

## Chapter 7 Core Sampling of Terraces West of Broad Way

(Last updated: Nov. 25, 2008)

In prior field seasons, archaeologists investigating the New Philadelphia town site primarily utilized one-inch diameter soil core sampling tools for an initial systematic testing of anomalies identified through geophysical surveys. Those smaller-scale core sampling tools typically obtain core samples of three feet in depth below the ground surface. Starting in the 2008 field season, we also began utilizing a two-inch diameter soil core sampler that can obtain core samples of up to six feet in depth below the ground surface. Figure 7.1 depicts this type of heavier-gauge soil core sampling device, which is driven into the ground with a thirty-pound slide hammer assembly on the upper portion of the device, and which is withdrawn from the ground with a custom lever jack assembly.

*Figure 7.1. Example of a slide hammer driven, two-inch diameter core sampling device.*



We will use this core sampling device, which is referred to as the “AMS core sampler,” in future field seasons as part of our ongoing program of conducting systematic testing of anomalies identified through remote sensing methods employed at the town site. Such core sample surveys can be used to test the anomalies identified both in ongoing ground-based geophysical surveys, and the anomalies identified in the low-altitude thermal imaging survey conducted in May, 2008 (see Chapter 2 of this report).

During the 2008 archaeological field school at New Philadelphia, we utilized the AMS core sampler to test a series of earthen terraces on the west side of the New Philadelphia town site. These terraces were constructed in the early 1990s by private landowners of portions of the town site as part of a federal program that promoted the creation of such ridges as measures to control soil erosion on the landscape. One can readily observe the contours of these terraces by comparing a 1939 aerial photograph of the town site (Fig. 7.2) with one taken in 1998 (Fig. 7.3).



*Figure 7.2. 1939 aerial photograph of New Philadelphia town site (Photograph from U.S.D.A. Aerial Photographs Collection).*

The west side of the town site in the 1939 aerial photograph consisted of relatively even topography (Fig. 7.2). That part of the landscape was modified in the early 1990s to create a series of curving terraces and a new catchment pond, as shown in the 1998 photograph (Fig. 7.3). A systematic walk-over survey of the town site conducted in late 2002 and early 2003 recovered relatively few artifacts from the surface area of those terraces, in contrast to a high frequency of artifacts located on the surface of the north central part of the town site (Gwaltney 2004). We are still in the process of exploring the area of these terraces with ground-based geophysical surveys, and we have questioned whether this area of the town site was dramatically disturbed by the creation of those terraces.



*Figure 7.3. A 1998 high-altitude aerial photograph of the New Philadelphia town site, with town boundaries outlined and three earthen terraces labeled (U.S. Geological Survey, Aerial Photographs Collection).*

During the 2008 field school, we undertook AMS soil core sample surveys along the ridges of the terraces labeled as 1, 2, and 3 in Figure 7.3. One general scenario for the method in which such terraces are created involves a bulldozer digging into the ground surface on either side of a terrace ridge and pushing soil and sediment layers up into that ridge in a way that significantly disturbs both the surrounding depressions, called swales, and the resulting ridges. If such a method was employed, one expects a soil core sample in a swale to show the absence of a thick top soil layer (which would have been scraped away onto the neighboring ridge) and one expects to find a soil core sample of the ridge top that exhibits significant mixing and disturbance of soil layers that were carved out of swales and pushed up to create that higher contour point.



*Figure 7.4. Paul Shackel and Chris Fennell obtain AMS soil core samples on terrace 1 in the New Philadelphia town site (Photograph by J. Eric Deetz).*

We placed several soil core sample points at approximately every 100 ft. from the north edge of the town site running southerly down the extent of terraces 1 and 2 and on part of terrace 3. The AMS soil core sampling device obtained sample profiles that went four feet in depth and were two-inches in diameter. Core samples were later recorded in profile as to soil and sediment colors, textures, and types, and any inclusions of cultural materials. We also took adjacent samples from points in the swale immediately east of terrace 1 (Figs. 7.3, 7.4). These soil core samples indicate that the stratigraphy underlying terrace 1 remains undisturbed, whereas the stratigraphy on the ridges of terraces 2 and 3 appears to be significantly disturbed from the creation of the terraces. Similarly, the swale immediately east of terrace 1 appears to lack the typical upper stratum of top soil found on other parts of the town site. It appears that terrace 1 was created by digging out adjacent swales without bulldozing soils and sediments in a jumble onto the ridge-top.

Based on these results, we may target portions of terrace 1 for further archaeological investigation in future field seasons. We will also use the AMS core sampler to obtain core samples of four or six feet in depth to test other portions of the town site stratigraphy or particular anomaly locations identified in ground-based or aerial remote sensing surveys.

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