

PHASE IB ARCHEOLOGICAL STUDY
BEAR TAVERN ROAD BRIDGE OVER JACOBS CREEK
HOPEWELL TOWNSHIP, MERCER COUNTY, NEW JERSEY



PREPARED FOR
MERCER COUNTY
OFFICE OF THE ENGINEER
TRENTON, NEW JERSEY

BY
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PHILADELPHIA, PENNSYLVANIA

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HOPEWELL TOWNSHIP, MERCER COUNTY, NEW JERSEY
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Prepared for

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MANAGEMENT SUMMARY

JMA conducted a Phase IB archeological survey within the impact area of changes to the Jacob's Creek Bridge and approaches in April of 2010. The survey consisted of 15 bucket auger tests and one shovel test within a transect that crossed the project area from southeast to northwest. No cultural materials were present within the project area which had been previously disturbed by the installation of a sewerline. The IB survey also included an examination of the stream banks between the extant Jacob's Creek bridge and Ewing Creek. No evidence of an earlier bridge was noted.

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1. INTRODUCTION

On Thursday, April 22nd, 2010, JMA employees Matthew Harris and Tod Benedict conducted a Phase IB archeological survey within the impact area of proposed changes at the location of a new bridge to carry Bear Tavern Road over Jacob's Creek and the reconfiguration of the bridge approaches. The project area is located in the southern portion of Hopewell Township in Mercer County, New Jersey. The Phase IA study for the project is reported under separate cover (McVarish and Yamin, January 2010).

The purpose of the archeological survey was to test the limits of disturbance of a sewer main crossing the creek south of the bridge, to test the integrity of soils outside the disturbed area, and to walk the area between the bridge and Ewing creek to look for signs of previous fords or bridges. Fifteen bucket auger (4-inch diameter) tests and one shovel test pit (STP) were excavated along a transect beginning along Jacob's Creek Road approximately 340 feet south of the southeast retaining wall of the bridge and ending on the west side of the creek at the south west retaining wall of the bridge (Figure 1, Plate 1). While all excavated soils and sediments were screened through quarter-inch hardware cloth, no historic or prehistoric archeological material, cultural features, or likely culture-bearing soils were encountered within these excavations.

2. THE PROJECT AREA

The project area is confined to a small strip of floodplain and hill slope situated to the west of Jacob's Creek Road and south of the extant Jacob's Creek bridge (Plate 2). For much of the project area, Jacob's Creek serves as its western boundary except for a small portion that extends west of the creek near the bridge. Known disturbances to the project area include a large sewer line that crosses the creek roughly 100 feet south of the bridge. Bucket auger tests, soil profiles, and observations of the creek banks indicate that the sewer trench has had a large impact on the integrity of the floodplain within the project area. Wire bound cages of crushed rock, commonly referred to as riprap, are buried in the banks of the creek on either side of the sewer crossing (Plates 3 and 4). Evidence of dynamite blasting in the way of tags from detonator wire was noted on the bank near the riprap. The proximity of bedrock to the surface (at the surface to one meter below the surface) likely required the use of explosives to achieve the grade necessary for the sewer line. A large sewer manhole cover is present on the western banks for the creek (Plate 5). Auger test numbers 10, 11, and 12 encountered shallow obstructions and disturbed profiles reflecting sewer trench fill (Figure 1). In addition to the sewer trench, an access road branched off Jacob's Creek Road and continued north towards the base of the bridge (Plate 6). This road apparently relates to recent construction. Its surface is well packed, flat, and level. Little erosion or displacement of the steep edges of the road has occurred. The road cross cuts a large pile of dumped rubble and bedrock which also does not show much erosion given its steep sides. Finally, the cultural debris, including bottles, cans, car parts, and general trash alongside the access road and Jacob's Creek Road is all recent. It is very likely that the road functioned as the access road for the heavy machinery needed to dig the sewer trench and lay the sewer pipes.



Plate 1. Auger hole excavation at beginning of transect; alongside Jacob's Creek Road.



Plate 2. General view of project area, looking north.



Plate 3. Exposed riprap on eastern bank of Jacob's Creel, looking east.



Plate 4. Exposed riprap on western bank of Jacob's Creek, looking north.



Plate 5. Manhole cover for sewer line crossing Jacob's Creek.



Plate 6. Construction access road alongside Jacob's Creek Road, looking south.

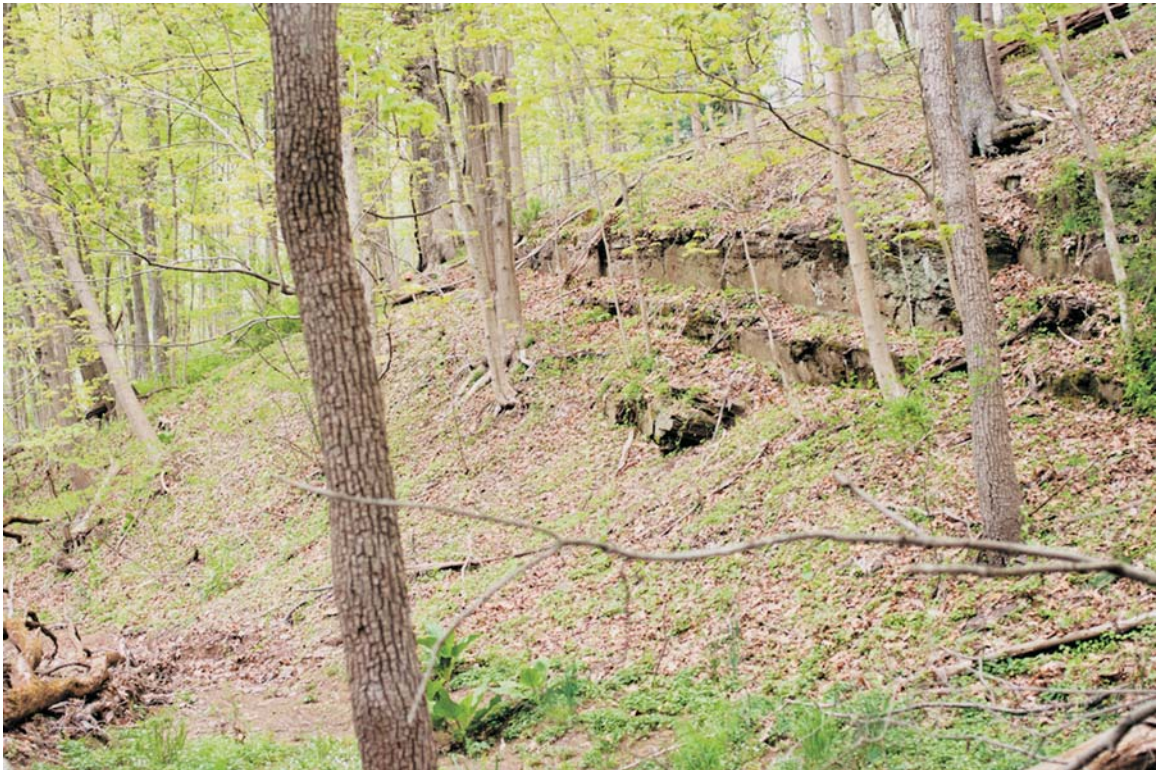


Plate 7. View along strike of quarried rock outcrop; looking southwest.

3. SUBSURFACE TESTS

The auger holes, designated AHs 1–16, were placed at 30-ft. (9.1-m) intervals along the approximate centerline of the proposed reroute of Jacob’s Creek Road. AHs 1 through 12 were located across the upland and alluvial landforms east of the stream, with AH 1 at the top of the embankment adjacent to Jacob’s Creek Road, while AHs 13 through 16 were located west of the stream, across the corresponding landforms on the opposite side of the valley (Figure 1).

AHs 1–5 were excavated into the upland landform, with AHs 3 and 4 within the probable road bed. The A horizon in these tests consisted of dark reddish brown very shaly silt loam (AHs 1, 3), shaly silt loam (AH 2), or silt loam (AHs 4, 5), which ranged from only 3 cm in AH 3 to 25 cm thick in AH 1. The underlying subsoil was composed of reddish brown silt loam to heavy silt loam, which varied from shaly (15–35% coarse fragments) to extremely shaly (60–90%). Impenetrable shale, resulting in “auger refusal,” occurred between 14 cm below surface in AH 3 to 63 cm in AH 4, both of which were within the road bed.

Closer to the creek, AHs 6–12 were excavated within the floodplain east of the channel. The shale content in the upper portion of the soil profile was significantly less than in the upland, although the thickness of the A horizon was comparable, and the color and texture of both the A and B horizons were the same. Impenetrable shale in these tests ranged from 80–101 cm below surface in AHs 7–9, 37 cm in AH 1, and 52 cm in AHs 6, 10, and 12. The alluvium derived subsoil became wet at approximately 75 cm in AHs 8 and 9. None of these tests produced cultural material.

A shovel test unit (STU 1) measuring roughly 60 cm in diameter was excavated 3 m northeast of AH 7 to examine a larger sample of the intact alluvial soils at this location, which were deeper and drier here than elsewhere in the vicinity. The A horizon, 22 cm thick, was dark reddish brown silt loam with weak, granular structure, while the underlying cambic (Bw) horizon, reddish brown silt loam with weak, sub-angular blocky structure, extended from 22–52 cm below surface. A slight lightening of the soil, though still registering as reddish brown, occurred between 52–77 cm, corresponding to a BC or C horizon, and a basal deposit of moist, reddish brown, shaly silt loam, a probable 2C horizon, was exposed between 78–86 cm. No artifacts were present in any of the horizons.

Shale fragments were prominent across the ground surface on the west side of the creek, both as outcrops and as loose surficial scatter. The width of the floodplain was much narrower along the proposed road centerline than on the east side of the creek, with a steeper upslope to the upland landform. AHs 13 and 14 were excavated within the floodplain portion of the transect, while AHs 15 and 16 were located on the sloped upland (Figure 1). Both AH 13 and AH 14 contained a thin A horizon and near-surface shale despite their occurrence in proximity to the stream. The A horizon consisted of dark reddish brown silt loam to shaly silt loam. Impenetrable shale was encountered within the A horizon in AH 13 (12 cm below surface) and 8 cm into the underlying subsoil of reddish brown very shaly silt loam (18 cm below surface) in AH 14. The soil color in AHs 15 and 16 was much less red, with a thin (4 to 7 cm thick) A horizon recorded as very dark grayish brown loam and the subsoil as strong brown sandy loam; auger refusal on impenetrable shale occurred between 15–17 cm. As on the east side of the creek, no cultural material was present.

4. FIELD SURVEY

Surface inspection of the stream bank on both sides of Jacobs Creek between the Bear Tavern Road bridge and Ewing Creek, roughly 180 m downstream, documented the absence of any visible intact or scattered masonry components associated with a former bridge abutment or pier, such as dressed or mortared stone. Based on the observed topography of the ground surface in the immediate vicinity of the extant bridge, it appears probable that any earlier (pre-1882) bridges here would have been constructed at the same location, and the ford in use during the eighteenth century also would have been at or directly adjacent to the location of the current bridge

A rock outcrop was noted along the western valley slope that likely once served as a rock quarry. The outcrop, which may well have been the source of the rock for the bridge abutments, is located roughly 450 feet south of the bridge well outside the project area. Plates 7, 8, and 9 show the hill slope position of the outcrop and the tool marks found across the outcrop. The type of stone derived from this outcrop of Passaic Formation is very similar to the lithology of the cut stones in the bridge abutments.

5. CONCLUSIONS AND RECOMMENDATIONS

Excavation within the project area did not encounter any prehistoric or historic period archeological artifacts, subsurface features, or buried land-surfaces. A small area of intact soils was identified (AUs 7-9 and STP 1), but the soil profile in this area (Plate 10) suggested a recent age and alluvial origin. Given the disturbance caused by the sewer pipe, access road, recent soils, and high degree of scouring by Jacob's Creek, it is extremely unlikely that any in situ artifacts or features are present within the proposed impact area of the new bridge and its approaches. JMA does not recommend any further archeological testing.

6. REFERENCE CITED

McVarish, Douglas C. and Rebecca W. Yamin, Ph.D.

2010 Bear Tavern Road Bridge Over Jacobs Creek, Hopewell Township, Mercer County, New Jersey, Phase IA Archeological Study. Prepared for County of Mercer, Office of the Engineer, 640 South Broad Street, Fourth Floor, Trenton, New Jersey 08650.



Plate 8. Evidence of pick and chisel marks along quarry face, looking west.



Plate 9. Evidence of pick and chisel marks along quarry face, looking west.



Plate 10. Profile of STP 1, looking north.