Friends of Casco Bay
Casco BAYKEEPER

Wednesday, August 30, 2006

Marine Environmental Geology Class
Bowdoin College
Brunswick, ME 04011

Dear Students,

We are very excited about the opportunity to collaborate with all of you this fall. Our experience with service learning projects has been encouraging, and we hope and expect that the students of Bowdoin College will be valuable partners in the investigation of Casco Bay now and in the future.

Casco Bay is not only a valuable resource for our communities; it also greatly influences and shapes the quality of life we associate with Maine. The Bay that serves our communities so well is not, however, impervious to change or degradation. As our communities grow and economies expand, increasing pressure is placed on coastal ecosystems to sustain our activities.

Friends of Casco Bay was formed in 1987 with a mission to watch over the environmental health of the Bay, identify the threats to its ecosystems, and to strive to improve and protect this valuable resource. Our own resources to meet these goals are limited, and we therefore welcome collaborations that will enable us to expand our efforts.

This fall we are looking for your assistance to help examine water flow and quality in Quahog Bay. This project is part of a multi-year effort to understand the dynamics of Quahog Bay and several other Bowdoin classes have contributed to earlier phases of the project. Quahog Bay in eastern Casco Bay has experienced reduced water quality including low dissolved oxygen for at least the past fourteen years. This bay is considered one of the most environmentally challenged in Casco Bay. Previous Dissolved Oxygen Monitoring Projects have revealed hypoxic conditions at depth and high organic carbon concentrations in the sediment, suggesting high sediment oxygen demand. These conditions are present regardless of temperature or salinity stratification in the water column. The 2006 project will attempt to understand why these conditions exist by looking at how water moves into and out of the bay. Building an awareness of the flushing rates in Quahog Bay may help us develop a clearer picture of why these hypoxic events occur.

43 Slocum Drive, South Portland, Maine 04106 tel (207)799-8574 fax (207)799-7224 keeper@cascobay.org

In order to measure tidal variability and mean flow, the project will take advantage of the narrow restriction at the mouth of Quahog Bay. In the middle of this restriction lies Pole Island. The project will focus on flow measurements on the south west side of this island. Since mid July, an Acoustic Doppler Current Profiler (ADCP) has been secured to the bottom of the channel to record flow through this deep and narrow restriction. The ADCP will continue to monitor flow through this fall and will be removed in mid October. During the week of September 20 & 21, as well as October 4th & 5th we hope to conduct a series of temperature, salinity, and dissolved oxygen profiles at approximately three or four sites. The sites will run along a transect, and include one site at the mouth of the bay, one or two in the middle of the bay, and one at the head of the bay. We will also collect water samples for nutrient and chlorophyll analysis at these sites. Weather data, including wind speed and direction, will be incorporated to determine how the tidal flushing rates are modified by the wind.

Your efforts in Quahog Bay will complement ours and will provide a valuable service to the community. We look forward to working with you this fall and to the presentation of the results at the end of the semester, which we anticipate will benefit all concerned. Thank you for your assistance on this project.

Best Regards,

Peter Milholland
Citizen Stewards Coordinator

Mike Doan
Research Associate