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The Taunton River's Last Major Tributary: Chemical Analysis of a Freshwater Dam System in the Upper Assonet River

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Bridgewater-Raynham Regional High School, Bridgewater, Massachusetts (2005). *The Taunton River's Last Major Tributary: Chemical Analysis of a Freshwater Dam System in the Upper Assonet River*. In Watershed Access Lab Projects. Project 38.
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**The Bridgewater-Raynham
Watershed Team (BRWT)
Presents:**

The Taunton River's Last Major Tributary

**Chemical Analysis of Water in a
Freshwater Dam System in the Upper
Assonet River**

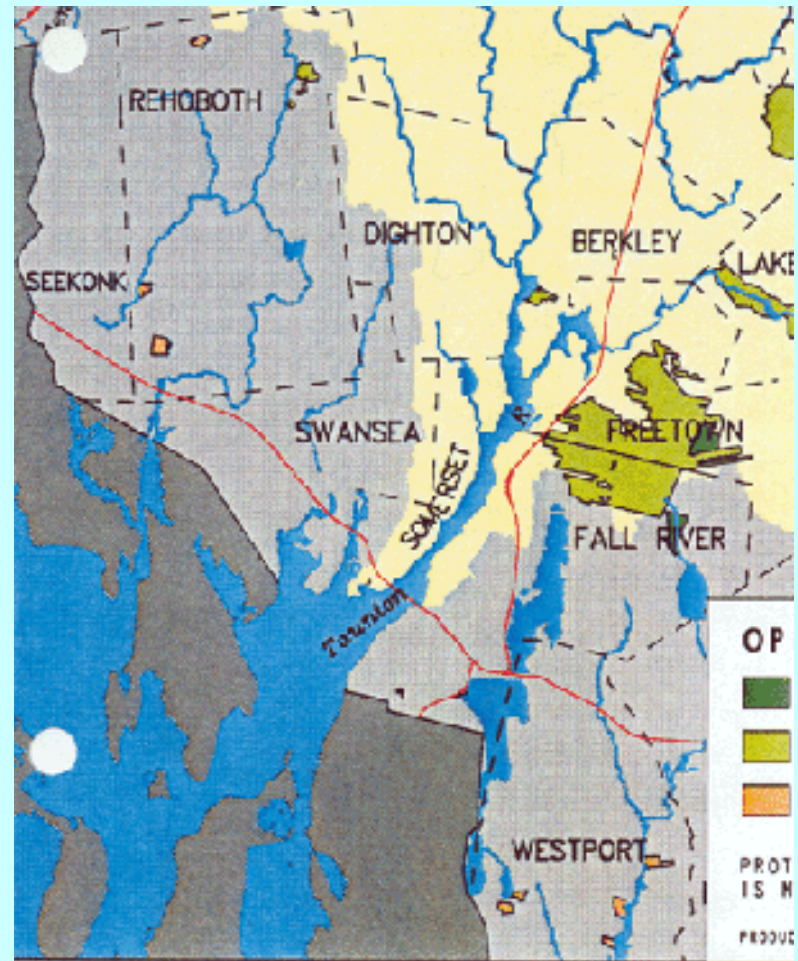
Fall 2005

Purpose of the Study

- To study how a dam system in the upper Assonet River effects the chemical and nutrient levels downstream.
- To prepare the Science Olympiad Team for the Freshwater Ecology section of their December 22nd meet at Bridgewater Raynham regional High School.
- Figures will help students complete the eagle scout communication merit badge.
- To increase stewardship and knowledge of the Taunton River Watershed (TRW) across Southeastern Massachusetts.

The Taunton Watershed Basin (southern portion pictured)

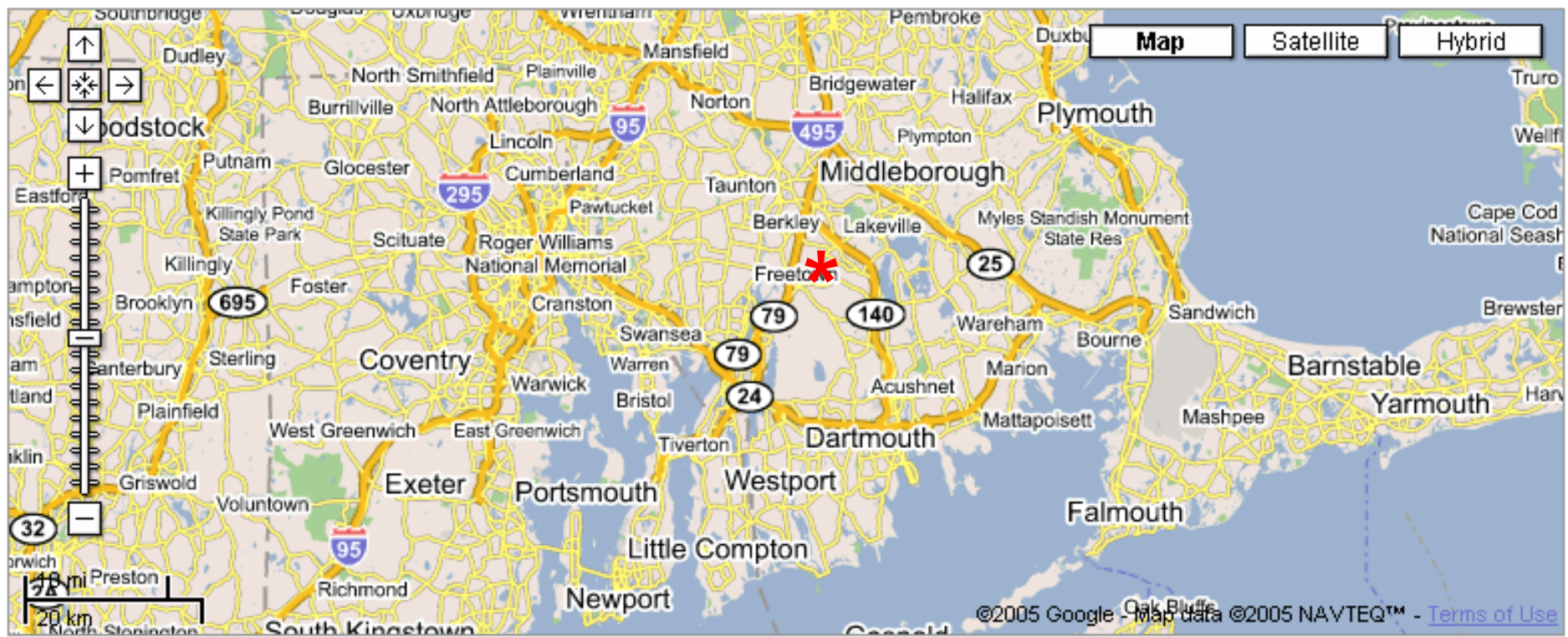
- Basin for 38 towns.
- 221 lakes and ponds
- 173 canoeable river miles
- Home to the 16,800 acre Hocomock Swamp
- 29 species of fish (brook trout included)
- 114 species of birds
- Source:
<http://www.trwaonline.org/>

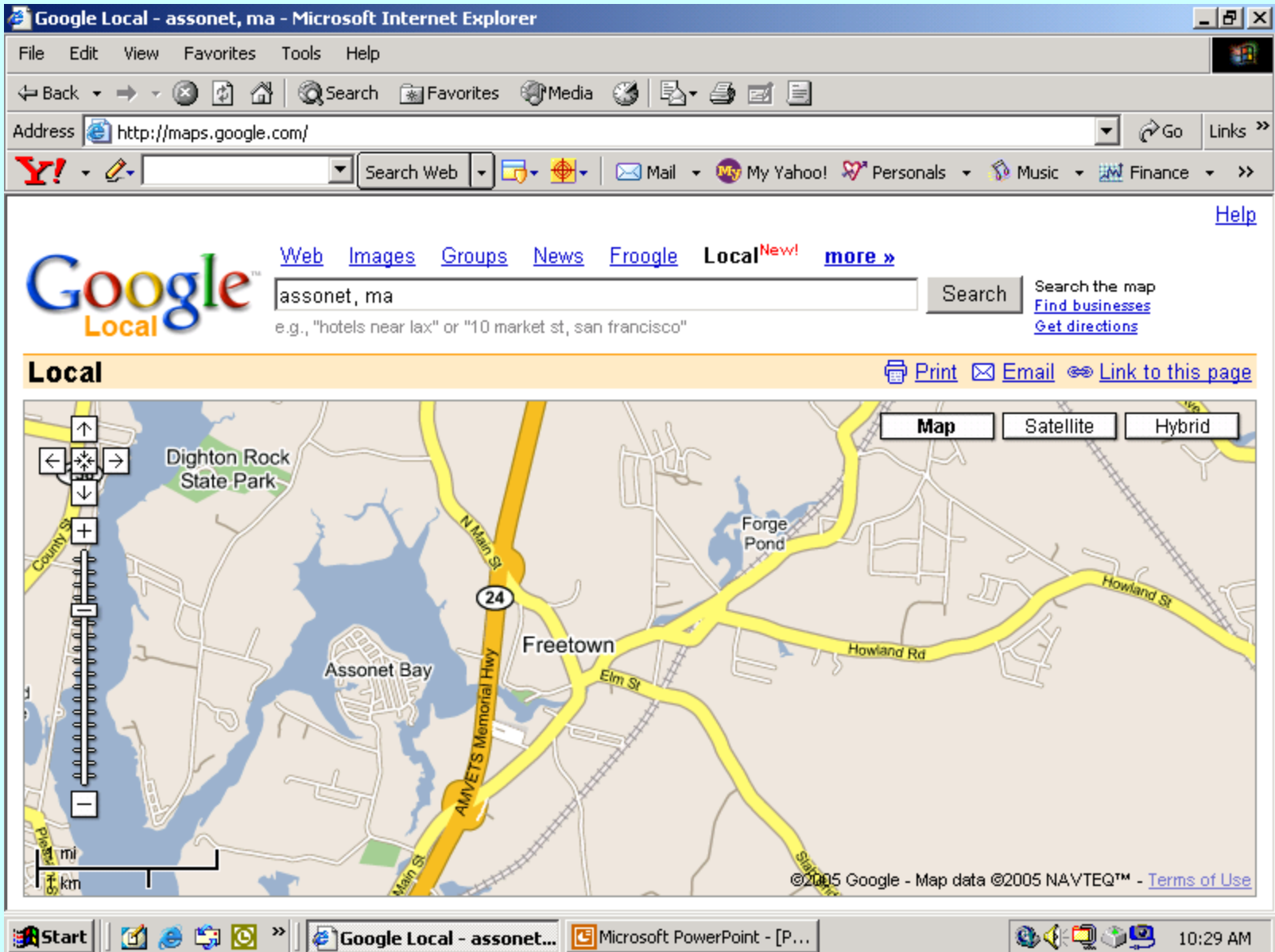


Location of Study

Local

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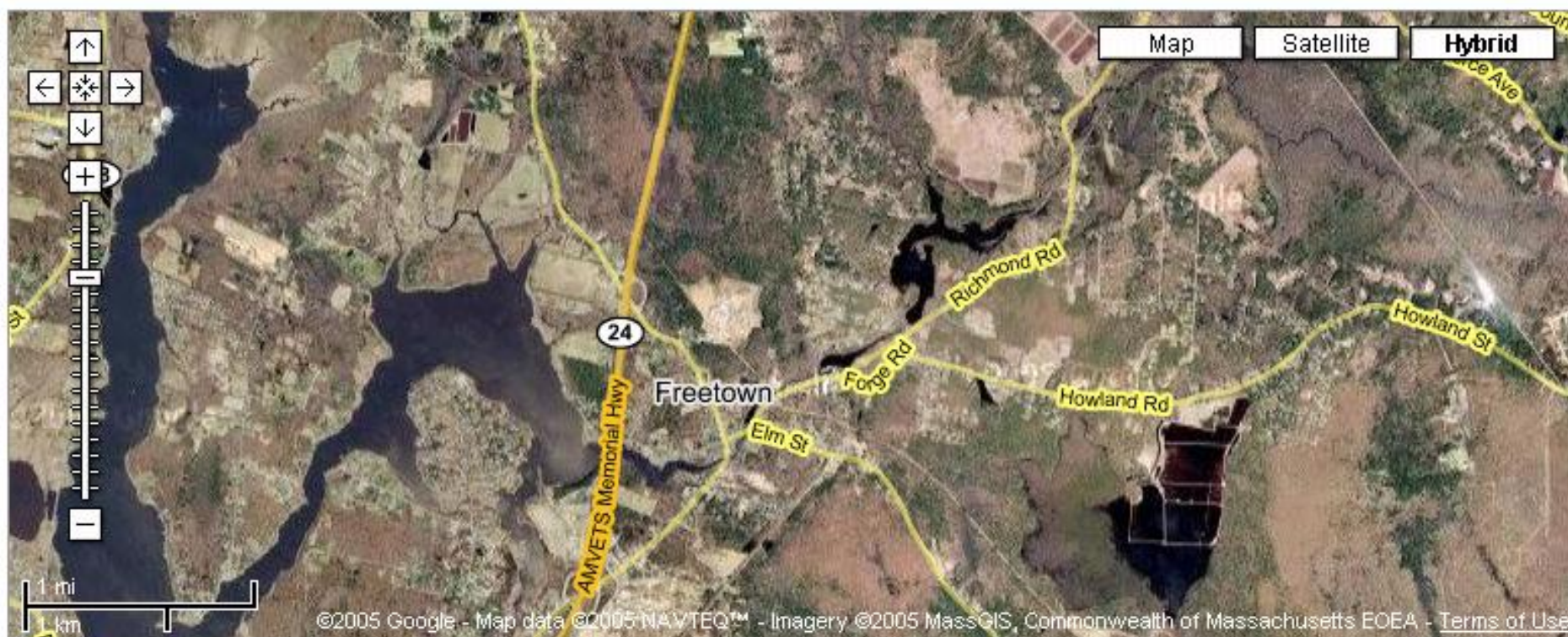
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assonet, ma

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Weather and Site Conditions

- Cloudy with some precipitation.
- Cool Air Temperature (45°F)
- Deciduous Trees dominate the landscape
- Dark Water (leaves release dark acids)
- Relatively Shallow Pond

Sample Locations

Local

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Pond and Dam System



Spillway

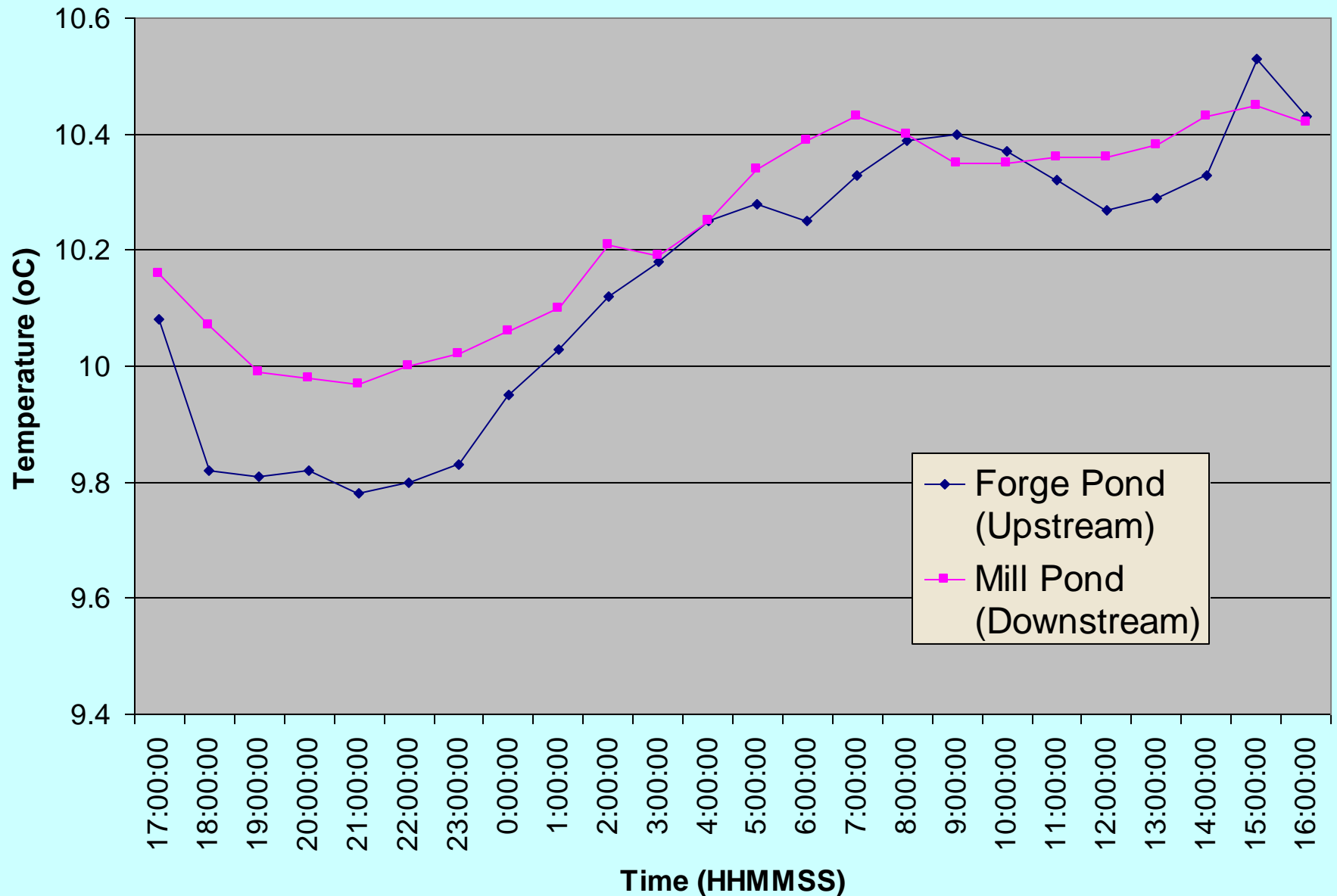


Hydrolab Data

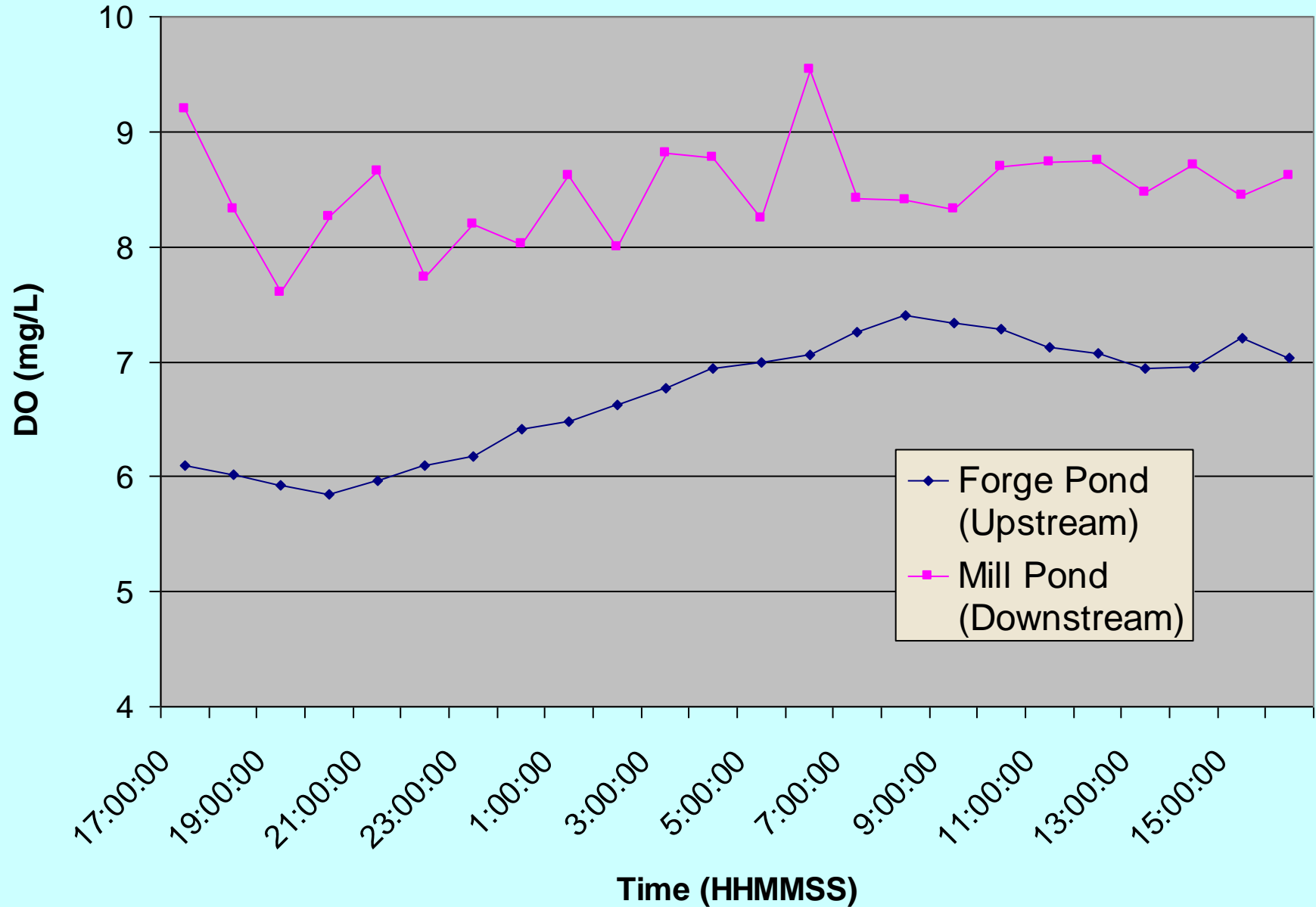
- Probes for hourly readings.
- Graphical Analysis of Temperature, pH, Dissolved Oxygen (DO), and Specific Conductivity.



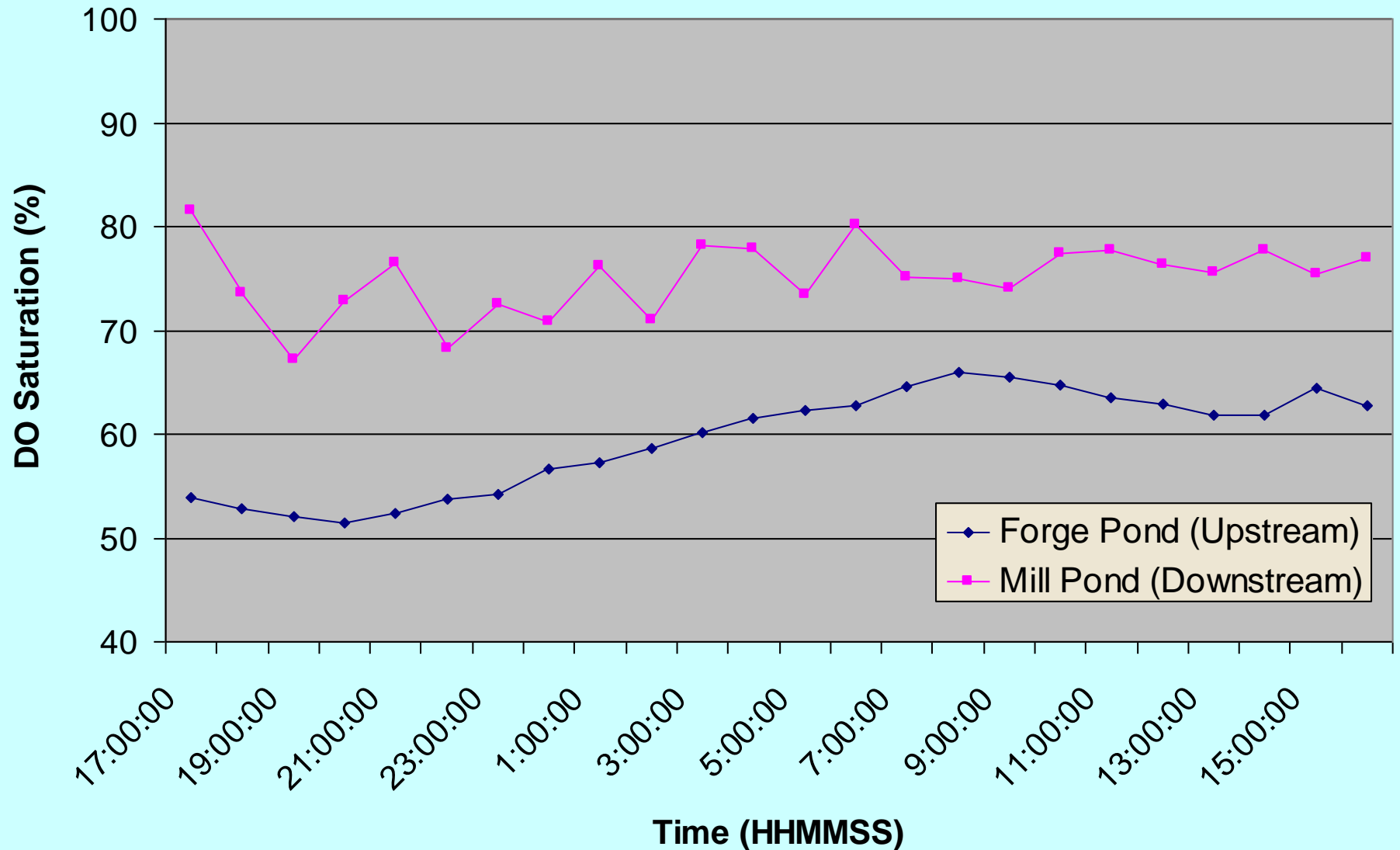
Temperature vs. Time



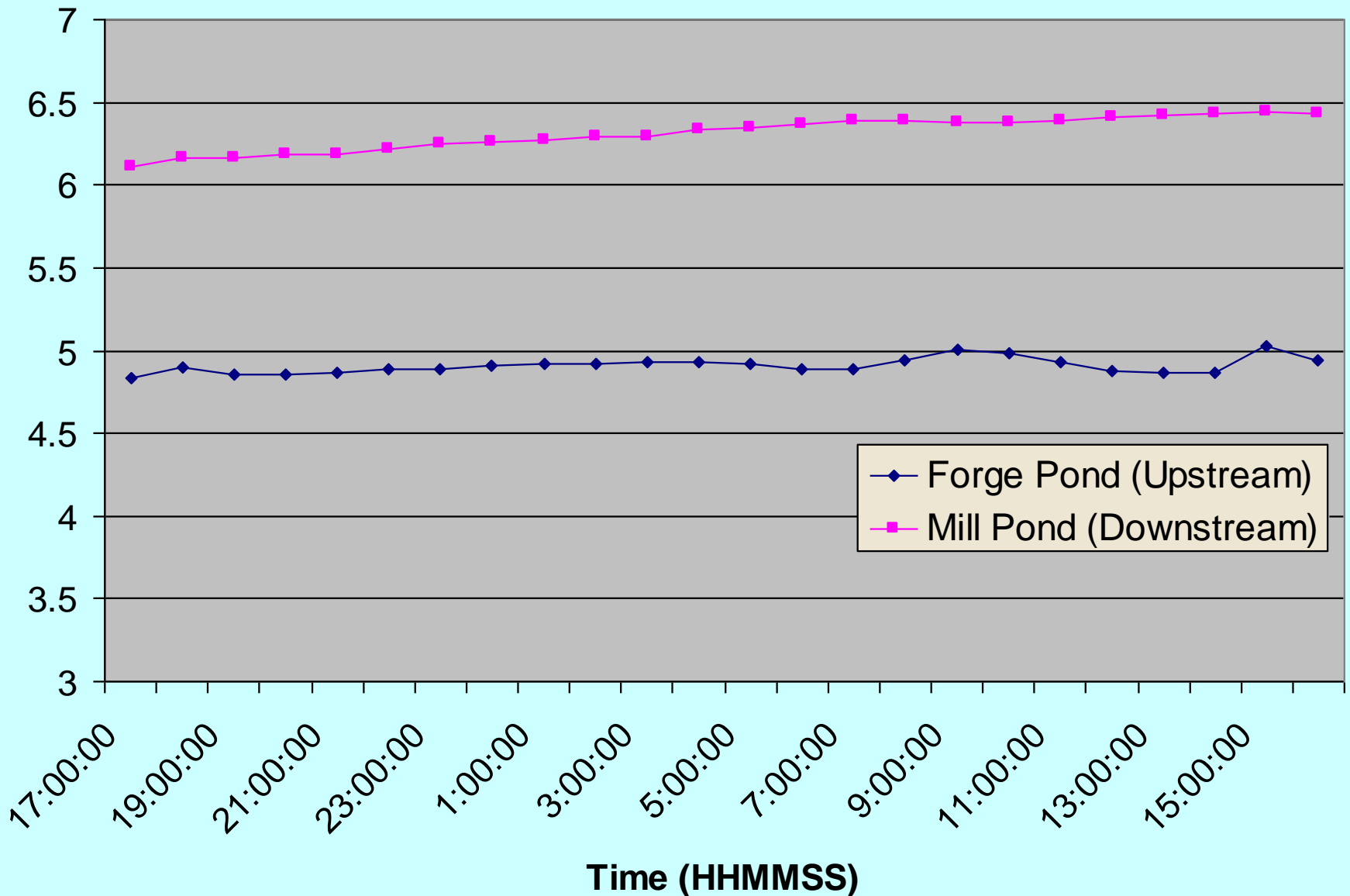
DO vs. Time



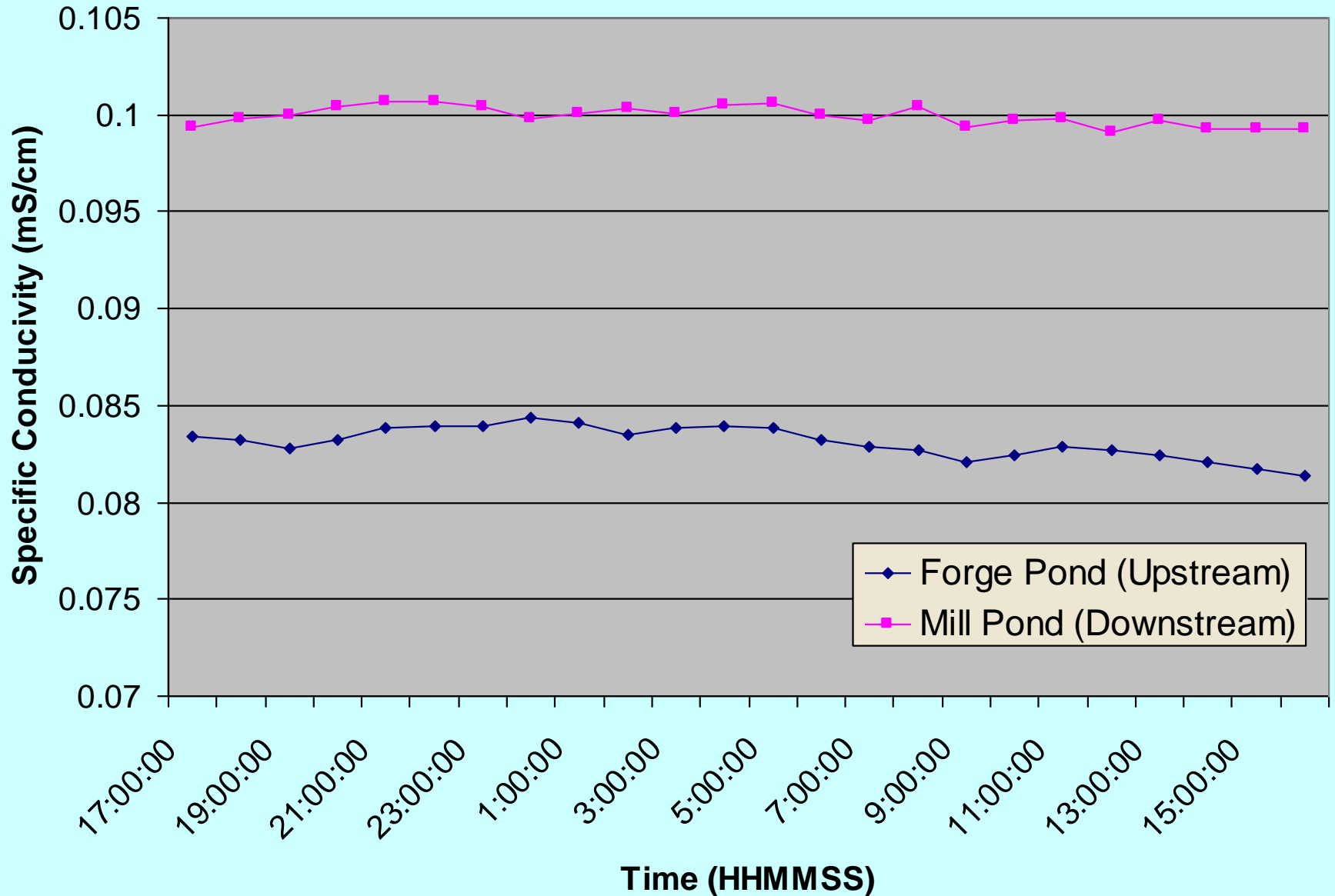
DO Saturation (%)



pH vs. Time



Specific Conductivity (mS/cm)



More Dissolved Substances in Mill Pond???

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Sigma Data

- Hourly water samples collected in bottles.
- Analyzed at the Bridgewater State College Watershed Access Lab by Kim McCoy.
- Larger amounts of phosphate and nitrate downstream.
- Rainfall and storm events effect nutrient availability.



Discussion and Conclusions

- Dam systems can effect water temperature.
- The dams changed the habitat by created pools and larger pond surface area.
- DO levels were higher after the dam.
- DO levels were higher in slightly warmer water.
- DO effects the water pH by pushing other dissolved gasses out.
- Specific conductivity is effect by narrow stream beds.

Future Studies

- Include data from the third dam.
- Historically, the Assonet River was known for its trout. Then the dams were built.
- Check seasonal variation (vegetation & evaporation)
- Measure flow, discharge, and nutrient loading from the spillway.
- Measure DO in the turbulent spillway.

Thank you to...

- Dr. Curry for his insight during the site visit.
- Kim McCoy for her help with the equipment and data.

Bridgewater-Raynham Watershed Team

- Mark Madonna
- Ray Seekell
- Ann-Marie Illsey
- Sehrish Abid
- Laurie Soderbom
- Kara Son
- Mr. Levesque