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Within Hunter Research, Inc., Ian Burrow served as Project Manager for these investigations. William Liebeknecht, Principal Investigator, directed the field investigations and laboratory analysis. The archaeological field team comprised Susan Ferenbach and Glen Mellin (Senior Archaeologists), Timothy Hitchens, and Glen Keeton, (Field Assistants). Artifact analysis was carried out by Susan Ferenbach. Report graphics were prepared by Elizabeth Cottrell and Matt Pihokker and report formatting was undertaken by Elizabeth Cottrell, both under the direction of James Lee and Ian Burrow. Report management, final editing, and production were overseen by James Lee. This report was authored by William Liebeknecht and Ian Burrow.

William B. Liebeknecht, MA, RPA, Principal Investigator

Chapter 1

RESEARCH DESIGN AND OBJECTIVES

A. INTRODUCTION

1. Historic Properties and Regulatory Framework

Phase II evaluation studies of the Reedy Island Cart Road Site 4 [7NC-F-153] concluded that a suite of archaeological features in Locus 5, comprising two parallel ditches, an intervening berm, and associated post settings are related to the alignment of one of the late 17th- and 18th-century cart roads connecting the Bohemia Manor area along the Upper Chesapeake Bay in Maryland with anchorages and landings on the Delaware (Figures 1.1 and 1.2)(Hunter Research, Inc. 2011a, 2011b, 2014). The studies also concluded that these features were eligible for the National Register under Criterion D. Working within the framework of the 2007 Memorandum of Agreement (MOA), the Federal Highway Administration, the Delaware State Historic Preservation Officer, and the Delaware Department of Transportation determined that an Alternative Mitigation Program would be an appropriate treatment for the adverse effect of the U.S. Route 301 undertaking on these eligible archaeological resources.

As part of the Phase II recommendations, Hunter Research, Inc. prepared a testable depositional model that predicted the topographic settings in which physical traces of these early, and in most cases long-abandoned, roads will be found (Hunter Research, Inc. 2014: Appendix E). In the intensively cultivated and deflated soils of this part of Delaware survival of these features was considered likely to be intermittent and to require the use of multiple techniques for successful identification. This document reports on and assesses the implementation of this Alternative Mitigation Program

2. Historic Context: Augustine Herrman's Cart Roads (Figure 1.3)

The cart road alignment examined in this study is part of the network of early roads across this part of the Delmarva Peninsula that owes its origins to Augustine Herrman in the third quarter of the 17th century. Immediately upon the receipt of his grant of the 6,000-acre Bohemia Manor tract, Augustine Herrman began the construction of a wagon road that extended between a newly created landing at the head of the Bohemia River across the peninsular ridge line to a landing on the Appoquinimink River near the modern day site of Odessa, Delaware.

The scale of this enterprise is shown from early descriptions of the road. In 1679, Dr. Benjamin wrote in a journal account of his trip from Boston to New Castle that "*About 8 myles below New Castle is a Creek* [the Appoqunimink]*, by wch you may come to a neck of land 12 myles over . wch are drawn goods to & from Maryland & Sloopes also of 30 tuns are carried overland in this place on certain sleds drawn by oxen, & launched again into the water on ye other side"* (Mountford 2002). In 1697 Governor, Francis Nicholson claimed that boats and shallops were portaged utilizing sleighs and "great carts" along the eight-mile-long cart road (Hunter Research, Inc. 2009:4-8 to 4-10).

A second, longer route connected the Augustine Creek/Reedy Island area with the main Bohemia Manor property. The 1740 Rumsey Map shows another road branching from the east side of Choptank Road, north of the Bohemia Landing road, and heading off to the northeast and (based on archaeological and cartographic evidence) intersecting with the east-west route from Reedy Island to Bohemia (mentioned

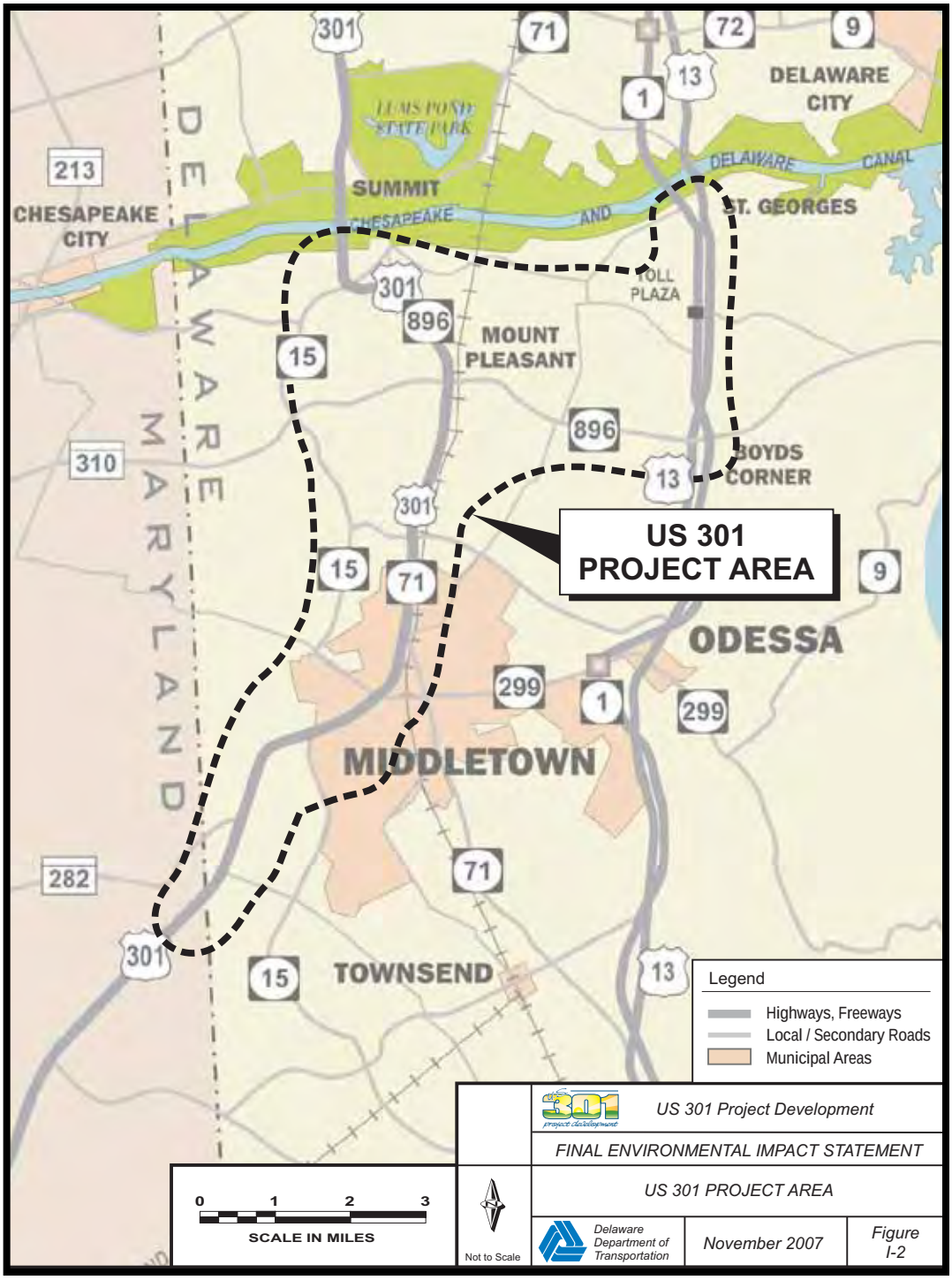


Figure 1.1. General Location of the U.S. 301 Selected Alternative Project Corridor. The area covered by this report is indicated. Source: Federal Highway Administration and Delaware Department of Transportation 2007:Figure I-2.

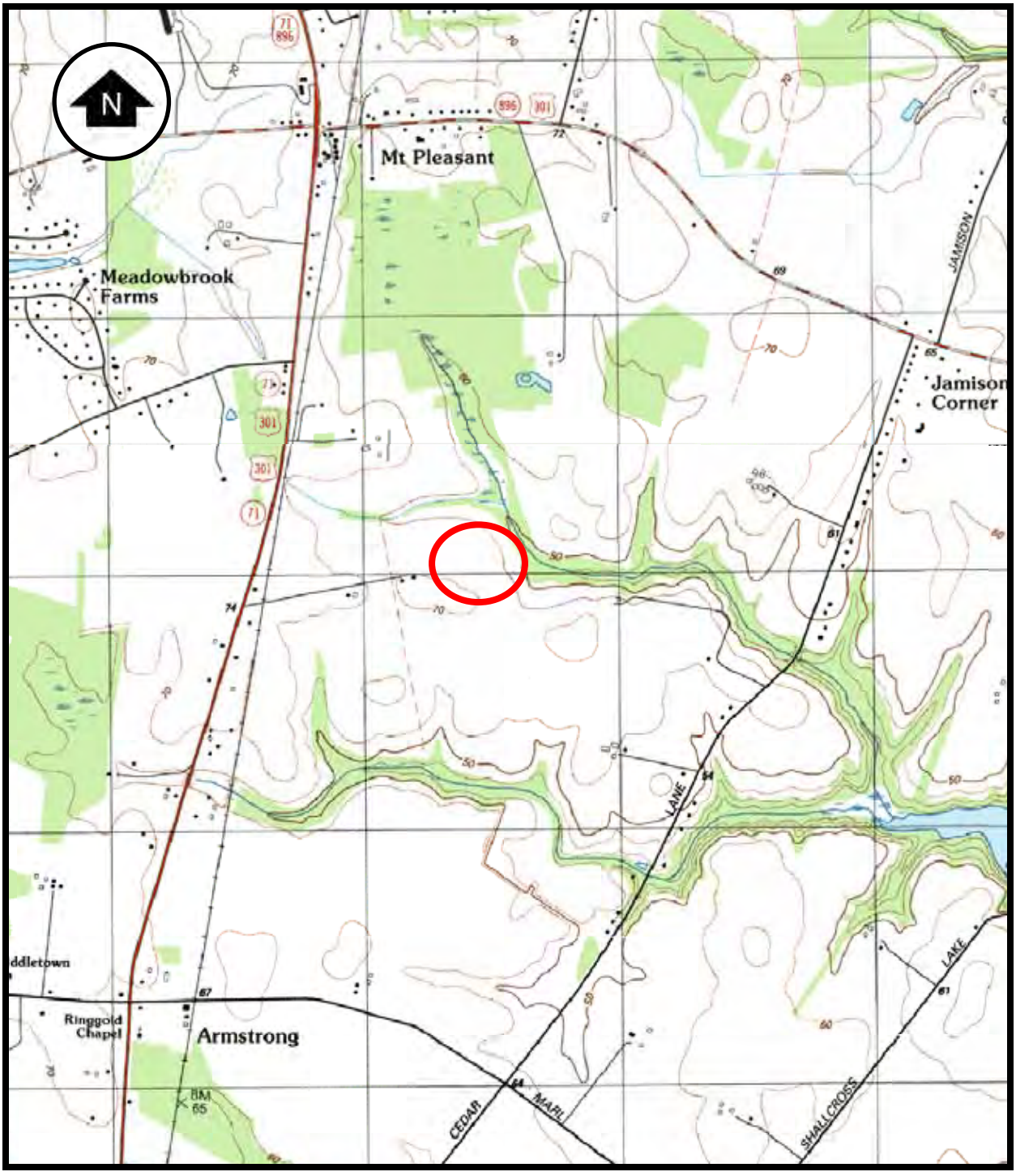


Figure 1.2. Detailed Location of the Alternative Mitigation Studies and the adjacent Phase I and II Investigations of the Reedy Island Cart Road Site 4 (7NC-F-153, N14533). Source: USGS Middletown, Delaware Quadrangle, 1953, photorevised 1986.

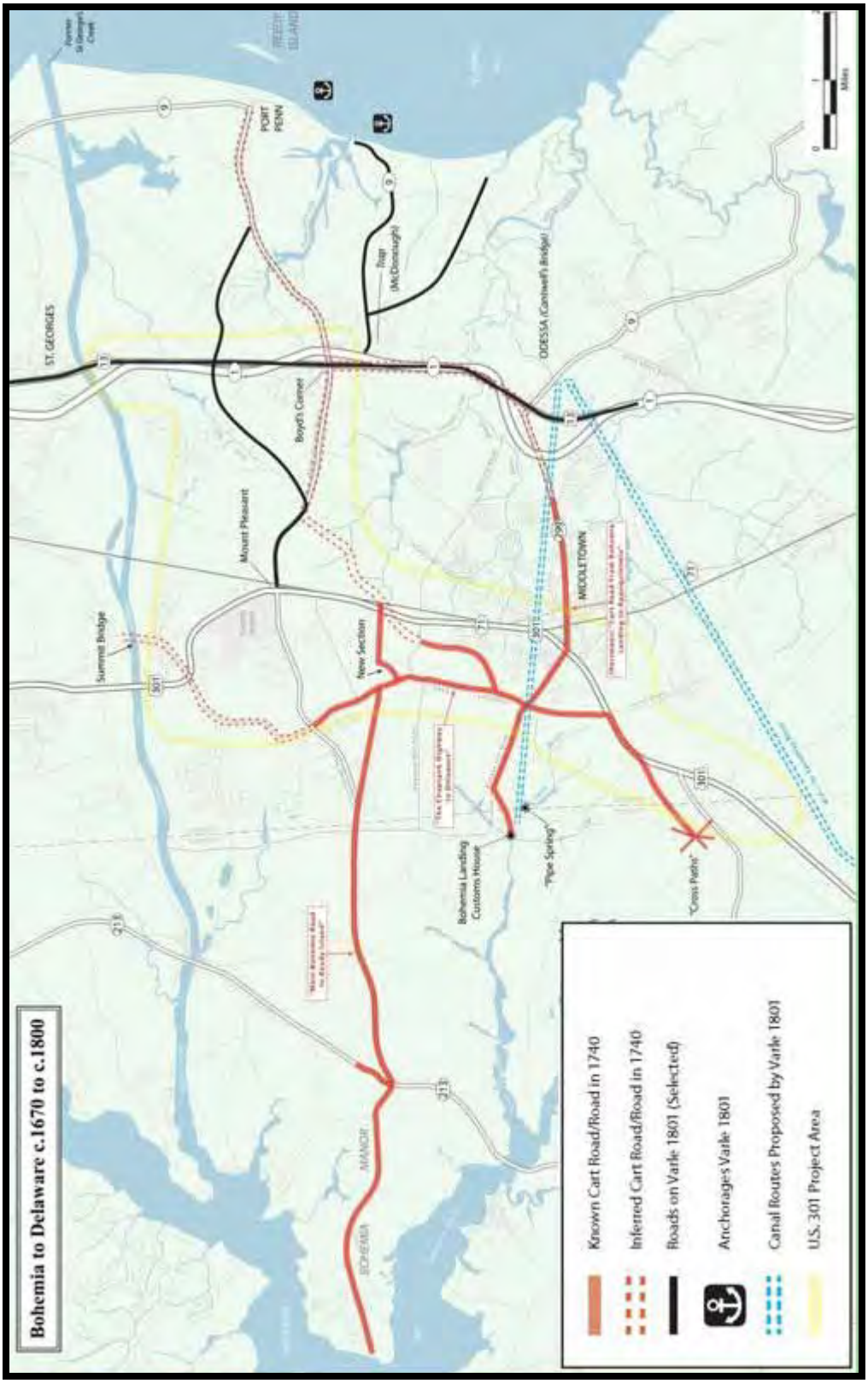


Figure 1.3. The Early Cart Road System from the Upper Chesapeake to the Delaware in the U.S. Route 301 Vicinity, as compiled in 2012. The map is compiled from several sources, but particularly the 1740 Rumsey and 1801 Varle Maps, with inferred or predicted continuations based on topography and other research. The project area is indicated. (Hunter Research, Inc.)

above) to the west of Boyd's Corner. This road can perhaps be seen as a cut-off route that would enable traffic coming from Bohemia Landing and heading to Appoquinimink/Odessa to instead divert northwards to Reedy Island. The route saves over two miles of that distance by skirting the headwaters of Drawyers Creek rather than following the north-south Choptank Road up to its intersection with the Bohemia/Reedy Island road. The construction date of this road is unclear although it was likely to have been built in the second half of the 17th century. It is this road which has been the object of the studies documented here.

B. THE OBJECTIVES

The overall objectives of these investigations were to:

1. Test the predicted alignment of the Reedy Island Cart Road in a specific area where the depositional model predicts that physical features of the road will survive, using multiple techniques (Figure 1.4);

2. Document these features and compare them with the existing data; and

3. Establish the nature of the East Spring Branch drainage crossing.

C. THE MODEL

The cart road alignment runs across four main types of environmental settings within the U.S. Route 301 corridor (Figure 1.5): Zone 1 -essentially level farm fields; Zone 2 - farm fields with slight slopes trending towards drainages and wetlands; Zone 3 - wetlands, underlain by clay and lying adjacent to drainages; and Zone 4 - drainage crossings. These zones are shown on the preliminary construction plans profile of the area of the U.S. Route 301 crossing of Springmill Branch (Figure 1.5). The following depositional conditions were predicted for these zones, based largely on the data from Reedy Island Cart Road Site 4:

Zone 1: Where the cart road crossed level farm fields, initial use created deep ruts within the upper sandy loam soils. For over a century after the abandonment of the road (i.e. *circa* 1780 to 1880) animal-traction plowing would have erased the upper portion of the ruts, blending them into the plowzone, but possibly leaving lower components in place. Subsequent mechanized plowing penetrated deeper in to the soil and increased erosion, especially through deflation on these level uplands. Up to two feet of the upper soil profile appears to have been lost in some locations along the U.S. Route 301 corridor, as evidenced by heavily truncated historic features such as cellar holes and postholes.

Zone 2: As in Zone 1 the period of initial use would have created deep ruts in the upper sandy loam soils and the period following (*circa* 1780 to 1880) would have erased the upper portion of the ruts blending them into the plowzone. What differentiates Zone 2 from Zone 1 is the slight slope towards watercourses. In areas of slight slopes towards drainages eroded soils from higher adjacent areas (Zone 1) were accreted during the period of mechanized plowing, partly burying the earlier plowzone and preserving the truncated ruts of the cart roads. On steeper slopes colluvial processes would tend to remove the soil materials and deposit them further downslope.

Zone 3: Closer to the water the underlying clay lies closer to the surface. There is slight evidence that gravels may have been emplaced to form an informal road bed above the clay in this. Most of these clay areas were probably not plowed during the first century after abandonment but mechanized plowing in the 20th century took advantage of these marginal areas and likely erased any traces of the built-up roadbeds.

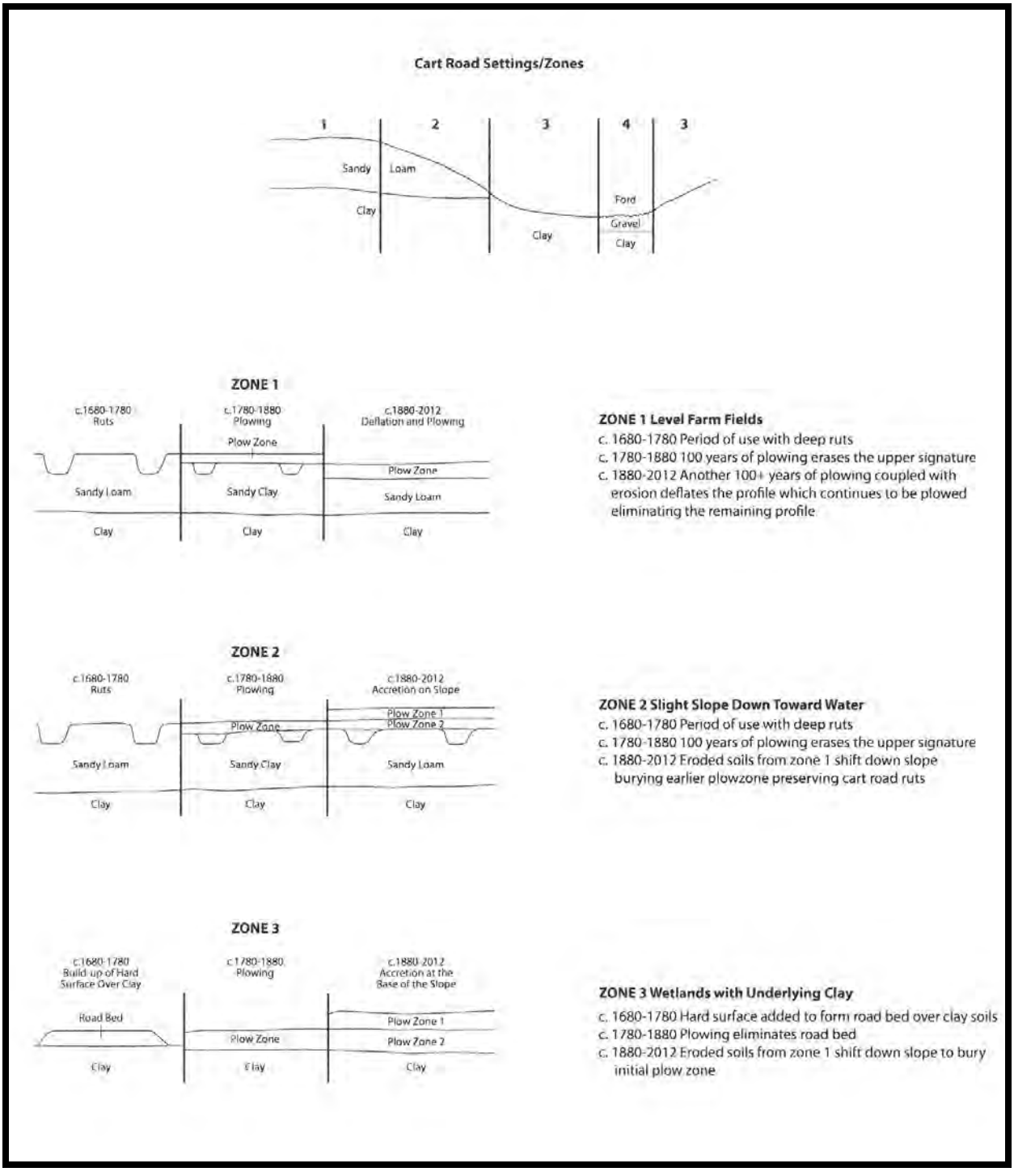
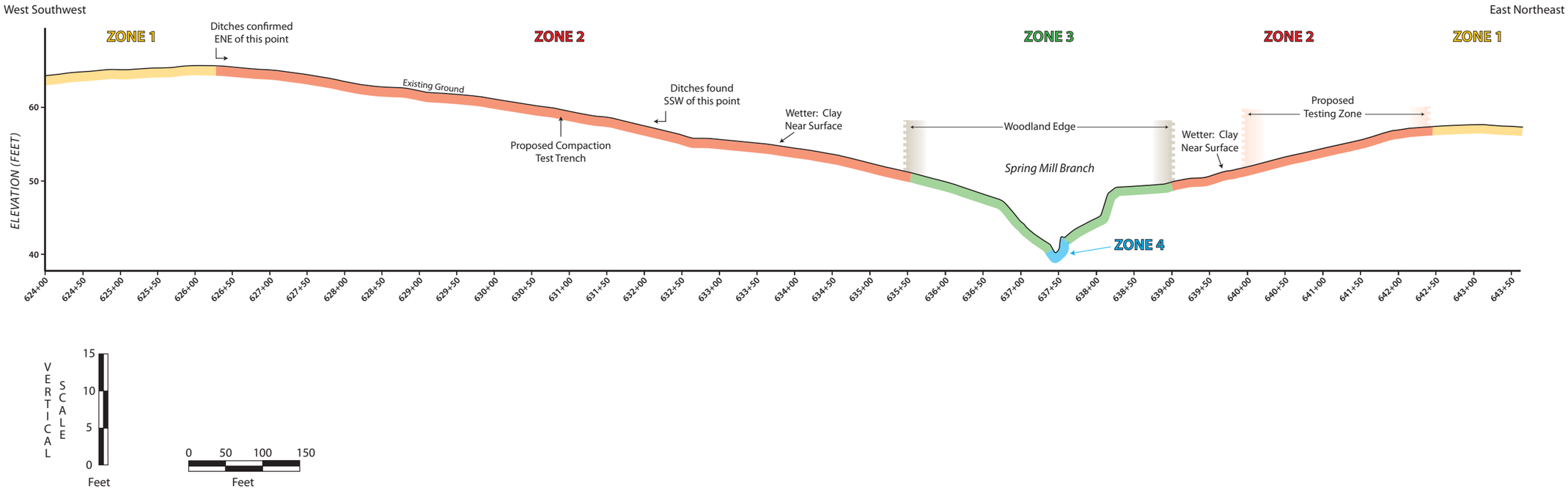


Figure 1.4. Model of Cart Road Setting Zones.



2. Profile of the U.S. Route 301 Centerline at the Springmill Branch crossing, with the Cart Road Setting Zones, Existing Archaeological Data, and Proposed Archaeological Testing Area shown. Base Map: DelDOT Preliminary Construction Plans Sheets 30 through 32.

Figure 1.5. Profile of the U.S. Route 301 Centerline at the Spring Mill Branch.

Zone 4: Crossings of the actual drainages would either have been by use of bridges or by means of a ford. Fords could be quite informal, simply making use of a portion of the stream having a solid exposed rocky base. This could be improved with wood corduroy or with gravel. Bridges required capital investment and were not common in the 18th century, being largely confined to major roads or "king's highways". The Reedy Island cart road spur is considered very unlikely to have had bridges constructed along its alignment, and fords are much more likely at drainage crossings.

If the above model is valid, the best chances of documenting remains of the cart road within the proposed alignment are in Zones 2 and 4 with a lower chance in Zone 3 and little or no chance in Zone 1. The best potential area conforming to these criteria within the proposed alignment was identified within Section 1, Segment 6, buried beneath the plowzone of an agricultural field on the slight slope near the edge of the woods, immediately east of the Reedy Island Cart Road 4 site. Elements of the cart road are also visible in Section 1 between Segments 5 and 6 where a ford constructed of gravel was observed in the bed of the headwaters of northern branch (Spring Mill Branch) of Drawyer Creek. The ford was observed during the Phase IA walkover by Geo-archaeologist John Stiteler (Archaeological and Historical Consultants, Inc. 2009).