases Contamination

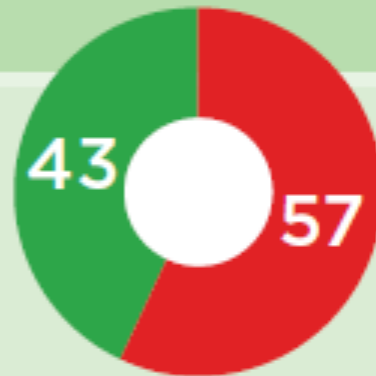
(some places more than others)

Tidal Tributaries

Dry



Wet



Sources of Contamination



Sources of Fecal Indicating Bacteria

Combined Sewer Overflows

Separate Sewer Overflows

Stormwater

Agricultural Runoff

Septic System Failures

Other

Combined Sewer Overflows

New York City – **500+**

Capital District – **92** in six communities

Hudson River Estuary – **58** in seven communities

Mohawk River – **52** in four communities

New Jersey – **26** in six communities

Upper Hudson River – **12** in three communities

Separate Sewer Overflows... Leaks, Failures, Upsets and Bypasses

\$1 billion in annual need

-

\$202 million in annual spending

“New York Wastewater Infrastructure In
Crisis” (NYS DEC)

Floodwaters send sewage into Capital Region rivers, creeks



Floodwaters send sewage into Capital Region

UNTREATED SEWAGE

KROMMA KILL ALBANY COUNTY

■ **59** THOUSAND GALLONS

WYNANTSKILL CREEK

■ **31** THOUSAND GALLONS

COXSACKIE CREEK

■ **18** THOUSAND GALLONS

SEPTEMBER 30, 2015

Sewage Pollution Right to Know reports

- Yorkville: **1,040 gallons** *per minute* for 15 hours
- Schenectady: **2,000 gallons** *per minute* for 7.5 hours
- Rensselaer: **100 gallons** *per minute* for 52 hours
- Colonie: **100 gallons** *per minute* for 10 hours
- Castleton: **500 gallons** *per minute* for five hours
- Coxsackie: **50 gallons** *per minute* for 20 hours
- Hudson: **1,100 gallons** *per minute* for six hours
- Ulster: **4,000 gallons**
- Newburgh: **5,000 gallons** *per minute* for 22 hours

PLUS combined sewer overflows in

- Capital District
- Kingston
- New York City
- elsewhere?

Streetwater (Urban Runoff)

Illicit sanitary sewer hookups

Pet waste

Urban wildlife (raccoons, rats, etc.)

Trash, and dumpster leaks

Other – biofilms, decaying organic materials, etc.

Agricultural Runoff

Manure

Manure spreading

Manure storage

Septic System Failures

~484,000 septic systems in Hudson River Watershed counties

Nationwide failure rate estimated at 10%

Other Sources

Wildlife

Pet waste

Growth/persistence in the environment

Plants, soils, decaying organic matter

What We Can Do



RIVERKEEPER.
NY's clean water advocate

What We Can Do

Improve monitoring and notification

Invest in infrastructure

Enforce clean water laws

Do the science

THANK YOU

The Ashokan Center
Catskill Creek Watershed Awareness
Project
Center for the Urban River at Beczak
(Sarah Lawrence College)
Columbia University Lamont Doherty
Earth Observatory CUNY Queens
Gardiner Environmental Conservation
Commission
Hudson Valley Arts and Science
Lower Esopus Watershed Partnership
Montgomery Conservation Advisory
Council
New York City Water Trail Association
Ossining High School
Pocantico River Watershed Alliance

Pleasantville Conservation Advisory
Council
Quassaick Creek Watershed Alliance
The River Project
Rochester Environmental Conservation
Commission
Rosendale Commission for
Conservation of the Environment
Saw Mill River Coalition
Sparkill Creek Watershed Alliance
SUNY Cobleskill
Wallkill River Watershed Alliance
Wawarsing Environmental
Conservation Commission
Yonkers Paddling and Rowing Club
20+ NYC boathouses, clubs and parks

THANK YOU

Austen-Stokes Ancient Americas Foundation, Chris and Suzanne Augustin, City University of New York, Dale and Laura Kutnick, Dextra Baldwin McGonagle Foundation, Double R Foundation, Eppley Foundation for Research, HSBC Water Programme, Hudson River Foundation for Science and Environmental Research, Lamont-Doherty Earth Observatory of Columbia University, John McLaughlin, Michele Hertz and Larry Friedman, The Nancy and Edwin Marks Family Foundation, New England Interstate Water Pollution Control Commission (NEIWPCC), S. Mackintosh Pulsifer, Mike Richter, Sun Hill Foundation, Wallace Research Foundation, **and many Riverkeeper members.**

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QUESTIONS?

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