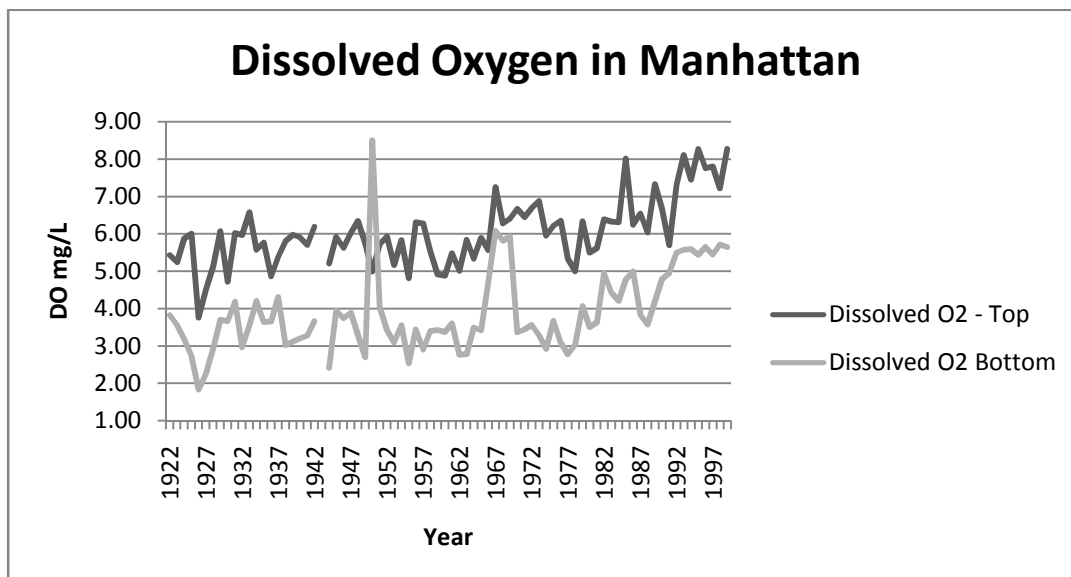


Name _____ Class _____ Date _____

Pollution in the Hudson River

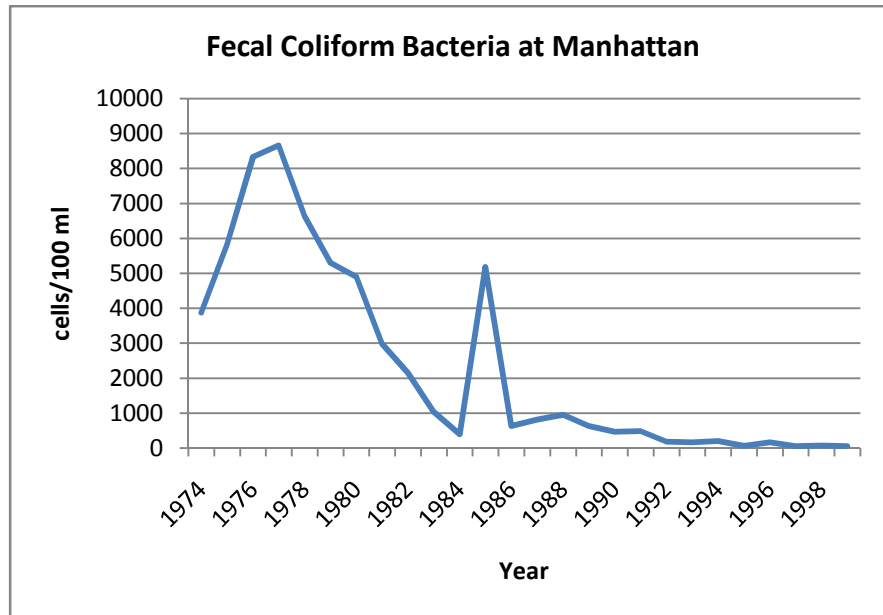
How has pollution changed in the last one hundred years in Hudson River ecosystem, as measured in Manhattan? By completing the following graphing activity, you should be able to answer this question to some degree.

Step 1: Use the graph below, which contrasts the dissolved oxygen (DO) levels in the Hudson River off of 42nd St., Manhattan, from 1922 through 1997 to answer the following questions. The data represents surface and bottom average concentrations (mg/L) during the summer.



1. What year was the DO level the highest? The lowest?
2. Why is the surface DO higher than the bottom DO? Do you think this is the same throughout the Hudson River?
3. What can you say about the overall trend of dissolved oxygen in the Hudson River at this location? How does this relate to the health of the ecosystem?
4. Do these data tell you enough about the health of the Hudson? What else would you like to know?

Step 2: Next, look at a graph showing the changes in fecal coliform bacteria levels in the Hudson river at the same site at 42nd St., Manhattan between 1974 and 1999. This graph looks a bit different, since we only have data starting in 1974. The New York State Primary Contact or ‘swimming’ standard is 200 cells per 100 mL, and the Secondary Contact Standard (for wading, boating, or fishing) is 2000 cells per 100 mL. Fecal coliform bacteria concentrations are indicators of sewage-related pollution, associated with untreated wastewater. The data collected represents an average of 8-14 samples that were collected during the summer.



Year	Fecal Coliform (cells/100mL)
1982	2147
1983	1031
1984	384
1985	5179
1986	628
1987	810
1988	945
1989	625
1990	463
1991	481
1992	180
1993	163
1994	196
1995	55
1996	158
1997	53
1998	72
1999	49.5

Based on the graph and the data, answer these questions:

1. What can you say about the overall trend in fecal coliform bacteria in the Hudson during the last 25 years?
2. When was the last time that the fecal coliform levels went above the primary contact standard levels? The secondary contact levels? What types of events might affect these numbers?
3. Based on this information, has the health of the Hudson River improved? Why or why not? Are you confident about your answer?
4. Do these data indicate that you could go swimming in the Hudson? Why or why not? What else would you like to know before making your decision?
5. Is there a relationship between the data on fecal coliform bacteria and dissolved oxygen levels? Why or why not?
6. Based on the graphs you completed and the information you received at the beginning of class regarding the Hudson River basin’s population and effluent discharge, are you surprised about what you found? Explain your answer.