

## **STUDY PLAN FOR BRINSON INLET LAKE WATER QUALITY MONITORING**

### Introduction

The restoration and wind tidal exclusion of Brinson Inlet Lake by the establishment of 2 low weirs was a collaborative effort between the U. S. Fish and Wildlife Service, Hampton Roads Sanitation District, City of Virginia Beach, Virginia Department of Game and Inland Fisheries, and Back Bay Restoration Foundation in response to the discovery that the lake was the primary contributor of sediment and turbidity to Back Bay, a nationally significant estuary. Now in its third year, the project is exceeding expectations for the establishment of submerged aquatic vegetation, recreational fishery, migratory waterfowl habitat, outdoor recreation, and as a place for K12 through college environmental learning and educational experiences. While initial monitoring documented impacts to water quality and design parameters, post restoration work has primarily been related to biological response of vegetation and fish in compliance with regulatory permit requirements.

### Purpose

Expand the scope of study beyond vertebrate and vegetative responses to trophic level monitoring and modeling. Data collected will be utilized by students at Christopher Newport University's Center for Wetland Conservation and Ocean Lakes High School for learning assignments, science projects, and annual poster session presentations. Results of enhanced monitoring will provide an indication of project success and guide adaptive management decisions.

### Methods

Conduct monthly monitoring of water temperature, pH, dissolved oxygen, specific conductivity, turbidity (NTU), total kjeldahl nitrogen, and total phosphorus at six permanent stations beginning in May 2014 until December 2014 utilizing a total station and acid fixed water samples.

### Student Questions

- what is the trophic status of the lake and how might it change or have changed over time?  
Compare trophic status to that of Back Bay estuary and discuss effects on biological life in the lake.
- what is the typical nutrient loading and sources of nutrients to the lake? Describe the seasonal variations in water quality and explain why they occur. How does the lake process nutrients and reduce turbidity? Explain the results of the water quality monitoring.
- what other inferences or conclusions can be made regarding the monitoring results?
- provide recommendations for additional data collection or studies and why?