

INTRODUCTION

Environmental pollution has been a main concern for centuries, but it became a real problem during industrial revolution in 19th century. During the industrial era, where the changes of social and living conditions occurred, the population increased and people moved to urban areas that led to depletion of natural resources. Pollution is an addition of harmful chemicals into the environment that can cause discomfort to all living organisms. There are many types of environmental pollution such as air pollution, water pollution and soil pollution. However, water pollution has a major impact since human organism is so dependent on it. Additionally, water pollution may consist of chemicals and wastes products that enter bodies of water as a result of various human activities. To test such statement, we ran an experiment in lab to test two different water samples from two different places of New York boroughs which are Hudson River in Manhattan and Flushing Meadow Lake in Queens.

QUESTION/PROBLEM

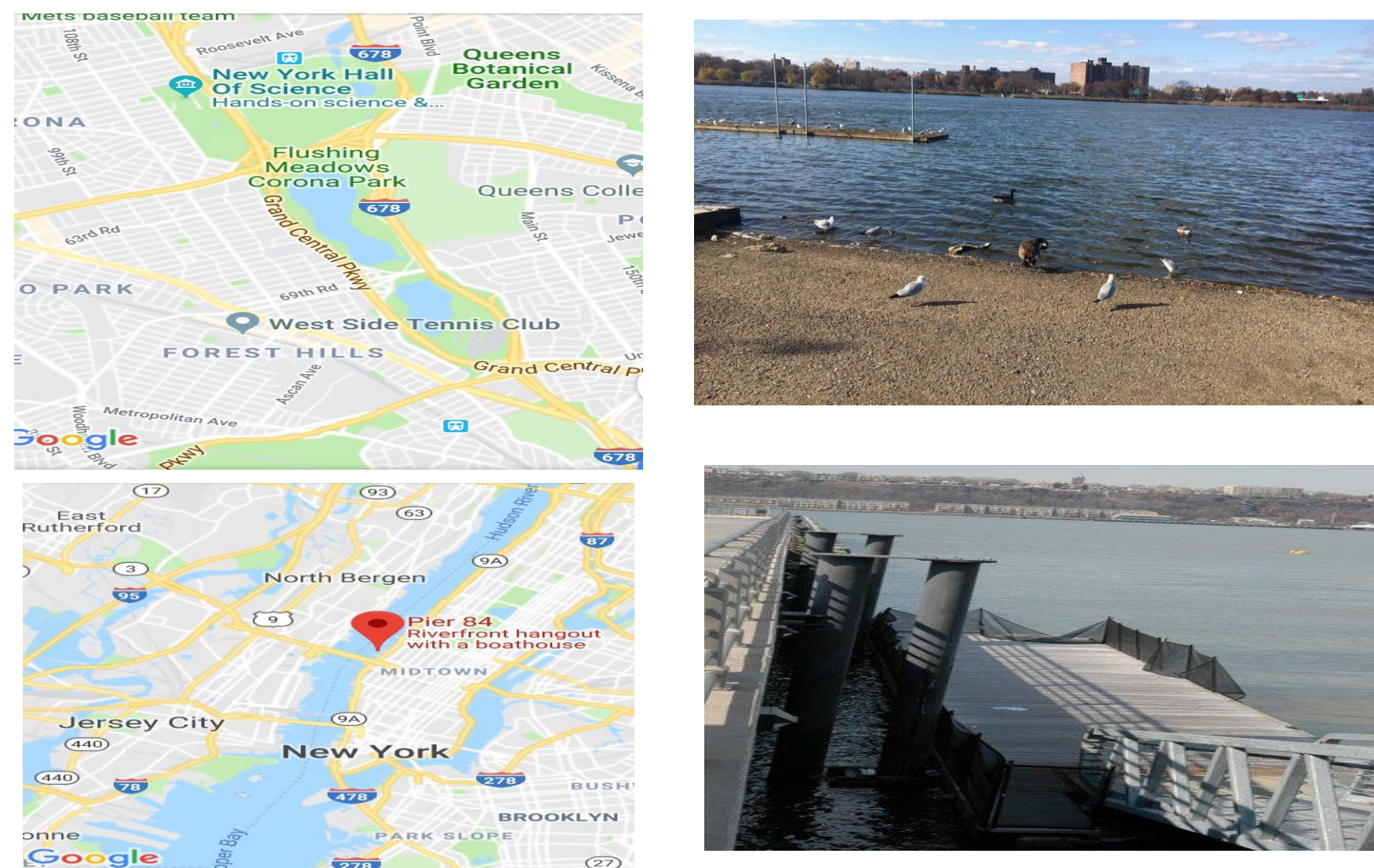
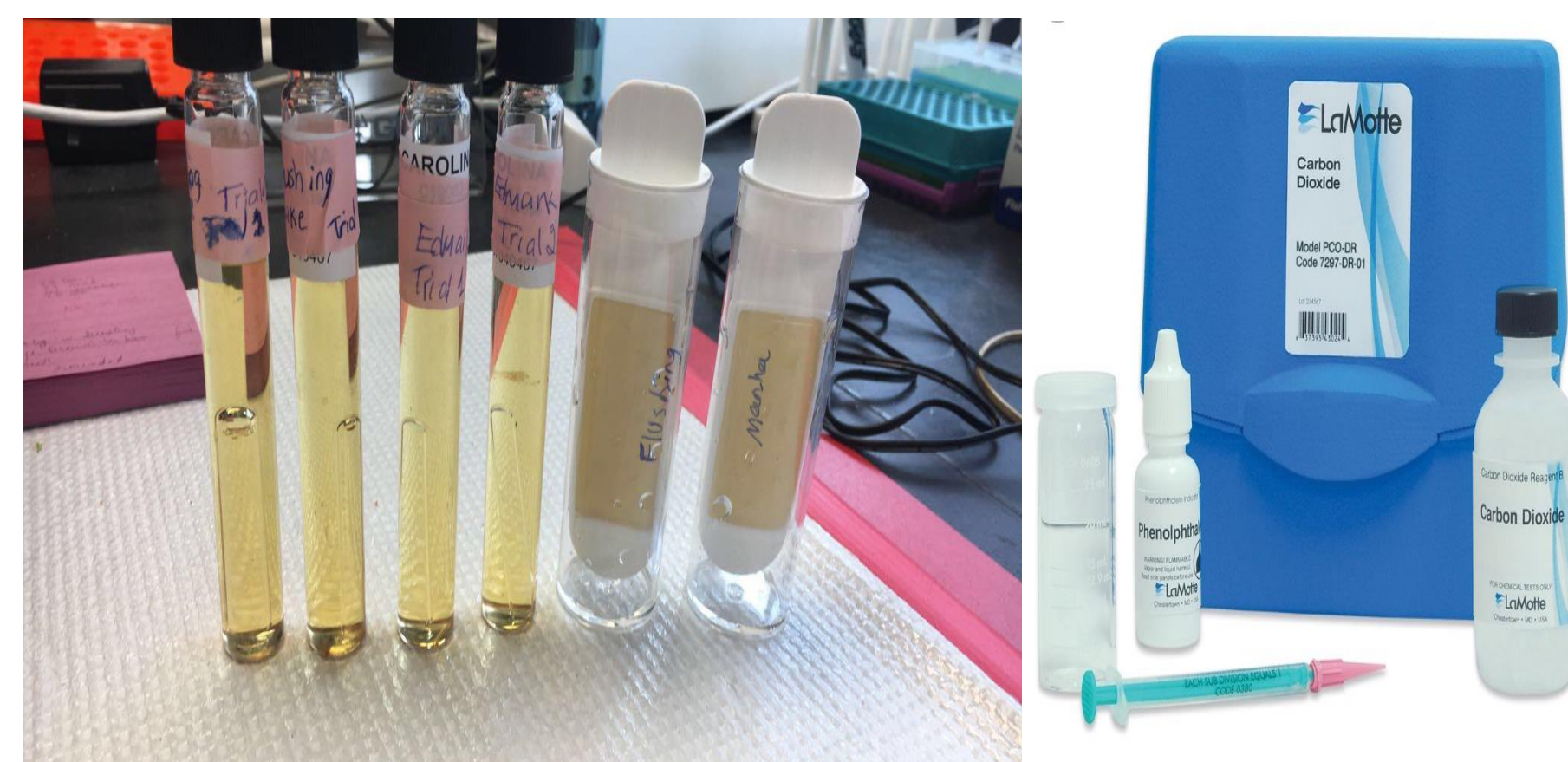
- Polluted water is unsuitable for living organisms, plants and animals that live around that specific body of water.
- In what borough is the water less polluted and suitable for living organisms?

HYPOTHESIS

Hudson River water body is more polluted due to its location and various human activities than the water sample from Meadow Lake in Queens.

METHODS

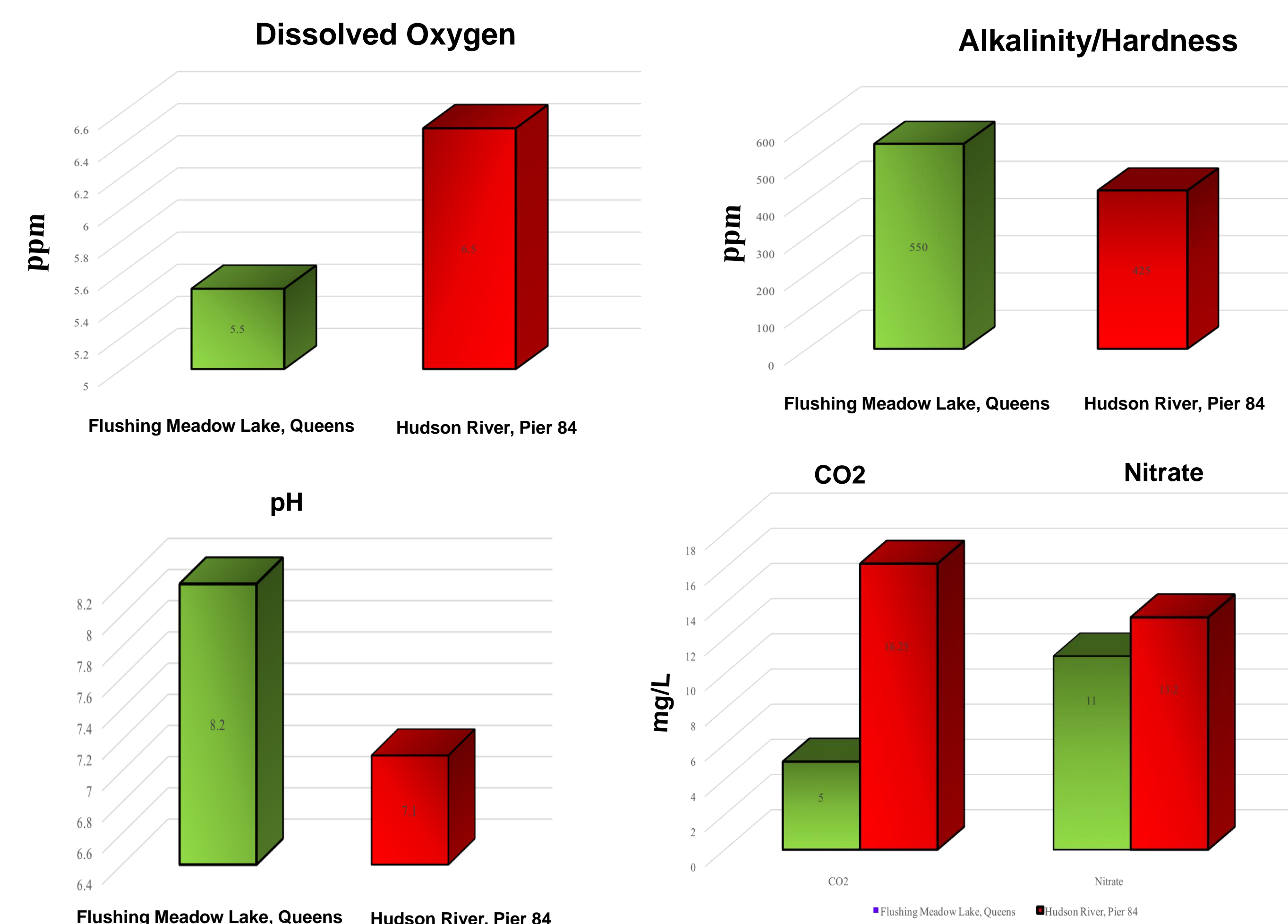
Dissolved oxygen
Co2
Nitrate
Lead
Coliform bacteria
PH
Alkalinity/hardness



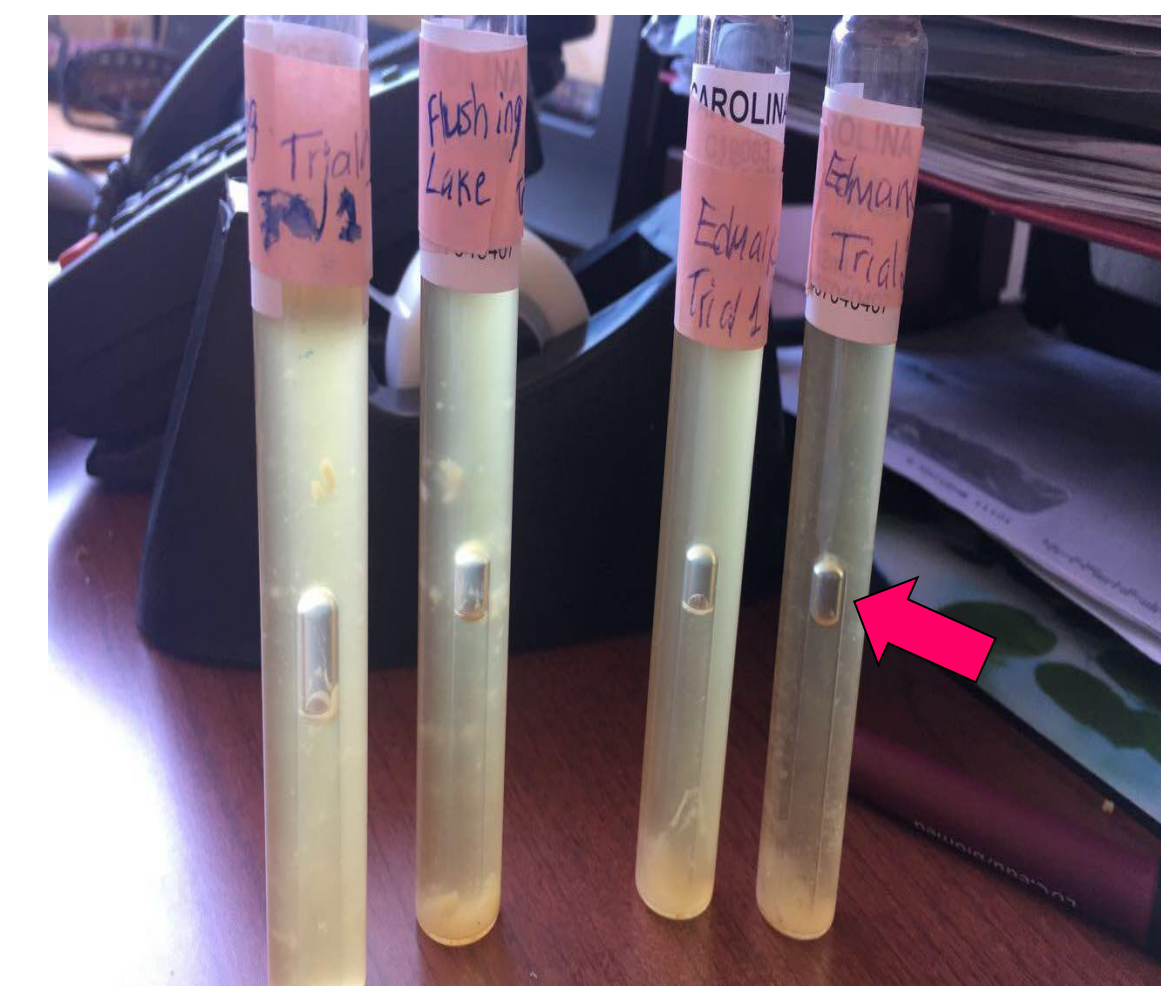
RESULTS

Flushing Meadow Lake, queens & Hudson River, pier 84

Flushing Meadow Lake, Queens	Trial 1	Trial 2	EPA standards
Dissolved Oxygen	7ppm	4.1ppm	6ppm and above
CO2 medium range	4mg/L	6mg/L	Below 10 mg/L
pH	8.2	8.2	6.5-8.5
Alkalinity/Hardness	560ppm	540ppm	< 180mg/L
Nitrate	13.2mg/L	8.8mg/L	10mg/L
Lead	Dark Orange	Orange	
Temp in Celsius	5.4 degrees	5.3 degrees	6.0 degrees
Coliform Bacteria	Large bubble in Durham tube	Medium-large bubble in Durham tube	
Hudson River, Pier 84	Trial 1	Trial 2	EPA standards
Dissolved Oxygen	6ppm	7ppm	6ppm and above
CO2 low range	20mg/L	12.5mg/L	Below 10mg/L
pH	7.1	7.1	6.5-8.5
Alkalinity/Hardness	500ppm	350ppm	< 180mg/L
Nitrate	17.6 mg/L	8.8mg/L	10mg/L
Lead	Dark Orange	Orange	
Temp in Celsius	5.0 degrees	5.0 degrees	6.0 degrees
Coliform Bacteria	Medium Bubbles	Medium bubbles	



Pseudomonas Bacteria and Fungus were detected by Biopaddle



Coliform Bacteria were detected by existing big bubbles in the Durham fermentation test tube

DISCUSSION

- Nitrate was present in the water from Manhattan more than the water from queens.
- Our results also showed a slight impact of lead in water only in queens.
- Alkalinity was more present in the water sample in Queens than Manhattan.
- Carbon dioxide was more in Manhattan in the medium range and queens had more carbon dioxide in the low range.
- The level of dissolved oxygen in trial 2 shows that Manhattan has better quality water than queens.

CONCLUSIONS AND FUTURE STUDY

In conclusion:

- Water pollution is defined as the presence in groundwater of toxic chemicals and that exceed what is naturally found in the water and may pose a threat to human health or the environment.
- Additionally, water pollution may consist of chemicals introduced into the water bodies as a result of various human activities.
- Any amount of those chemicals pollutes the water, regardless of the harm they may pose to human health and the environment.
- Our result show that Queens and Manhattan have certain chemicals that affect the water but overall Queens water is slightly more polluted.
- In order to reduce pollution people must be educated that when we pollute our environment it will come right back to affect us. Not only should they be educated on pollution but there should be signs in areas were pollution is rising to let people know the seriousness of environmental pollution.

REFERENCES

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