

Mill Pond Restoration Archaeological Assessment & Intensive (Locational) Surveys Ground Penetrating Radar Survey Barnstable, Massachusetts

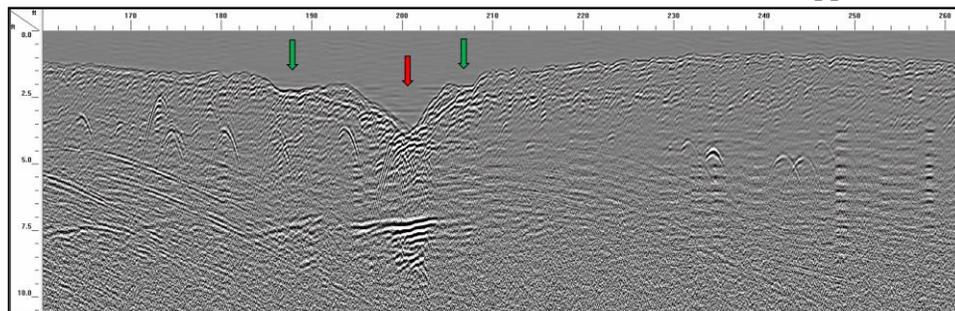
For environmental improvement purposes, the Town of Barnstable proposes to restore Mill Pond, an impounded freshwater pond along the Marstons Mills River. Restoration will involve dredging and removal of accumulated sediment with minimal impact to underlying native soils. Sediments have accumulated in the pond since the river was dammed in the late 17th century to power a fulling mill and a gristmill.

The Massachusetts Historical Commission (MHC) requested that an assessment and intensive (locational) archaeological survey be conducted, and that the scope include assessment of dredging impact areas to determine if any submerged sites would be affected. To meet the underwater survey requirements, AHS conducted a Ground Penetrating Radar (GPS) survey of Mill Pond to identify any submerged landforms that may possess high archaeological sensitivity.

AHS used a GPR machine in a flat-bottom canoe, a simple, cost-effective approach to scanning for stone obstructions and submerged watercraft. GPR is an active, non-invasive geophysical method that records contrasts in the dielectric properties of subsurface materials, or in this case, beneath the water. The dielectric contrast of the water was determined before the survey by running a test transect with the GPR machine and measuring the depth of the water to the initial silt layers and pond floor. AHS was able to determine the dielectric contrast of the pond and dramatically improve the post-field processing of the GPR data. Based on the GPR analyses, one important finding is an archaeologically sensitive landform that appears to be preserved adjacent to the natural course of the now submerged Marstons Mills riverbed. The relatively flat terrace above the river follows its course throughout the APE, and it is sensitive for both pre-colonial and early historical period archaeological sites. An excellent depiction of this landform is shown on the transect below; the river terrace appears on both sides of the river channel.



GPR collection setup, with flat-bottom canoe, GSSI 400 MHz antenna and SIR 4000 tablet.



GPR transect profile displaying archaeologically sensitive landform (river terrace – green arrows) on either side of the Marston Mills River channel (red arrow). The bathymetry of the pond is clear in this view, with the light grey representing the varying depth of the silt and water, and the contrasting initial pond bed surface.

Based on the results of the GPR survey, AHS determined that no archaeologically sensitive areas will be affected.