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Following Fall Brook

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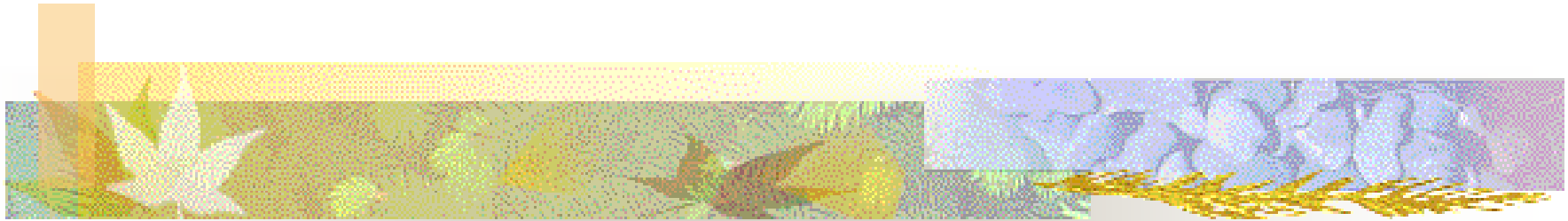
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Following Fall Brook



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Introduction

- Fall Brook is a part of the Taunton River Watershed which drains into Mount Hope Bay.
- In studying Fall Brook we examined two separate sites, Wareham Street and Wood Street.



Purpose

- To determine how land use affects nitrate and phosphate levels.
- We tested the nitrate and phosphate levels at each location every hour for twenty four hours from October 9, 2006 to October 10, 2006.



Hypothesis

- We believe that the nitrate and phosphate levels will increase as the river flows downstream into the Nemasket River due to an increase in land use.



Site Locations

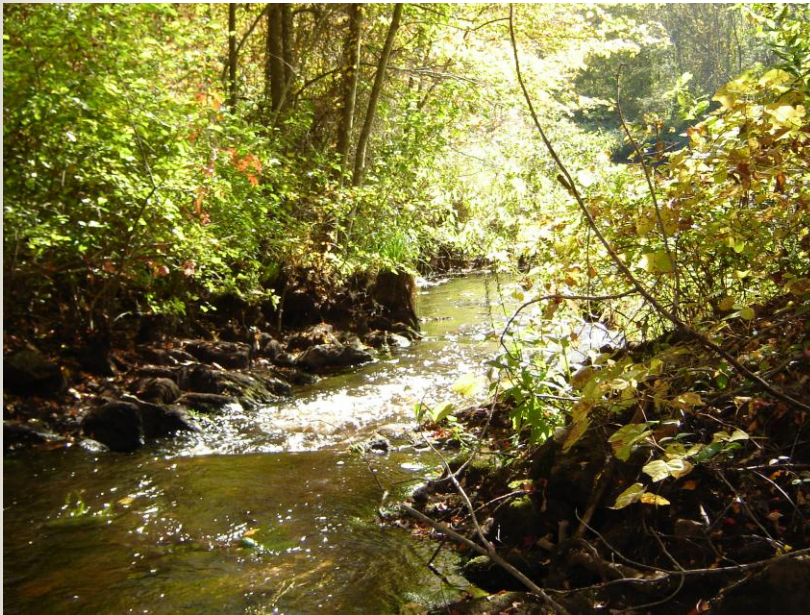
Wareham Street

- Located next to a horse farm.
- Downstream from a cranberry bog.
- In a heavily wooded area.

Wood Street

- Of sites tested, furthest downstream
- In wooded area
- Runs through conservation land
- Large Riparian zone

Site Pictures



Wareham Street



Wood Street

Fall Brook Site Locations Middleboro High School

Fall Brook
Wareham Street

Fall Brook
Wood Street

Legend

— Perennial Stream	— Ditch/Canal	— Pond, Lake, Ocean	— Submerged Wetland
— Intermittent Stream	— Aqueduct	— Reservoir	— Cranberry Bog
— Shoreline	— Dam	— Wetland	— Tidal Flat
— Intermittent Shoreline	— Channel in Water	— Salt Wetland	— Inundated Area
— Manmade Shoreline			



0 0.1 0.2 0.4 Miles



Experimental Design

■ Grab Samples

- Obtain samples in standard grab sample containers
- Filter (approx. 30mL) into small brown bottles
- Freeze samples

■ Sigmas

- Anchored Sigma to tree on the bank of each site.
- Put ice in the bottom of the compartment
- Let it run for 24 hours.
- Discard every other sample.

■ Put Hydrolab in water, making sure it doesn't touch the bottom.

- Tests for pH, dissolved oxygen, and temperature.

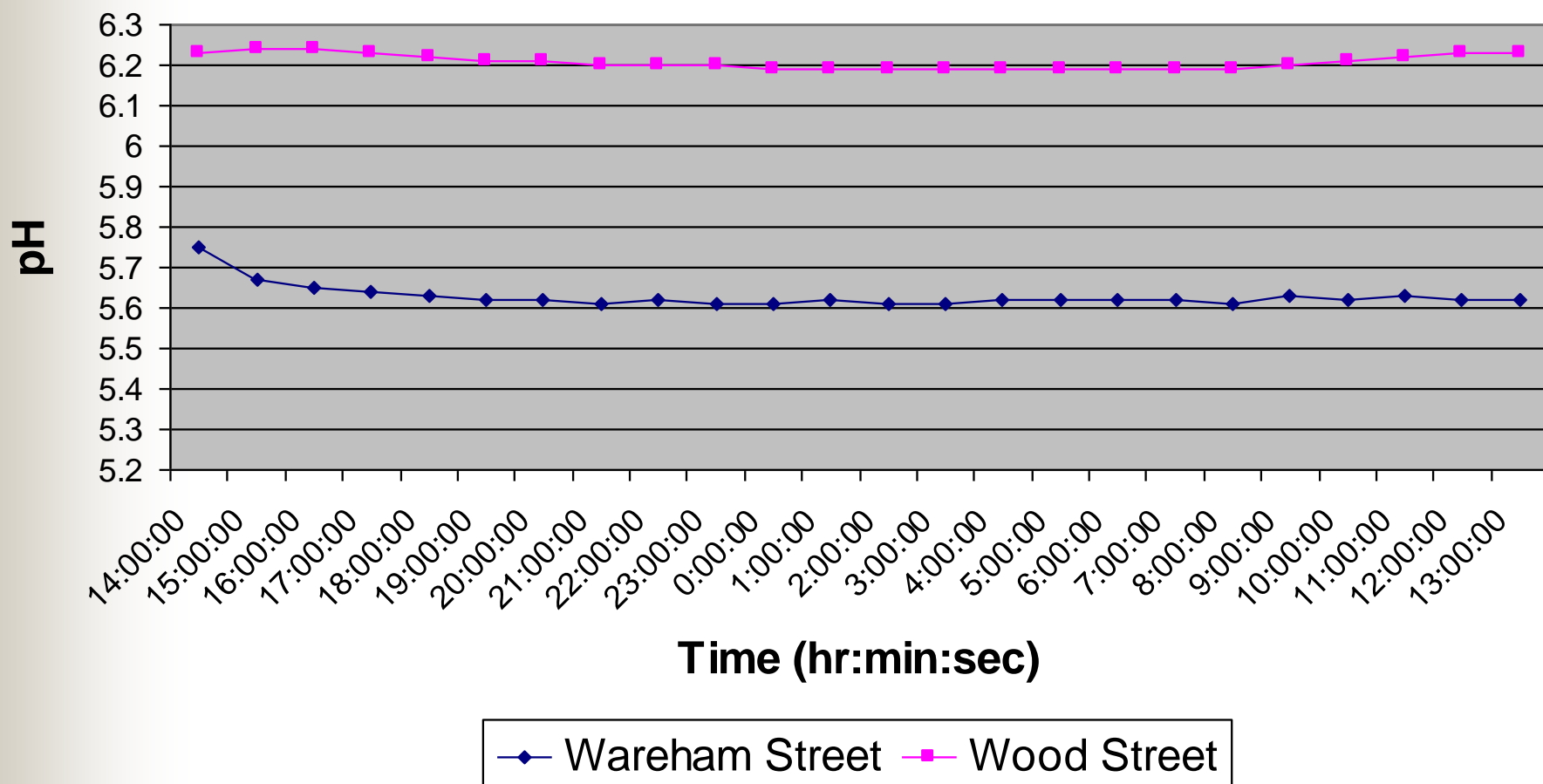
Sigma and Hydrolab



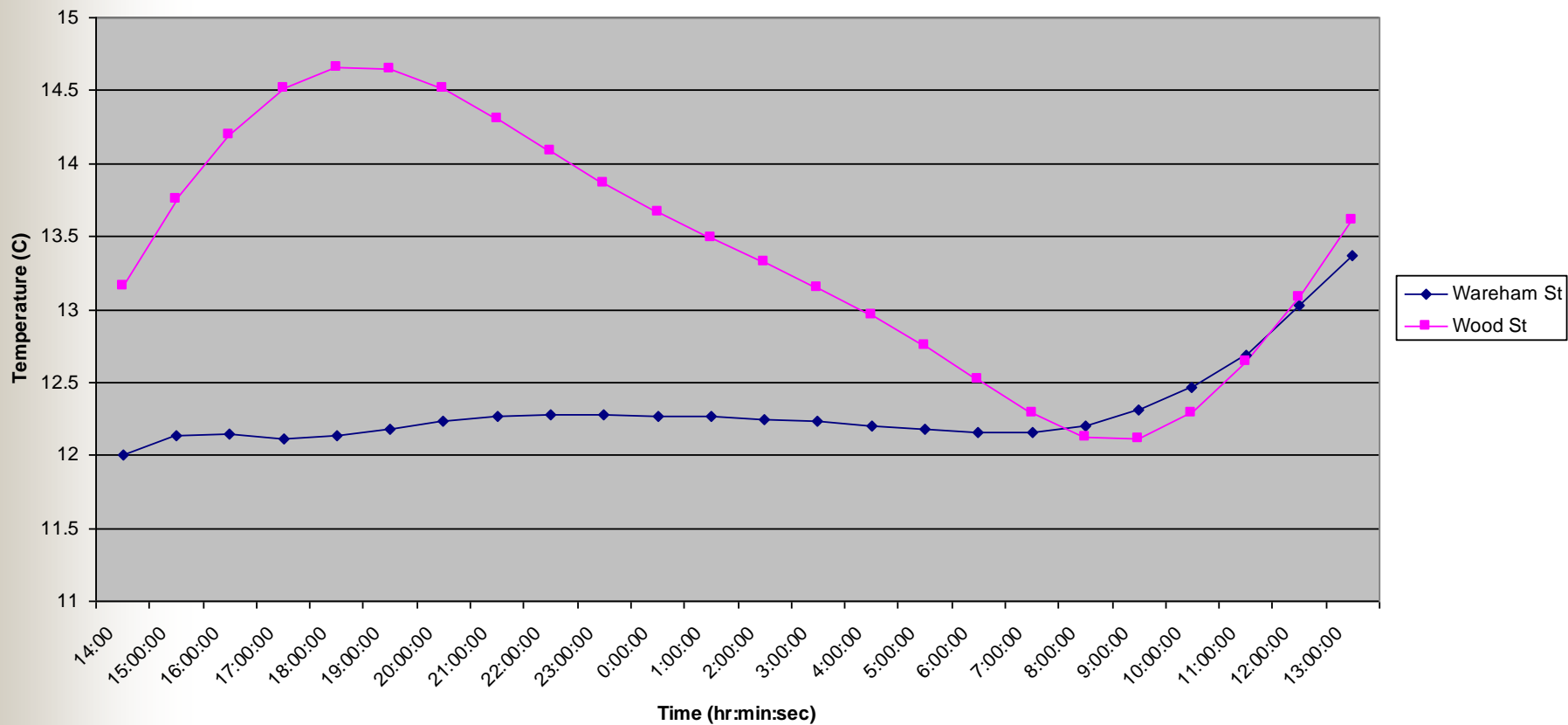
pH Fall Brook

10/9/06 and 10/10/06

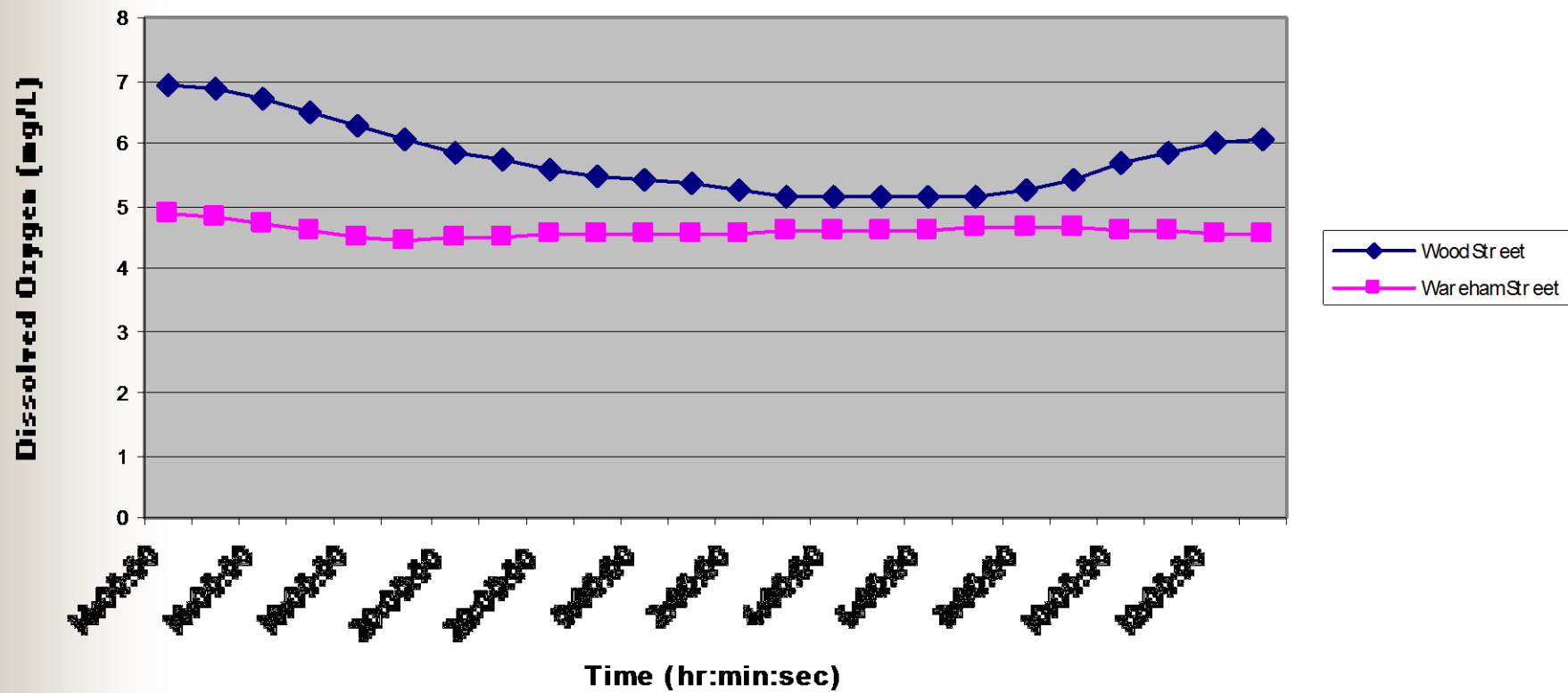
Water Chemistry Directed Study



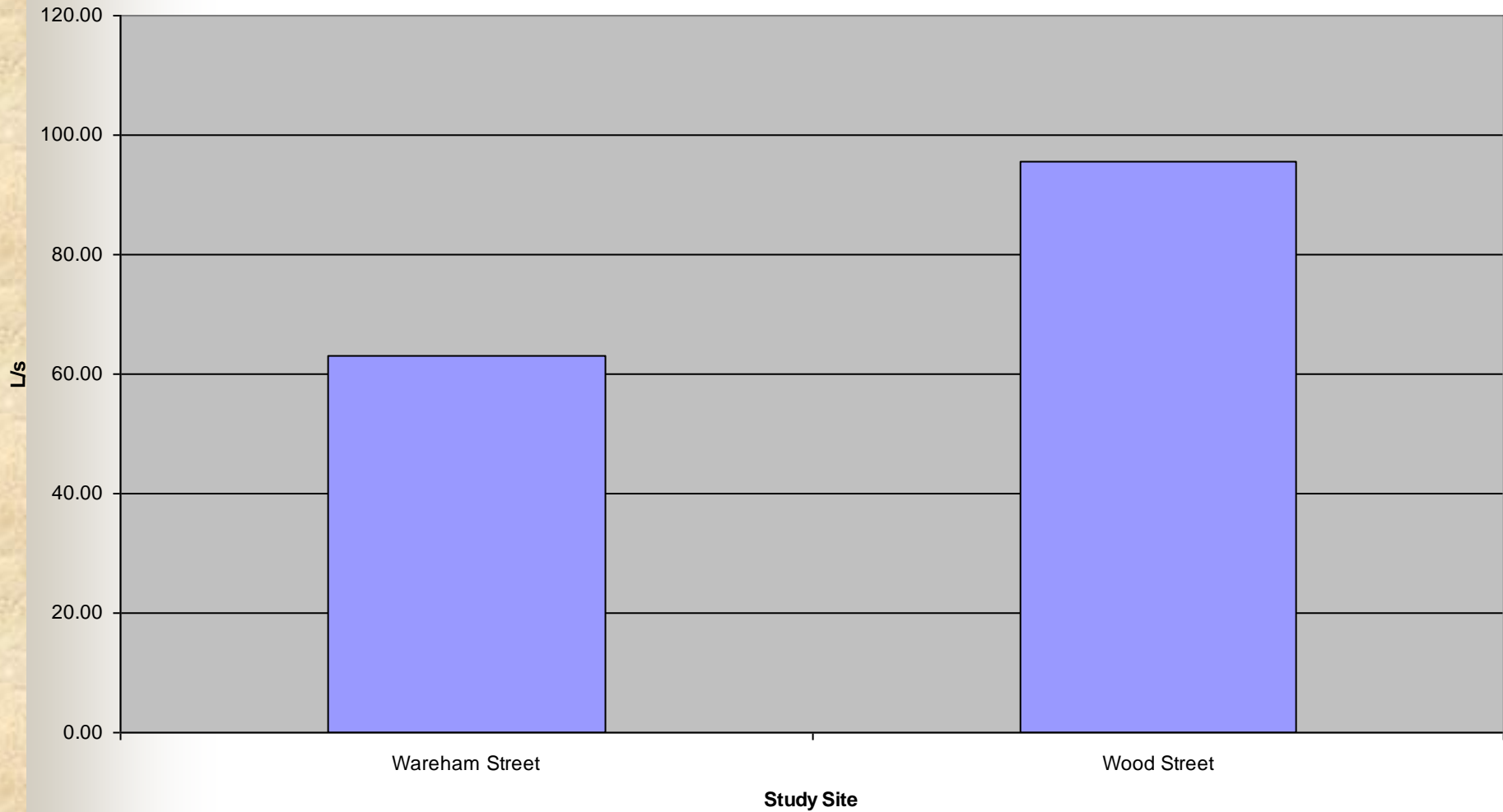
Temperature of Fall Brook
10/9/06 and 10/10/06
Watershed Chemistry Directed Study



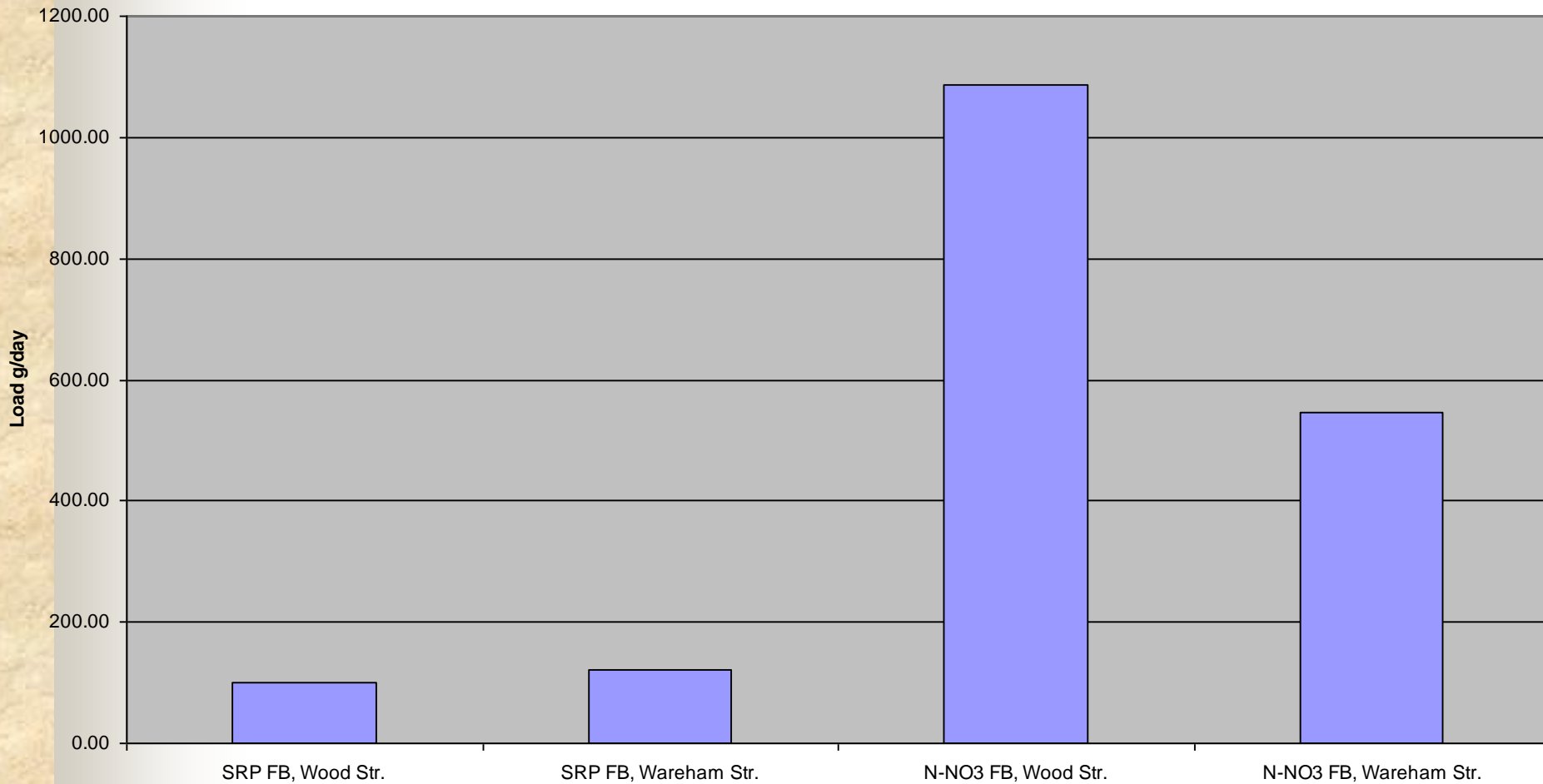
Dissolved Oxygen
10/09/06 and 10/10/06
Watershed Chemistry Directed Study



Discharge at Fall Brook: Wareham and Wood Street



SRP and N-NO3 Loads For Study Sites Fall Brook: Wareham and Wood Street





Conclusion

- Wood Street has higher nitrate levels
 - Further downstream
 - more land use.
 - Higher discharge and load
 - More water and pollutants going through location
- Phosphate has barely any difference
 - Levels too low to create a large effect.
- pH, Dissolved Oxygen, Temperature levels differ only slightly



Conclusion contd.

- Nitrate and Phosphate levels were non- toxic
 - Large Riparian zone
 - Improves water quality
 - Sediment filter
 - Pollution filter
 - Regulate stream flow
 - Bank Stabilizer
 - Allows for biodiversity within the ecosystem of the River at each location.
- Hypothesis was incorrect
 - Phosphate levels did not change significantly



Possible Threats to Fall Brook

- Development

- Destroys Riparian zone

- Pollutants are not leached out

- Cranberry bogs not a threat

- Environmental regulations ensure lower chemical levels