
3.0 METHODS AND RESEARCH DESIGN

3.1 METHODS OF DATA COLLECTION

The investigation began with an analysis of archeological sensitivity based on mapping supplied by RKK detailing the areas of maximum physical disturbance of all of the proposed alternatives involving construction. This area was designated the overall Area of Potential Effect (APE) for archeology (Figure 1). This construction mapping was compared with a series of historic maps covering the region dating from 1820, 1849, 1868, 1881, and 1893 (Figures 10-16). The map data was then combined with knowledge of previously reported cultural resources in and near the APE, an understanding of the history of the general region, and known settlement and subsistence behaviors of past populations to develop a preliminary evaluation of historic archeological sensitivity.

Sensitivity or potential for prehistoric archeological remains was also assessed principally through map analysis. Factors including proximity to water sources (generally within 100 meters), well-drained soils, knowledge of prehistoric settlement patterns, and proximity to known prehistoric sites were assessed in determining the relative sensitivity of a particular location. The single most telling factor affecting prehistoric sensitivity was the extensive degree of previous construction disturbance throughout the area. Many more locations within the APE might have been judged sensitive for prehistoric sites but for the presence of previous earthmoving disturbance.

These sensitivity evaluations ultimately formed the basis for guiding the Phase I archeological testing. Test excavation units were focused on those areas deemed highly or moderately sensitive for archeological materials, while disturbed or otherwise low sensitivity areas were not tested. All evaluations of archeological sensitivity were presented to and agreed upon by representatives of the SHPO, DelDOT, RKK, and JMA at numerous meetings held prior to archeological field survey.

Field investigations commenced with a pedestrian reconnaissance of the entire APE for archeology. The locations of wetland areas, areas of previous disturbance, and the nature of landforms in the APE were confirmed and noted on a set of base maps.

The presence or absence of archeological resources in areas of high archeological sensitivity was documented through the manual excavation of shovel test units (STUs) placed at 15-m intervals. Additional units, termed radial tests, were placed at 7.5-m intervals around positive finds. No testing took place within identified wetlands, on steep slopes, or areas of obvious previous disturbance. The locations of all STUs were recorded on plans of the project area, and the soil profiles were recorded on standardized forms. Excavated soils were passed through one-quarter-inch hardware cloth to ensure uniform recovery of cultural material. Cultural material was retained in bags marked with standard provenience information. However, recent artifacts, roadside debris, and other similar classes of artifacts were noted on field forms but were not generally saved. Following excavation and recordation, the locations of shovel tests were restored to as close as original condition as possible by backfilling with the screened soil. Narrative field notes and black-and-white and color photographs were produced to document the setting and results of the field investigations.

The geoarcheological assessment at the eastern portion of the APE also included the use auger test units (ATs) at Site 1 and a bucket auger at Site 7 and. STUs at Site 7 were augmented using an 8.9 cm (3.5 inch) bucket auger until refusal. A gouge auger and piston sampler were employed in the testing of AT locations within Site 1. The gouge auger used for this survey is 100 centimeters long and 60 millimeters in diameter, and recovers an undisturbed sample of cohesive

soil/sediment without compaction or mixing of stratigraphic layers. The piston sampler is 75 centimeters long and 40 millimeters in diameter. The piston sampler also takes undisturbed samples of less cohesive soil/sediment (such as unconsolidated sand) without compaction or mixing of stratigraphic layers.

The soils recovered from the ATs were documented based on depth below ground surface, textures, colors, degree of mottling, consistence, and other notable features. The supratidal deposits recovered from the tests were screen through one-quarter-inch mesh to identify any archeological materials associated with the deposits. The position of each test location was plotted on a base map.

All artifacts were transported to JMA's laboratory in West Chester, Pennsylvania, for processing, analysis, and temporary storage. Delaware State Museum Accession numbers were obtained for the collections generated by the project. All cultural material and associated documentation resulting from the project will be submitted to the Delaware State Museum for curation at an approved facility.

3.2 RESEARCH DESIGN

The overall objective of the Phase I archeological survey is to identify historic and prehistoric sites that might be adversely affected by the turnpike improvements project. Beyond this general goal, archeological data obtained during the course of the survey might be amenable to addressing various standing research questions in Delaware archeology.

Regarding prehistoric archeology, prehistoric artifact assemblages might address questions about the use of Iron Hill jasper in the area. Iron Hill is located near the central portion of the current APE and is a known source of jasper utilized by prehistoric peoples. Identification of an assemblage of this material in the APE might lead to an increased understanding of the lithic technology involved in the utilization of this local raw material. Minimally, the recovery of Iron Hill jasper from a site(s) in the APE would enhance the extant data base regarding the distribution and use of this material.

Another possible area of inquiry for prehistoric sites is the relationship between sites and wetlands. Considerable survey efforts have been focused on the Churchmans Marsh locality, partly with an interest in studying prehistoric use of marsh and wetland environments. Recovery of floral and/or faunal remains from a site within the APE might assist in the understanding of seasonality and settlement in such environments, and how such adaptations changed through time.

Historic archeological questions that might be addressed principally turn on an interest in historic farmsteads in the area. As discussed above, farmsteads are the most likely type of historic site to be found within the APE. The excavation and analysis of such a site would address questions regarding farming in northern Delaware and its development over time. A farmstead site might reveal how local farmsteads fit into the various developmental stages and processes of development, as outlined previously.