Following Fall Brook

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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
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

Time (hr:min:sec)
Temperature of Fall Brook
10/9/06 and 10/10/06
Watershed Chemistry Directed Study

Time (hr:min:sec)
Temperature (C)

Wareham St
Wood St
Dissolved Oxygen
10/09/06 and 10/10/06
Watershed Chemistry Directed Study

Time (hr:min:sec)
Discharge at Fall Brook: Wareham and Wood Street

Study Site

Wareham Street

Wood Street

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

<table>
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<th>Load g/day</th>
<th>SRP FB, Wood Str.</th>
<th>SRP FB, Wareham Str.</th>
<th>N-NO3 FB, Wood Str.</th>
<th>N-NO3 FB, Wareham Str.</th>
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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