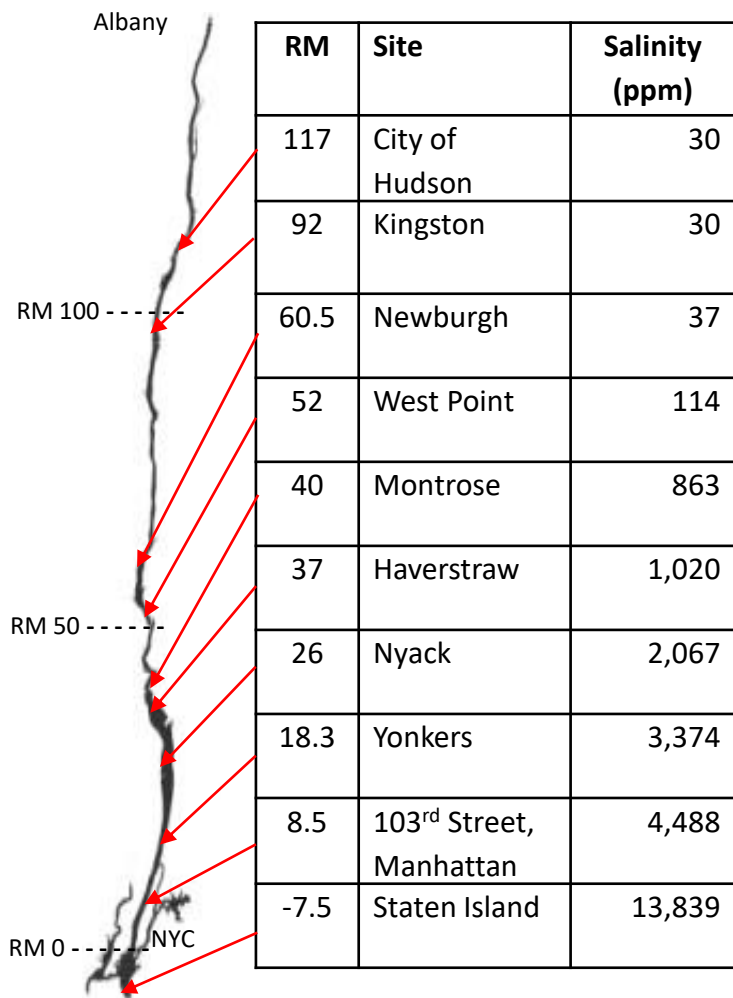


A Day in the Life of the Hudson and Harbor 2023: Salinity

Salinity Data 2023

Salinity can be reported in many different units. Here the units are **parts per million (ppm)** of **chloride** (a ratio of salt per one million parts of water) to compare results from sites far apart on the estuary. In saltier areas, like New York City, salinity is usually measured in **parts per thousand (ppt)**. **River miles (RM)** are measured north from the Battery in NYC.



Where was the salt front on October 5, 2023?

The **salt front** (the leading edge of dilute sea water) in the Hudson River is located where salinity reaches 100 ppm.

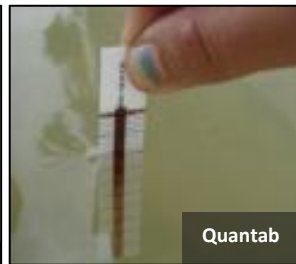
The salt front is where the river water becomes completely fresh, as opposed to salty or **brackish** (a mixture of salt and fresh water).

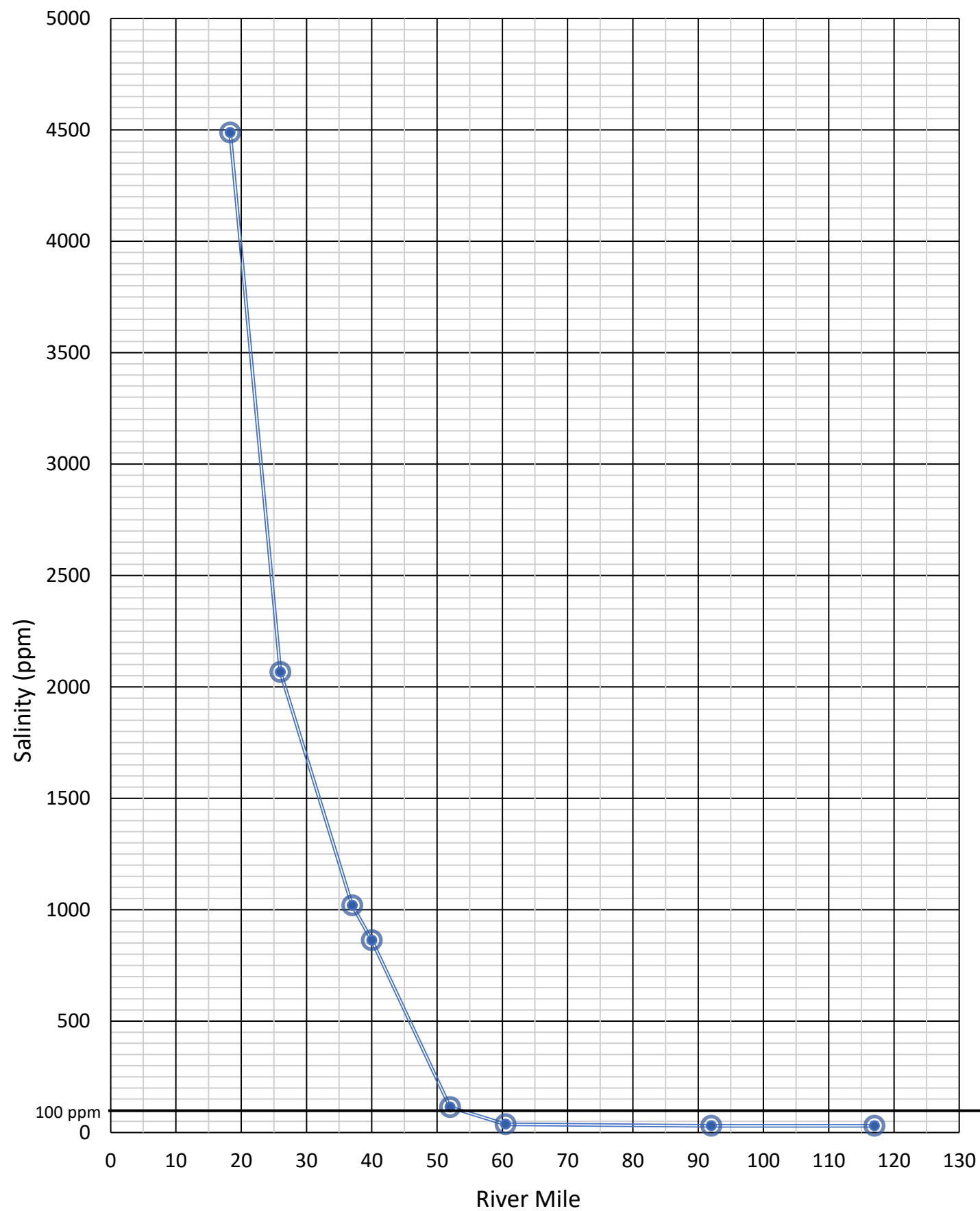
Use a pencil to plot salinity readings for 2023 (found in the table to the left) on the graph on the next page.

- Place a point for salinity readings from **Hudson through Yonkers** directly above the listed river mile.
- Using a ruler, draw a line from one point to the next. Start at the point for the lowest river mile and continue to the highest.
- Using your graph plot and the horizontal line at 100 ppm, estimate (in river miles) the position of the salt front on October 5.

River Mile ~53

People use different tools to measure salinity. Hydrometers and refractometers are best used in saltier water, while quantabs are best for fresh and slightly salty water.





A Day in the Life of the Hudson and Harbor 2023:

Salinity in New York City

Teacher Version

When we looked closed closely at Day in the Life salinity samples from around New York City we were puzzled by what we saw! Here is salinity (parts per thousand, ppt) at a few sampling sites. Can you help us solve the puzzle?



Site	Time of sample	Salinity (parts per thousand)
Ferry Point Park, East River	9:20 AM	21 ppt
Brooklyn Bridge Park, East River	11:30 AM	17 ppt
Pier 45, Hudson River	12:05 PM	9 ppt
Canarsie, Jamaica Bay	12:30 PM	29 ppt
Coney Island, Lower NY Bay	12:15 PM	30 ppt

1. Why is the East River saltier than the Hudson River? (Hint: Where is the source of salt water for both rivers?)

The East River connects two salty bodies of water (Long Island Sound and New York Bay/the Atlantic Ocean), while the Hudson River has more freshwater inputs from the watershed and upstream.

2. Where was the salinity the highest? Why?

Coney Island and Canarsie had the highest salinity readings because they are closest to the ocean.