

LANDSCAPE STUDIES AND THEIR INTEGRATION INTO DECISION-MAKING DATABASES – A VIEW FROM THE “FIELD”

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Geologists and geophysicists who study the evolution of landscapes are often called upon to include results of their work in larger datasets for management plans. A few basic examples include: site suitability surveys for onshore/offshore construction; basic geologic mapping; geoarchaeological investigations; and resource reconnaissance.

We present an example of the integration of field-acquired geological and geophysical data with laboratory analyzed aerial photography coupled to assist in the development of a management plan for Rainsford Island, Boston Harbor, Massachusetts.

Rainsford Island is owned by the City of Boston and is a park of the Boston Harbor Island National Park Area. The Island has seen many varied land uses over time and has a rich cultural history. As a result, the Island is presently officially closed to visitors. During its past, the Island was used as a cemetery from 1737 until about 1920. Anecdotal evidence suggests that all the remains were removed from the Island in the 1920's. Documentation has only been found for 3 of the estimated 1100 burials. The portion of the Island where the burring ground was located is only a few meters above the high tide line.

A combined team of geologists, geophysicists and archaeologists joined together to examine the Island. The team investigated historic aerial photographs to develop a short-term coastal erosion/deposition trend; employed ground penetrating radar and marine seismic equipment to determine long-term shoreline changes and framework geology; and acquired high-resolution ground penetrating radar to locate specific burials.

The ultimate goal of the team is to integrate the three scientifically-rich datasets into one environmental model of the southern portion of Rainsford Island. Once the model is complete, the results will be turned over to the City Archaeology Program of the City of Boston and the National Park Service for use in developing a management plan for the resources of the Island. Ultimately, the outcomes of this model will predict whether or not the cemetery is threatened under present calm-weather and storm condition as well as used to predict the effects of future storms and coastal modification on the site.

This approach and resultant model is in a series of site-specific investigations ongoing by the team on historic sites throughout Boston for use in development of management plans to preserve the resources of the rich cultural history of the City. Other sites include: the oldest house in Boston, the William Blake House; the Thomas Clapp House in Dorchester; Revolutionary War earthworks and British mass grave sites at Bunker Hill;

the wreck site of the Revolutionary War era Privateer, the Brigantine Freemason; the French Man-O-War Le Magnifique and others.